EUROPEAN CLUSTER COLLABORATION PLATFORM

Summary report on cluster policies and programmes across Europe and priority third countries

2022 edition

14 December 2022

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Brussels, 14th December 2022

Strengthening the European economy through collaboration

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Executive summary

This executive summary summarises the main findings from the ECCP Summary Report on Cluster Policies and Programmes across the EU27 and selected third countries in 2022. Based on the update of the 56 national factsheets, the report provides overarching findings about national and regional cluster policies, programmes and initiatives within Europe and selected third-priority countries. In addition, the report also covers the current state of play of cluster policy.

The report is based on desk research at the national level (mostly in the national language) and validation by the national authorities in the EU Member States and COSME countries as well as national experts of the European Cluster Association. Moreover, data are enriched with quantitative and qualitative data from previous evaluations and ECCP data.

Overarching findings on the EU cluster landscape and the economy

- Almost **1,400 cluster organisations (1,398) are profiled on the ECCP** out of which 78% (1,091) are in the EU27. On average, cluster organisations in the EU27 have around 170 members.
- **Cluster organisations in the EU27 represent a large share of the European economy** and are mostly linked to manufacturing sectors and the industrial ecosystem "Digital", reflecting the ongoing digital transformation of Europe's core industries.
- The **presence of cluster organisations is positively linked to various aspects of regional competitiveness** such as employment, human resources and research and development expenditures. Moreover, cluster presence is especially linked to indicators that measure digital performance.

Overarching findings on the EU cluster policy and support initiatives

- **Different EU cluster policies and support tools** focus on the future development and enhancement of the European cluster landscape, including platforms to support cluster collaboration (especially the ECCP) and partnering projects for European clusters (e.g. Euroclusters, ESCP, INNOSUP-1).
- **Partnering projects between cluster organisations** mainly helped to boost internationalisation activities (ESCP-4i), cluster management excellence (ESCP-4x) and cross-regional cluster exchange in the field of smart specialisation (ESCP-S3). The INNOSUP-1 programme supported cross-sectoral cooperation to develop new value chains.
- The current **Joint Cluster Initiative (Euroclusters)** has recently started its activities with 30 Euroclusters, including more than 170 European cluster organisations and their partners (e.g. business agencies) receiving a total of 42 million EUR in EU funding. Supported organisations come from 22 different EU Member States. These 30 Euroclusters address all 14 industrial ecosystems that have been identified as core pillars for the EU industrial policy.

Overarching findings on national cluster policies and programmes across Europe and third countries

- **National cluster policies** are almost exclusively introduced in the EU27 member states and third countries, while COSME countries (so far) only rarely have dedicated cluster policies on the national level.
- **Cluster support** aims mostly at strengthening innovation ecosystems (89%), SME support (89%), R&D support (88%), industry-research collaboration (85%), internationalisation (82%), and upskilling (80%).
- Most cluster policies (65%) are set with a **limited duration period**.

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Overarching findings on the state of play of cluster policy across Europe and third countries

- Out of 56 countries analysed, **50% have a dedicated cluster policy at the national level**.
- EU Member States have a long tradition of dedicated cluster policies. In total, **51% of the EU Member States have more than 10 years of experience** in implementing cluster-specific policies.
- While regular **monitoring or evaluation activities** are performed in 21% of the national cluster policies in the EU27, 44% of the EU27 do not have any monitoring mechanism or only past evaluations available.

Recommendations for future cluster policies

- Scoring results from the maturity index point out that EU27 cluster policies have already a well-developed level of maturity. However, **monitoring and evaluation of cluster policies and cluster-relevant policies** need to be further elaborated to improve future national/regional cluster support.
- **Knowledge exchange** is relevant to further enhance and upgrade national cluster policies, especially in the light of increasing transformation needs and geopolitical challenges. Dedicated databases, such as the ECCP Policy Toolkit, are vital tools in this regard which can support the exchange of good practices for cluster policy development. To ensure relevance in dynamic policy making settings, such information repositories need to be regularly updated and maintained.

Introduction

The 2022 edition of the summary report on cluster policies and programmes across Europe and third-priority countries summarises the main findings from the 56 country factsheets on national and regional cluster policies in EU, COSME and other third countries.[1] The factsheets have been updated in 2022. Presented findings are based on desk research at the national level (mostly in the national language) and have been subject to validation with the national authorities in the EU27 and COSME countries as well as national experts of the European Cluster Association in selected countries.

The report aims at providing overarching findings with regard to national and regional cluster policies, programmes and initiatives within Europe and selected third-priority countries. In addition, the report includes a chapter on the current state of play of cluster policy and provides evidence-based recommendations on further elaboration of EU cluster policy.

The summary report follows largely the structure of the country factsheets and consists of the following five chapters:

1. **EU cluster landscape and the economy**

In Chapter 1, an overview of the cluster landscape is provided. Thereby, the regional distribution as well as the size and membership structure of cluster organisations is in the focus. In addition, this chapter examines the sectoral industry profile of cluster organisations and their members as well as the economic footprint of cluster organisations in the European economy. The connection between clusters and regional competitiveness is examined.

2. **Overview of the EU cluster policy and support initiatives**

The second chapter gives an overview of cluster policy support initiatives at the EU level that were implemented under the COSME and Horizon 2020 programme in the 2014-2020 funding period and support initiatives which are implemented under the Single Market Programme in the 2021-2027 funding period through the COSME and Horizon 2020 programmes.

3. **Cluster policies and programmes across Europe and third countries**

In Chapter 3, the main findings from the cross-analysis of the 56 factsheets are presented by focusing on the types of cluster policies implemented, policy objectives and beneficiaries. Furthermore, this chapter explores the duration of different policies, the budget allocated (based on publicly available information) as well as the policy results and the extent to which these policies are aligned with the European Commission's priorities for 2019-2024.

4. **State of play of cluster policy across Europe and third countries**

Chapter 4 provides an overview of the state of play of cluster policy in Europe and beyond, by looking at the policy approach, continuity, evidence of performance and cluster support instruments. In addition, the maturity level for the three country categories, EU, COSME and third countries, is shown. The maturity level of cluster policies is based on four dimensions which are scored based on the existence of certain attributes (policy scope, continuity of cluster policies, evidence of performance and instruments).

5. **Conclusions and recommendations for future cluster policies**

The last chapter provides a short conclusion and recommendations on how to further develop EU cluster policy.

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[1] For a full list of analysed countries, refer to Table 3 in the Annex.

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01

EU cluster landscape and the economy

1. EU cluster landscape and the economy

In this chapter, the cluster landscape is scrutinised. Thereby, a general overview is provided on the different cluster actors that are profiled on the ECCP in the different regions (EU27, COSME & Others). Following this overview, cluster organisations are examined with regard to their size, membership structure and sectoral industry profile. We provide more details on cluster organisations that are in the EU27. In addition, after giving a brief overview of the economy in the EU27, the economic footprint of cluster organisations in the European economy is analysed. Finally, the connection between the presence of clusters and regional competitiveness is examined, outlining the importance of cluster organisation for growth in the EU.

To start, Figure 1 provides an overview of the different ECCP Profiles by Actor Type and region. Table 4 in the Annex provides a full overview of cluster actor profiles by country. As of October 2022, there are almost 1,400 cluster organisations (1,398) profiled on the ECCP out of which 78% (1,091) are in the EU27. **All EU27 Member States have at least one cluster organisation profiled on the ECCP**. Among the EU27, Spain has the most cluster organisations profiled on the ECCP (172; 16% of EU cluster organisations), followed by Germany (123; 11%). Cyprus, Malta, and Luxembourg are the Member States with the lowest number of profiled cluster organisations.

Figure 1: Key summary data of the different cluster actor profiles on the ECCP

	Total General	EU27 Countries	Non-EU COSME	Third Countries
Cluster Organisations	1,398	1,091	84	213
Cluster Members	7,283*	399	21	8
European Cluster Partnerships	276	203	3	9
Cluster Networks	46	34	0	1
National Cluster Associations	22	19	2	1
Policy Institutions	19	17	1	1
Resource Efficiency Providers	136	129	3	1
Training Providers	25	22	3	0

*Source: ECCP; Data extracted from ECCP Platform on 14/10/2022, *Around 6900 cluster member profiles were previously transferred from the previous platform but have not been updated and hence do not include any location or contact data.*

More than **7,000 cluster members** are profiled on the ECCP (October 2022), comprising private enterprises, research organisations, universities, and technology centres. For most of these cluster members, no regional data is provided. However, among the cluster members for which this

information is provided, Romania (116), France (63), and Lithuania (38) have the most cluster organisation member profiles on the ECCP.

This is followed by around **280 European Cluster Partnerships**, including 24 new Joint Cluster Initiatives (Euroclusters) or the various European Strategic Cluster Partnerships (ESCP) such as the ESCP for Excellence[2], ESCP for Going International[3] and the ESCP for smart specialisation investments[4] from the 2014-2020 period. The greatest number of European Cluster Partnerships and initiatives are coordinated from Spain (52), closely followed by France (51), and Italy (30). Only a small number of European Cluster Partnerships and initiatives are coordinated from the Netherlands (2), Austria (2) or Finland (1).

Besides these core actors on the ECCP, further institutions within the cluster ecosystem are represented on the ECCP. They include 46 cluster networks, i.e. Meta-Clusters, out of which 34 are coordinated from the EU27 Member States, followed by 22 National Cluster Associations (19 from the EU27) and 19 policy institutions such as the EU-Japan Regional Cooperation Helpdesk (17 from the EU27). Finally, 136 Resource Efficiency Providers and 25 Training Providers are registered on the ECCP, that are offering expertise on upskilling and reskilling or digitisation for the EU cluster community.

Size and membership of EU27 cluster organisations

In the following section, we provide more detailed information on the cluster ecosystem in the EU27 Member States. We look at the cluster organisations, their size and membership structure, all of which are important information to assess the maturity and capacity of the ecosystem.

First, we assess the **distribution of cluster organisations profiled on the ECCP by EU27 member states**. As one can see in Figure 2 below, the top 5 countries (Spain, Germany, France, Italy, and Poland) account for 572 out of 1091 or 52% of all the cluster organisations that are profiled on the ECCP. Compared to the economic significance of these countries (69,6% of total EU GDP, 2019), this share can be considered appropriate.

Second, we assess the membership structure of the cluster organisations profiled on the ECCP. Considering that viable clusters depend on a critical mass and the co-location of related industries, membership structures, and membership sizes provide the first proxy to assess the maturity and capacities of cluster organisations. **Around 62% of the cluster organisations in the EU27 profiled on the ECCP have less than 100 members**. 22% of the cluster organisations in the EU27 have between 101 and 200 members. Only around 5% have more than 400 members. On average, cluster organisations in the EU27 have around 170 members.

However, there is considerable variation in the size of cluster organisations by country (see Figure 2). Among the two countries that account for the majority of the profiled cluster organisations (Spain and Germany), there is a relatively similar distribution of the size profile shares. France and Germany are the countries with the highest shares of cluster organisations with more than 500 members. In other Member States like Poland, Romania, Bulgaria, Greece, Croatia, or Hungary, however, most of the cluster organisations have less than 100 members. Figure 2 indicates that cluster organisations in the EU13 Member States and Less Developed Regions[5] tend to have smaller size profiles compared to the EU15 Member States and More Developed Regions.

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[2] https://clustercollaboration.eu/eu-cluster-partnerships/escp-4x (last access 29.11.2022)

[3] https://clustercollaboration.eu/eu-cluster-partnerships/escp-4i (last access 29.11.2022)

[4] https://clustercollaboration.eu/eu-cluster-partnerships/escp-s3 (last access 29.11.2022)

[5] see also https://ec.europa.eu/eurostat/web/cohesion-policy-indicators/context/cohesion-regions

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Figure 2: Cluster organisations registered on the ECCP, by EU27 Member States and size group
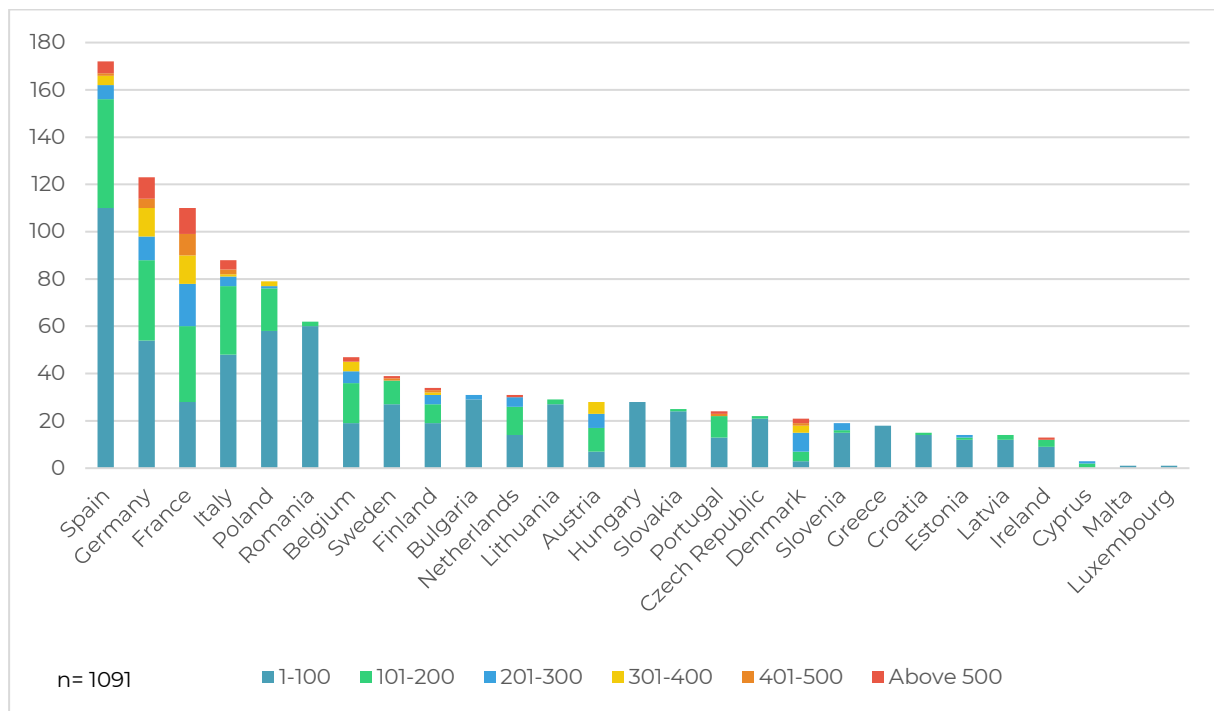
Source: ECCP; Data extracted from ECCP Platform on 14/10/22; summary data provided in Table 5 *(Annex).*

Overall, European cluster organisations on the ECCP represent **around 164,700 members**, of which 84% are SMEs, 9% are large firms and 7% are research organisations. The following Table 1 provides a breakdown of the distribution of cluster members by country, where considerable variation can be observed in the types of members that make up cluster organisations. Larger variations are also found among the cluster members by country which can partially be explained by the different sizes of the economies. For instance, with a share of around 34%, most of the cluster organisation members are from Germany. At the same time, Germany also accounts for the highest share of GDP (25%) in the EU27[6].

- **SMEs** are the most prevalent type of cluster organisation members across all EU27 Member States. Their share ranges from 67% in Ireland to 92% in Cyprus. The 100% SME members in Malta are the result of one cluster organisation.
- **Large firms** are most prevalent in Ireland with a share of 24% followed by Czechia (18%) and Austria (17%). In Malta (0%), Cyprus (2%), and Germany (4%) this type of cluster member is the least prevalent.
- The highest shares of **research organisations** can be found in Greece (18%), Croatia (17%), and Slovenia (16%). In Malta, no research organisations are represented by cluster organisations that are profiled on the ECCP. With a share of 4%, research organisations are the least prevalent in Spain and Denmark.

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[6] https://ec.europa.eu/eurostat/de/web/products-eurostat-news/-/ddn-20211220-1 (last access 29.11.2022)

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Table 1: Cluster organisations members in the EU27, by actor type and country

EU27 COUNTRY	Large firms		SMEs		Research Organisations		Total #
	#	%	#	%	#	%	
Austria	821	17%	3,584	74%	425	9%	4,830
Belgium	978	14%	5,360	77%	615	9%	6,953
Bulgaria	137	11%	1,004	79%	126	10%	1,267
Croatia	74	13%	416	70%	101	17%	591
Cyprus	10	2%	496	92%	31	6%	537
Czechia	150	18%	601	72%	89	11%	840
Denmark	598	12%	4,205	84%	217	4%	5,020
Estonia	41	6%	612	88%	43	6%	696
Finland	310	10%	2,384	80%	287	10%	2,981
France	3,195	14%	17,427	74%	2,902	12%	23,524
Germany	2,274	4%	50,985	91%	2,585	5%	55,844
Greece	77	11%	497	71%	125	18%	699
Hungary	47	5%	819	87%	77	8%	943
Ireland	297	24%	834	67%	116	9%	1,247
Italy	1,050	7%	13,537	87%	1,058	7%	15,645
Latvia	84	9%	766	85%	54	6%	904
Lithuania	84	9%	720	79%	107	12%	911
Malta	0	0%	20	100%	0	0%	20
Netherlands	425	11%	3,249	83%	239	6%	3,913
Poland	615	10%	4,752	80%	552	9%	5,919
Portugal	263	9%	2,504	82%	301	10%	3,068
Romania	181	8%	1,814	78%	336	14%	2,331
Slovakia	103	14%	548	77%	62	9%	713
Slovenia	160	13%	914	71%	206	16%	1,280
Spain	2,428	12%	16,520	81%	1,351	7%	20,299
Sweden	483	13%	3,061	83%	153	4%	3,697
Total	**14,885**	**9%**	**137,629**	**84%**	**12,158**	**7%**	**164,672**

Source: ECCP; Data extracted from ECCP Platform on 14/10/22.

Another key indicator in this overview assessment is the **team size of cluster management organisations**. As for all management organisations, sufficient and well-trained experts are essential for driving the success and development of organisations. In particular, in the context of cluster organisations, which are faced with increasing complexities (supply chain reorganisations, digital

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transformation, resource diversification, including energy, etc.) – similar to their members – sufficient management capacities are vital.[7]

The cluster management team size structure of EU cluster organisations shows a similar pattern compared to the number of member organisations (see Figure 3). Here, the **majority of the cluster organisations in the EU27 (65%) have between one and five employees**. Around 21% of the cluster organisations have a staff size of six and ten employees. Finally, only around 4% of the cluster organisations employ more than 20 persons. Not surprisingly, as can also be seen in Figure 3, there is a positive relationship between the number of cluster members and cluster management team size: with increasing numbers of cluster organisation members, the cluster management team size also increases.

Figure 3: Cluster management team size of EU27 cluster organisations, by number of members
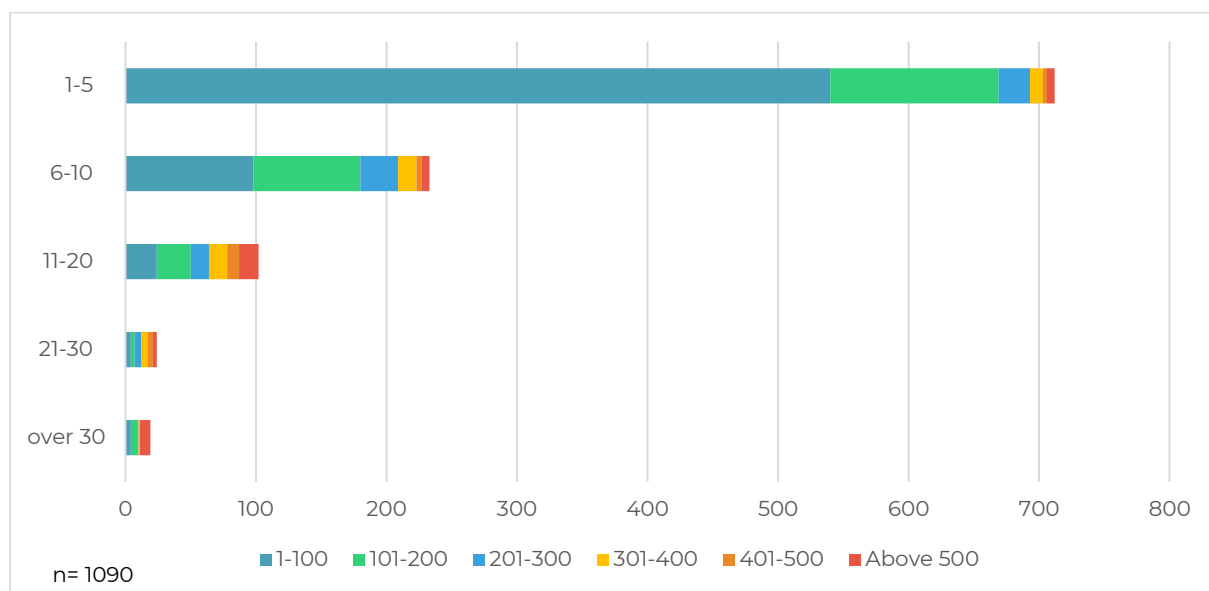
Source: ECCP; Data extracted from ECCP Platform on 14/10/22; summary data provided in the Annex.

Sectoral industry profile of cluster organisations in the EU27

In the next section, we will provide some insights into the sectoral profile of the 1091 EU27 cluster organisations and their contribution to the EU industrial ecosystems and key EU industrial alliances. This information is helpful to assess the representation of sectors and industries that EU27 cluster organisations are addressing. We focus on cluster organisations only, as they are the core user group on the ECCP, for which we have the most comprehensive data.

Overall, the cluster organisations from the EU27 that are profiled on the ECCP are linked to 71 out of the 88 of the broader NACE 2-digit sectors, which reflects that the **profiled cluster organisation represent a large share of the European economy**. However, when looking at the Top 25 economic sectors in which the cluster organisations are active (Figure 4), some variations in the number of cluster organisations per economic sector can be identified. The highest number of cluster organisations across all size groups address manufacturing sectors. Overall, 248 cluster organisations

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[7] Hantsch, S. et al. (2013): Cluster Management Excellence in Germany – German clusters in comparison with European peers. Available online: https://www.cluster-analysis.org/downloads/CountryReportGermany2012.pdf (last access 06.12.2022)

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out of the 577 cluster organisations (43%) that have provided information about their sectoral industry are linked to manufacturing sectors.

Among these **top 25 economic sectors**, in which the Cluster Organisations are active, two sectors stand out. These sectors can be regarded as transversal sectors as they include computer programming, consultancy, and related activities (J62) and scientific research and development (M72). Other prevalent sectors are related to the manufacture of machinery and equipment (C28), crop and animal production, hunting and related service activities (A01) and the manufacture of food products (C10).

Figure 4: Top 25 economic sectors of cluster organisations in the EU27, by number and size group

n= 577
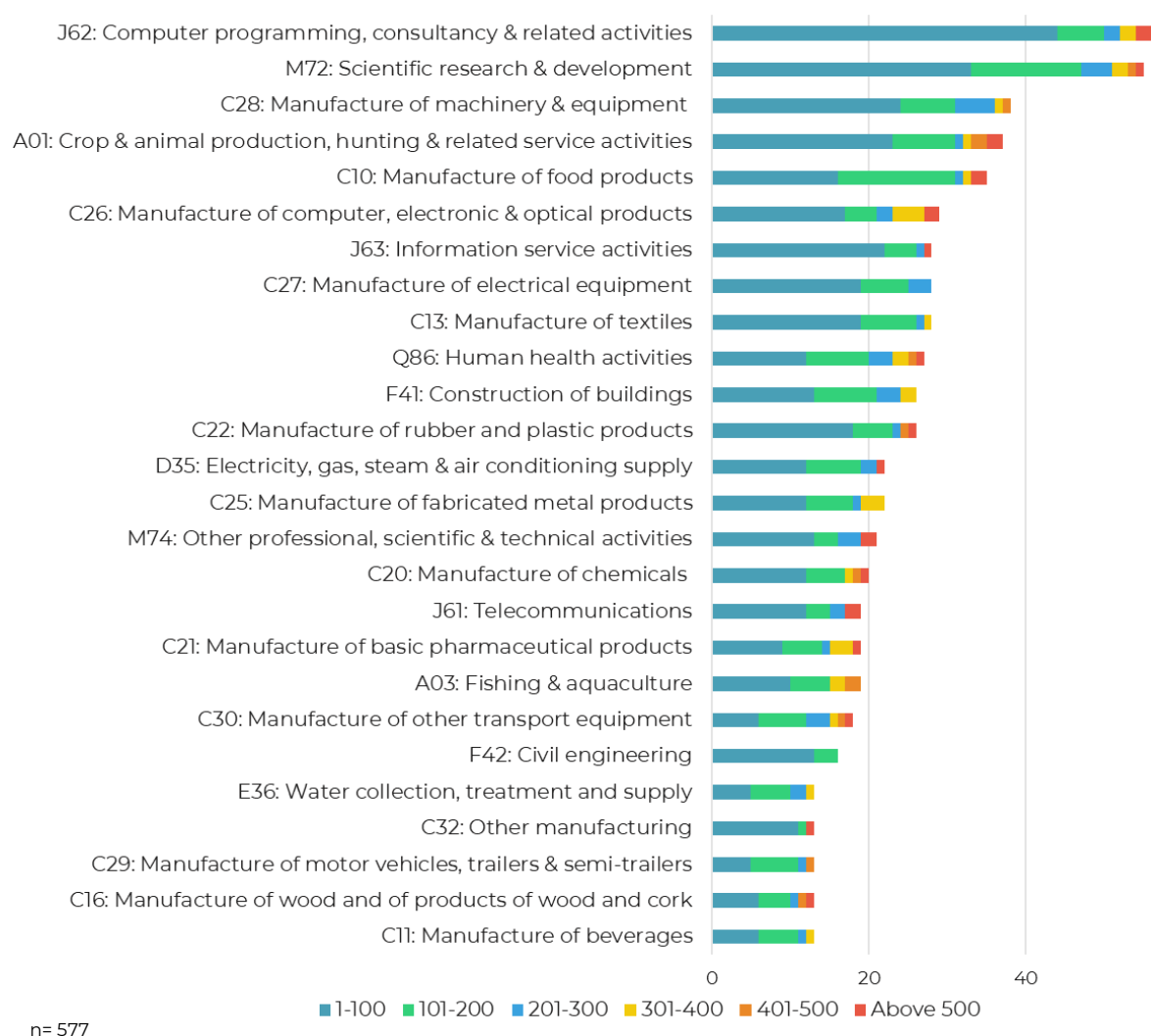
Source: ECCP; Data extracted from ECCP Platform on 14/10/22; summary data provided in Table 7 *(Annex). The Annex includes a full list of the NACE 2-digit codes and names. These Top 25 economic sectors are highlighted in bold letters in Annex 2. Note: Cluster organisations can select multiple economic sectors.*

In the following, the analysis of the economic activity is complemented by an examination of the EU **industrial ecosystems** as well as the **industrial alliances** which are linked to the profiled cluster organisations (see Figure 5). Overall, 14 EU industrial ecosystems were first introduced in 2020 by the

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European Commission.[8] These 14 industrial ecosystems are designed to encompass players operating in a value chain and include ecosystems such as "Aerospace & Defence", "Health" or "Tourism". Industrial alliances bring together a wide range of partners in a given industry or value chain and are built around a common goal of implementing EU policy objectives.[9] These alliances include for instance the "European Raw Materials Alliance" or the "European Battery Alliance".

This examination reveals that the **industrial ecosystem "Digital" is by far the most prevalent** among the profiled cluster organisations as it is linked to more than 100 cluster organisations (EU27) on the ECCP. This underlines the relevance and competencies of cluster organisations in supporting the digital transition. Cluster organisations in this industrial ecosystem also tend to have a larger size profile (more than 500 members) compared to cluster organisations in other industrial ecosystems. The industrial ecosystems "Agri-food", "Health" as well as "Renewable Energy", with around 60 cluster organisations, are also among the top 5 industrial ecosystems. Since renewable energies and the food system are also pivotal elements of the green transition[10] the relevance of cluster organisations in contributing to the green transition can be emphasised. With less than 15 cluster organisations, the industrial ecosystems "Energy Intensive Industries", "Electronics", "Textile", and "Proximity & Social Economy" are at the other end of the distribution. No cluster organisation on the ECCP is currently associated with the ecosystem "Retail".

Regarding the industrial alliances, the "Low Carbon Industries" with 50 cluster organisations in the EU27 standout. This industrial alliance is focused on boosting the production and supply of renewable and low-carbon fuels in the aviation and waterborne sectors.[11] Among the Top 3, industrial alliances by the number of cluster organisations are also the industrial alliances' Hydrogen and Micro-Electronics. While the "Hydrogen Alliance"[12] supports the large-scale deployment of clean hydrogen technologies by 2030, the "Micro-electronics Alliance"[13] has the aim of boosting competitiveness in this sector in the EU. Moreover, a gap between the industrial alliances with more than 30 cluster organisations (e.g., "Hydrogen", "Micro-electronics", etc.) and the ones with 15 or fewer cluster organisations ("Raw Materials", "Batteries", etc.) can be identified.

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[8] For more information, see also https://clustercollaboration.eu/in-focus/industrial-ecosystems (last access 30.11.2022).
[9] For more information, see also https://single-market-economy.ec.europa.eu/industry/strategy/industrial-alliances_en (last access 30.11.2022).
[10] see European Commission (2020): Technical support for implementing the European Green Deal. Available online https://reform-support.ec.europa.eu/system/files/2021-03/2020.2329-final-web.pdf (last access 06.12.2022)
[11] For more information, see also https://transport.ec.europa.eu/transport-themes/clean-transport-urban-transport/alternative-fuels-sustainable-mobility-europe/renewable-and-low-carbon-fuels-value-chain-industrial-alliance_en (last access 30.11.2022).
[12] For more information, see also https://single-market-economy.ec.europa.eu/industry/strategy/industrial-alliances/european-clean-hydrogen-alliance_en (last access 30.11.2022).
[13] For more information, see also https://single-market-economy.ec.europa.eu/industry/strategy/industrial-alliances/industrial-alliance-processors-and-semiconductor-technologies_en (last access 30.11.2022).

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Figure 5: Cluster organisations in industrial ecosystems and industrial alliances by number of members
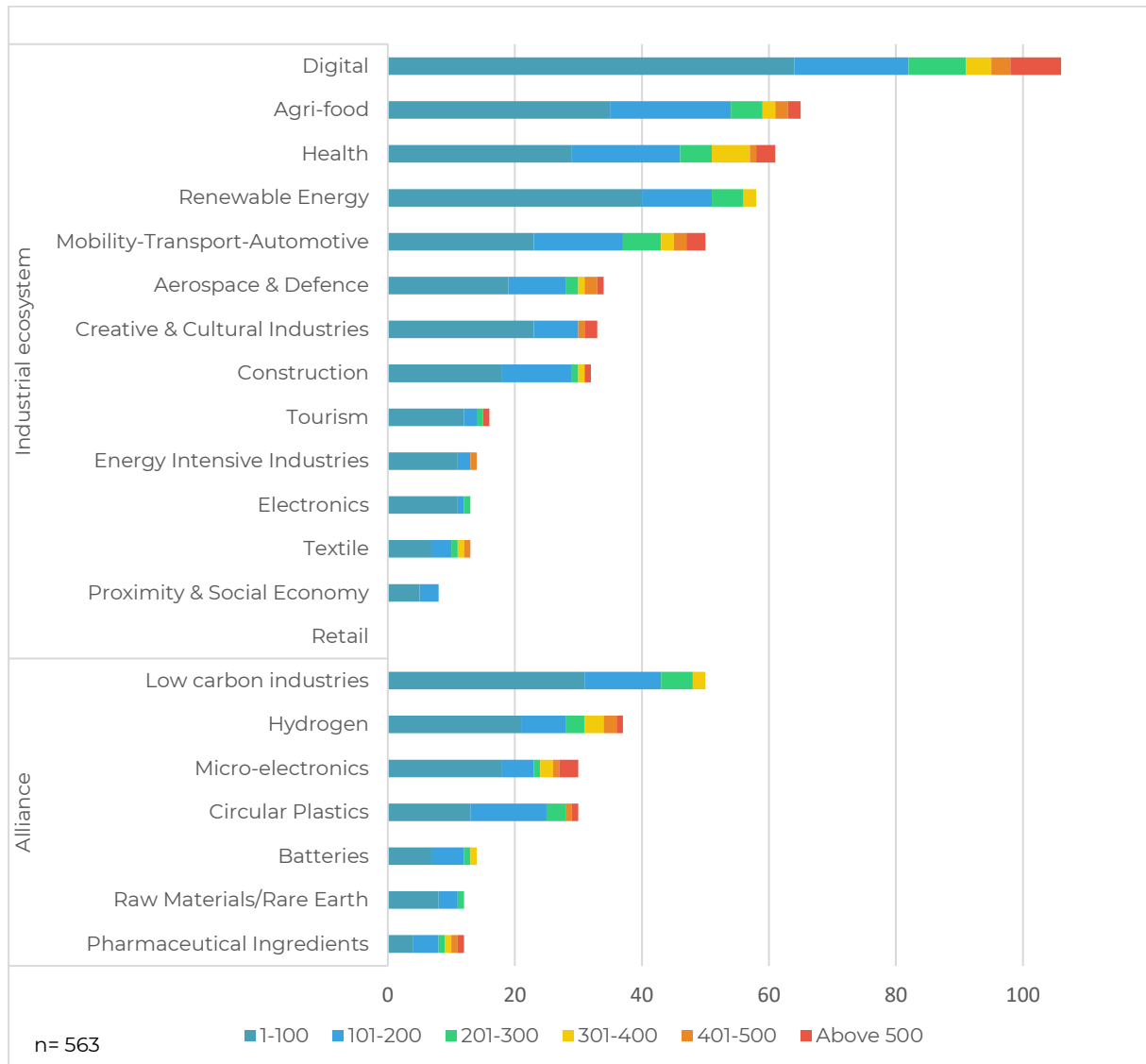
Source: ECCP; Data extracted from ECCP Platform on 14/10/22; summary data provided in Table 8 *(Annex 1). Cluster organisations can select multiple industrial ecosystems.*

Figure 6 provides an analysis of the **different types of members of cluster organisations by industrial ecosystem and industrial alliance**. Given that SMEs are the most represented cluster member type in EU cluster organisations they also play an important role across all industrial ecosystems and industrial alliances. However, some variations can be detected. For instance, the share of SMEs is the lowest in the industrial ecosystems "Mobility-Transport-Automotive", "Renewable Energy" and "Energy Intensive Industries". These are also the ecosystems where Large Firms and Research Organisations have the highest proportions. This can at least partially be explained by relatively high entry barriers and the comparably high required capital investments for production in these ecosystems. Among the alliances, the lowest share of SMEs is found in "Batteries". The industrial ecosystems "Construction", "Creative & Cultural Industries", "Textile", and "Tourism" are the ones with the highest shares of SMEs.

Figure 6: Types of cluster organisation members by industrial ecosystem and industrial alliance, in the EU27

	Large companies	SMEs	Research organisations
Industrial ecosystem			
Aerospace & Defence	701	2978	576
Agri-food	1017	7454	756
Construction	292	4435	249
Creative & Cultural Industries	209	2932	253
Digital	1827	15043	1163
Electronics	86	789	115
Energy Intensive Industries	227	678	152
Health	924	7123	932
Mobility-Transport-Automotive	1581	5090	653
Proximity & Social Economy	55	308	20
Renewable Energy	732	3116	678
Textile	106	1557	126
Tourism	56	1408	90
Industrial alliance			
Batteries	322	967	185
Circular Plastics	523	4215	316
Hydrogen	839	3347	632
Low carbon industries	636	3188	511
Micro-electronics	880	6960	656
Pharmaceutical Ingredients	238	1611	183
Raw Materials/Rare Earth	84	619	161

Source: ECCP; Data extracted from ECCP Platform on 14/10/22.; summary data provided in Table 9 (Annex 1).

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EU27 cluster organisations in the economy

This section of the report examines the economy in the EU27 by focusing on secondary data on employment and gross value added (GVA). Based on this introduction, the economic footprint of cluster organisations that are registered on the ECCP in the European economy is scrutinised.

To begin with, Figure 7 informs about **employment and gross value added** (GVA) at basis prices in the EU27 in 2020. This serves as an overview of the composition of the economy in the EU27. In terms of employment two dominant sectors in the EU27 can be identified. Around 50 million persons in the EU27 Member States are employed in sectors related to domestic trade, transport, accommodation, and food service activities (G-I) as well as public administration, defence, education, human health, and social work activities (O-Q). To some extent, these are sectors that are less relevant for clusters as for instance the activities related to public administration activities which are mainly carried out by governments[14]. This will also be discussed in a later section). The manufacturing sector (C) which plays a central role in regional competitiveness[15] employs around 30 million people in the EU27. The information and communication activities related sector (J) is among the sectors with the lowest levels of absolute employment and covers around six million employed persons. However, this sector is characterised by the strongest employment growth between 2010 and 2020 which indicates the increasing relevance of digitalisation in the last decade (see Figure 34 in the Annex).

In terms of gross value added at basic prices the overall GVA in the EU27 amounts to around EUR 12 trillion. Thereby, activities related to public administration, defence, education, human health, and social work (O-Q) are among the most relevant economic activities in the EU27. Corresponding to the absolute employment numbers the activities related to domestic trade, transport, accommodation, and food service (G-I) followed by manufacturing (C) are also among the top 3 economic activities in terms of GVA. In some sectors (e.g., real estate activities) a noticeable gap between employment numbers and GVA can be found which indicates a high productivity level in these sectors (e.g., L: real estate). This analysis has outlined the most relevant categories of economic activity in the EU27. It is found that among the most relevant sectors in the EU there is a number of activities that are less relevant to the concept of regional competitiveness and clusters. How this is reflected in the distribution of cluster organisations in the 11 categories of economic activity will be examined hereafter.

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[14] see https://www.bundesbank.de/resource/blob/619164/ccae9c8d5f91f785cb1693e60c77f3a9/mL/nace-rev-2-data.pdf (last access (08.12.2022)

[15] OECD (2007): Competitive Regional Clusters: National Policy Approaches. Available online: https://www.oecd.org/cfe/regionaldevelopment/38678677.pdf (last access 08.12.2022)

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Figure 7: Employment (bars) and GVA at basic prices (diamonds) in 11 categories of economic activity in the EU27, 2020
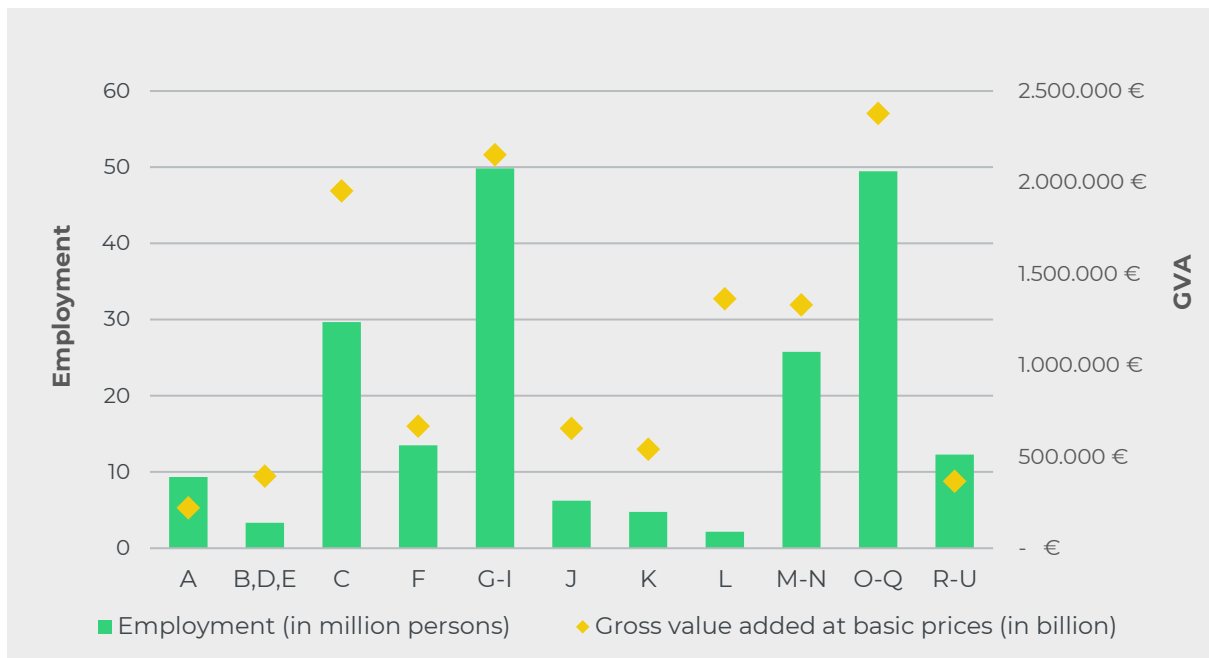
Source: ECCP (2022); based on data from Eurostat. Note: A: Agriculture, forestry and fishing; B,D,E: Mining, Energy and Water supply; C: Manufacturing; F: Construction; G-I: Domestic trade, transport, accommodation and food service; J: Information and communication; K: Financial and insurance; L: Real estate; M-N: Professional, scientific and technical; administrative and support service; O-Q: Public admin., defence, education, human health and social work; R-U: Arts, entertainment and recreation; other services; act. of households and extra-territorial.

In the following, the previous examination of the European economy is combined with the sectoral distribution of cluster organisations registered on the ECCP. This serves to further examine the extent cluster organisations reflect the European economy as well as their economic footprint. An overview of employment in the EU27 and the sectoral distribution of cluster organisations with profiles on the ECCP (relative to all profiled cluster organisations) along the 11 categories of economic activity is provided in the following Figure 8. Here the figure illustrates that the distribution of cluster organisations does not directly correspond with the employment shares in the EU27. This is not too surprising since for a number of these categories of economic activity such as public administration activities which are mainly carried out by governments[16] the concept of regional competitiveness is less relevant compared to other sectors (e.g., manufacturing). Although accounting for only around 14% of employment in the EU27 in 2020 by far most profiled cluster organisations (63%) are active in the manufacturing sector. This is similar to the information and communication-related activities which account for a relatively small share of persons employed (3%) but the second highest share of cluster organisations is found (23%). This can be linked to the relevance of cluster organisations for digitalisation which is pointed out by the literature.[17]

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[16] see https://www.bundesbank.de/resource/blob/619164/ccae9c8d5f91f785cb1693e60c77f3a9/mL/nace-rev-2-data.pdf (last access (08.12.2022)

[17] Okuwhere, M. et al. (2022): The catalyst roles of clusters in the relationship between open innovation and Digitalisation: A systematic review and research agenda within SME context. Available online: https://pure.coventry.ac.uk/ws/portalfiles/portal/56311371/The_catalyst_roles_of_clusters_in_the_relationship_between_open_innovation_and_Digitalisation_A_systematic_review_and_research_agenda_within_SME_context_FinalPaperUpload_904_0623073209_Published_copy.pdf (last access 07.12.2022 and Götz, M. & Jankowska, B. (2018): "On the Role of Clusters in Fostering the Industry 4.0". Available online: https://www.emerald.com/insight/content/doi/10.1108/S1745-886220180000013016/full/html (last access 07.12.2022)

Figure 8: Cluster organisations and employment in 11 categories of economic activity in the EU27 relative to all cluster organisations (bars) and total employment (diamonds), 2020
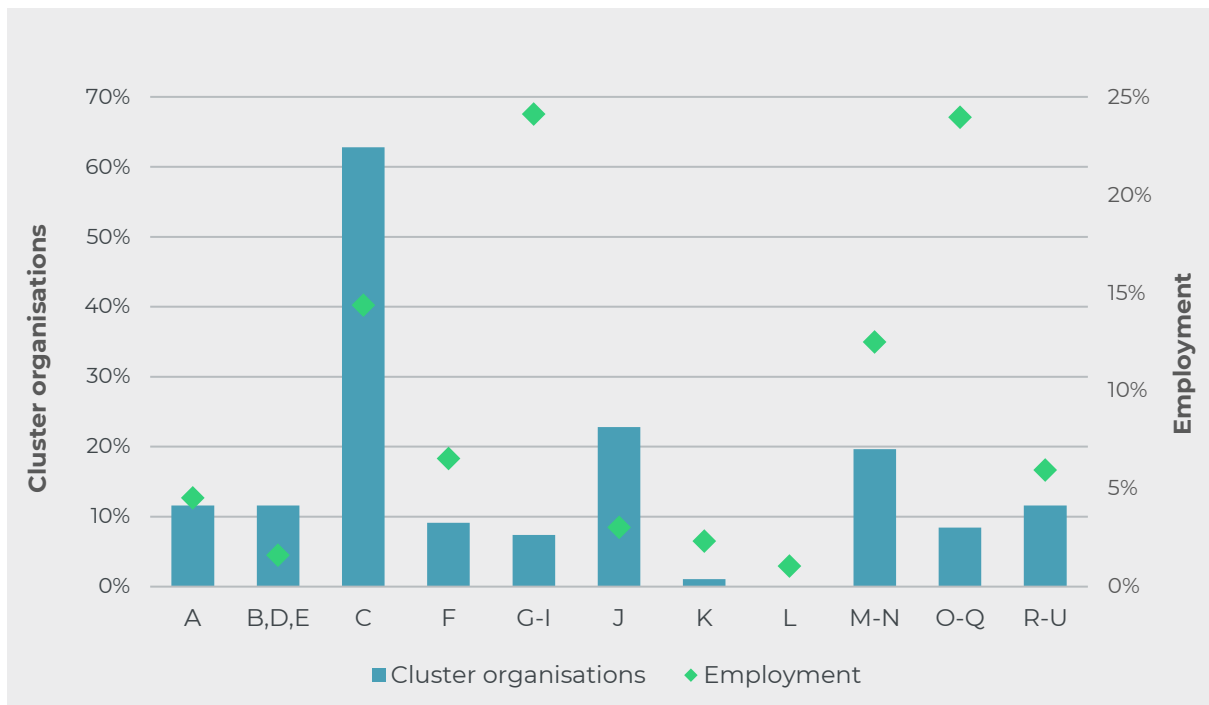
Source: ECCP (2022); cluster organisation data based on information from 577 cluster organisations in the EU27 extracted from ECCP Platform on 14/10/22. Total employment in 2020 amounts to 206 million persons, employment data from Eurostat. Note: A: Agriculture, forestry and fishing; B,D,E: Mining, Energy and Water supply; C: Manufacturing; F: Construction; G-I: Domestic trade, transport, accommodation and food service; J: Information and communication; K: Financial and insurance; L: Real estate; M-N: Professional, scientific and technical; administrative and support service; O-Q: Public admin., defence, education, human health and social work; R-U: Arts, entertainment and recreation; other services; act. of households and extra-territorial.

In addition, the following Figure 9 displays the relative distribution of **cluster organisations and GVA** in 2020 in 11 categories of economic activity in the EU27. Similar to the previous figure, it can be underlined that in many cases a higher level of GVA in a given sector is not accompanied by a high share of cluster organisations. For instance, this concerns activities related to public administration, defence, education, human health and social work (O-Q) and real estate (L). The cluster organisations that are registered on the ECCP and related to public administration, defence, education, human health and social work activities (O-Q) are mostly active in the sector of human health activities (Q86) which reflects the prior considerations regarding public administration activities. In the case of real estate activities, there are no registered clusters on the ECCP that are active in this sector. This can at least partially be explained since the real estate sector is mainly related to renting and operation of real estate[18] which are activities that are not traditionally linked to regional competitiveness. However, especially for activities related to manufacturing sectors both a high level of GVA and cluster organisations can be found.

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[18] see https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Real_estate_activity_statistics_-_NACE_Rev._2#Structural_profile (last access 08.12.2022)

Figure 9: Cluster organisations and GVA in 11 categories of economic activity in the EU27, relative to all cluster organisations (bars) and total GVA (diamonds), 2020
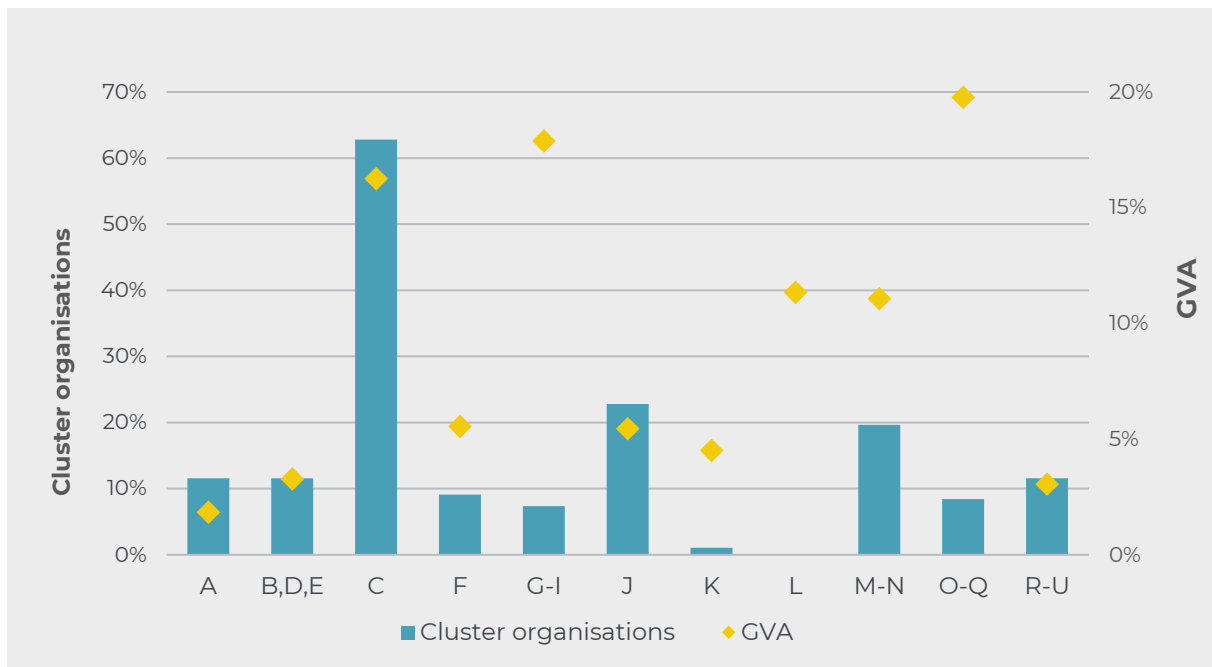
Source: ECCP (2022); cluster organisation data based on information from 577 cluster organisations in the EU27 extracted from ECCP Platform on 14/10/22. GVA at basic prices in 2020 amounts to EUR 12.03 trillion, GVA data from Eurostat. Note: A: Agriculture, forestry and fishing; B,D,E: Mining, Energy and Water supply; C: Manufacturing; F: Construction; G-I: Domestic trade, transport, accommodation and food service; J: Information and communication; K: Financial and insurance; L: Real estate; M-N: Professional, scientific and technical; administrative and support service; O-Q: Public admin., defence, education, human health and social work; R-U: Arts, entertainment and recreation; other services; act. of households and extra-territorial

Cluster organisations and regional competitiveness

The final section of Chapter 1 aims at identifying relationships between cluster presence and relevant regional competitiveness indicators that capture innovation and entrepreneurship as well as factors related to the green and digital transition. To that end, a correlation analysis was conducted, exploring significant underlying relationships between these variables.

The following figure provides an illustrative overview of the selected regional competitiveness Indicators. Overall, 25 indicators (see Table in the Annex for a full overview) of regional competitiveness that capture different aspects of regional competitiveness are grouped into four dimensions:
- Outcome indicators
- Intermediate performance
- Firms' behaviour
- Business environment

This is to account for different levels of the indicators and builds upon the Competitiveness Framework developed by the European Cluster Observatory[19]. The indicators of the "Business environment" and "Firms' behaviour" can be considered as competitiveness drivers that have an inter-

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[19] Franco, S., Murciego, A. & Wilson, J. (2011): Business Environment Secondary Data Report. European Cluster Observatory

dependent relationship in which they influence each other and determine the "Intermediate performance" indicators. The "Intermediate performance" indicators on the other hand are important to achieve the "Outcome" indicators which refer to rather overall goals. Moreover, emphasis has been placed on selecting indicators that capture factors of the green and digital transition for each dimension (highlighted below with dedicated icons) (see Figure 10).

Figure 10: Overview of the framework of regional competitiveness indicators

Outcome indicators	1. GDP per Capita (PPP) 2. Sales of new-to-market and new-to-enterprise product innovations as percentage of total turnover 3. Employment in technology and knowledge-intensive sectors 4. Share of ICT in GVA 🖧 5. Air emissions in fine particulates (PM2.5) in Industry 🌱
Intermediate performance	1. Employment rate 2. Apparent labour productivity 3. Gross fixed capital formation as % GDP 4. PCT patents per million population 5. ICT PCT patents 🖧 6. Green PCT patents 🌱
Firms' behaviour	1. Business R&D expenditures 2. SMEs that introduced a business process innovations (percentage of SMEs) 3. SMEs that introduced a product innovation (percentage of SMEs) 4. Innovative SMEs collaborating with others 5. Public-private co-publications per million population 6. Employed ICT specialists 🖧 🌱 7. Share of Green Employment 🌱
Business environment	1. Public R&D expenditures. 2. Human resources in science and technology 3. Birth of enterprises 4. Survival rate of enterprises (3 years) 5. Quality of Government Index 6. Individuals who have above basic overall digital skills 🖧 7. Number of recovery facilities 🌱

Legend	
🖧 Digital Transition	🌱 Green Transition

Source: ECCP (2022).

The key results of the correlation analysis of the beforementioned indicators of regional competitiveness and the presence of cluster organisations are presented in Figure 11. This figure also accounts for the different levels and relations between the dimensions are discussed previously. For cluster presence, the number of cluster organisations registered on the ECCP as well as regional[20] and industry-relevant nodes are utilised in the correlation. We find that the **presence of cluster organisations has a significant and positive relation with several regional competitiveness indicators**.

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[20] Regional-relevant specialisation nodes indicate that the region is specialised in the sector (LQ > 1.5) and the employment share of that sector is relevant for the region (regional employment share > 1%).

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More precisely, we find that the presence of cluster organisation is positively linked to

1. human resources in science and technology,
2. employed ICT specialists and
3. employment in technology and knowledge-intensive industries.

Moreover, the presence of cluster organisations is positively connected to the share of public R&D expenditures and even stronger to business R&D expenditures. For the patents, a positive link is found between the number of cluster organisations and the number of patents per million population as well as the share of ICT patents. A positive relation is also found for GDP per capita as well as for apparent labour productivity and the share of ICT in GVA. Most significant relations between the number of cluster organisations and regional competitiveness are found in the dimensions "Intermediate performance" and "Outcome". Other research does as well find a positive relation between clusters and overarching measures such as GDP.[21] All in all, it can be concluded that the presence of cluster organisations is positively linked to various aspects of regional competitiveness and is especially linked to indicators that measure digital elements. This is in line with the findings provided previously in Figure 5, in which most cluster organisations on the ECCP is active in the industrial ecosystem "Digital". In addition, the literature points out the positive effects of clusters on the successful application of open innovation digitalisation in SMEs[22] as well as the positive contributions of clusters to the development of industry 4.0[23] as a subtopic of the digital transition.

When considering cluster presence, as measured by the number of regional and industry-relevant nodes, the results show a slightly different picture. Here, **even more regional competitiveness indicators have a significant relation to cluster presence**. This especially concerns indicators in the dimensions of "Business Environment" and the "Outcome" indicators. For the dimension of "Business Environment" both the regional and the industry-relevant nodes are positively linked to the birth of enterprises and human resources in science and technology. This is in line with other research that finds that industrial clustering is a central factor in attracting professional human resources[24] and further underlines the role of clusters for skill development.[25] The regional relevant nodes have a significant and positive relation to the number of recovery & recycling facilities. However, the regional relevant nodes are significantly and negatively linked to the survival rate of enterprises and the industry-relevant nodes are negatively linked to individuals with the above basic digital skills. A potential explanation for the negative link between the regional relevant nodes and the survival rate of enterprises can be a higher competitive surrounding in the specialised region.

When considering the dimension "Firms' behaviour" as the second driver of competitiveness, the number of regional relevant nodes has a positively and relatively strong relation to green employment. However, a negative relation for this measure of cluster presence and the shares of

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[21] Ketels, C. (2003): The Development of the cluster concept—Present experiences and further developments. Available online: https://cluster.hse.ru/mirror/pubs/share/212158643 (last access 07.12.2022)

[22] Okuwhere, M. et al. (2022): The catalyst roles of clusters in the relationship between open innovation and Digitalisation: A systematic review and research agenda within SME context. Available online: https://pure.coventry.ac.uk/ws/portalfiles/portal/56311371/The_catalyst_roles_of_clusters_in_the_relationship_betw een_open_innovation_and_Digitalisation_A_systematic_review_and_research_agenda_within_SME_context_Final PaperUpload_904_0623073209_Published_copy.pdf (last access 07.12.2022)

[23] Götz, M. & Jankowska, B. (2018): "On the Role of Clusters in Fostering the Industry 4.0". Available online: https://www.emerald.com/insight/content/doi/10.1108/S1745-886220180000013016/full/html (last access 07.12.2022)

[24] Hsu, M.-S et al. (2014): "The impact of industrial clusters on human resource and firms performance", Journal of Modelling in Management, vol. 9 (2). Available online: https://www.emerald.com/insight/content/doi/10.1108/JM2-11-2012-0038/full/html (last access 07.12.2022)

[25] See also ECCP (2020): Supporting skills for industry through clusters. Available online: https://clustercollaboration.eu/sites/default/files/WYSIWYG_uploads/discussion_paper_skills_final_2.pdf (last access 07.12.2022)

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innovative SMEs collaborating with others and SMEs that introduced a business process innovation. In this regard, other findings from the literature do as well indicate that the location in a cluster does not per se lead to more innovations. The innovative output of firms is rather affected by the presence of other innovative firms.[26] Other researchers also indicate that the effect of clusters on the innovation performance of firms is influenced by the type of industry.[27] Both the number of regional and industry relevant nodes are linked to employed ICT specialists. In addition, the number of industry relevant nodes is positively related to public-private co-publications and business research and development expenditure. In terms of the dimension "Intermediate performance", a significant positive link for the regional relevant nodes is found for the employment rate which is in line with other research that points out a positive relation between clusters and employment.[28] Similar to the number of cluster organisations, the number of industry relevant nodes are positively linked to apparent labour productivity, PCT patents per million population, and ICT patents. Other research does as well point out the positive link between clusters and patenting.[29] For the "Outcome" indicators a significant relation is found in almost all cases. Both the regional and industry relevant nodes have a positive relation with the share of ICT in GVA and employment in technology and knowledge-intensive sectors. However, a significant negative link is found for the number of regional relevant nodes and sales of new-to-market and new-to-enterprise product innovations. Moreover, it is found that both the regional and industry relevant nodes are positively related to higher levels of air emissions, implying a negative effect of cluster presence on the environment. This can at least partially be explained since more relevant industries in a given region are likely to increase air emissions in that region, which further underlines the relevance of the green transition.

[26] Beaudry, C. & Breschi, S. (2003): Are firms in clusters really more innovative? In Economics of Innovation & New Technology. Available online: https://www.tandfonline.com/doi/abs/10.1080/10438590290020197 (last access 07.12.2022).

[27] Žižka, M. et al. (2018): The effect of clusters on the innovation performance of enterprises: traditional vs new industries. Available online: https://hal.archives-ouvertes.fr/hal-01857439/document. (last access 07.12.2022).

[28] Spencer, G.M. et al. (2009): Do Clusters Make a Difference? Defining and Assessing their Economic Performance. In Regional Studies, vol 44 (6). Available online https://www.tandfonline.com/doi/abs/10.1080/00343400903107736 (last access 07.12.20022)

[29] Porter, M. E. et al. (2014): Clusters, convergence, and economic performance. In Research Policy, vol.43 (10). Available online: https://www.sciencedirect.com/science/article/abs/pii/S0048733314001048 (last access 07.12.2022).

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Figure 11: Relationship of clusters and regional competitiveness, correlation results

Dimension	Indicator	Cluster Organisations	Regional relevant nodes	Industry relevant nodes
Outcome indicators	GDP per Capita	+		+
	Sales of new-to-market & new-to-enterprise product innovations as percentage of total turnover		-	
	Employment in technology & knowledge-intensive sectors	+	++	++
	Share of ICT in GVA	+	+	++
	Air emissions in fine particulates (PM2.5) in Industry		+	+
Intermediate performance indicators	Gross fixed capital formation			
	Apparent labour productivity	+		+
	Employment rate		+	
	PCT patents per million population	+		+
	Green PCT patents			
	ICT patents	+		+
Firms' behaviour	Business R&D expenditure	++	+	+
	Innovative SMEs collaborating with others		-	
	SMEs that introduced a business process innovations		-	
	SMEs that introduced a product innovation			
	Public-private co-publications			+
	Employed ICT specialists	+	+	++
	Green Employment		++	
Business Environment	Public R&D expenditure	+		+
	Quality of Government Index			
	Birth of enterprises		+	+
	Survival rate of enterprises		-	
	Individuals who have above basic overall digital skills			-
	Human resources in science & technology	+	+	+
	Number of recovery & recycling facilities		+	

(Left vertical label spanning lower rows: Competitiveness Drivers)

Legend

++ Positive correlation   -- Negative correlation

+ Weak positive correlation   - Weak negative correlation

Source: ECCP (2022); cluster organisation data based on information from 1087 cluster organisation in the EU27 extracted from ECCP Platform on 14/10/22, sources of regional competitiveness indicators provided in Table 15 in the Annex. Note: The numbers in the table indicate Pearson correlation coefficients that are significant at 95% level. Positive/negative Correlations include coefficients >=0.3, weak correlations include coefficients >=0.1. Green fields indicate a positive relationship and red a negative relationship.

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02

Overview of EU cluster policy and support initiatives

2. Overview of the EU cluster policy and support initiatives

The following chapter gives an overview of cluster policy support initiatives at the EU level that were implemented in the 2014-2020 funding period and support initiatives which are implemented in the 2021-2027 funding period. In addition, the chapter presents the relevance of clusters in other EU programmes and initiatives such as the European Regional Development Fund and the National Resilience Plans.

In the last years, the EU introduced **different policies and support tools** focusing on the future development and enhancement of the European cluster landscape. As outlined in the Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI (2021), several EU cluster support initiatives aimed between 2014-2020 to facilitate market entries for SMEs through cluster collaboration within Europe, to support the development of cross-sectoral value chains and investments in cluster excellence.[30] On the European level, the EU supports clusters through platforms, strengthening cluster collaboration and support and partnering projects between cluster organisations.

Figure 12: Overview of the EU cluster support initiatives in the 2014-2020 and 2021-2027 funding period

EU cluster policy is closely accompanied by the **European Cluster Expert Group** which meets regularly and develops recommendations and expertise for the European Commission, Member States, and regions for implementation of EU cluster policy and knowledge exchange.[31]

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[30] European Commission (2021): Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI. Available under: https://op.europa.eu/en/publication-detail/-/publication/a2c3e9e1-3deb-11ec-89db-01aa75ed71a1 (last access 18.11.2022).
[31] The current mandate of the 33 members is ending on the 31 December 2022. For more information on the European Cluster Expert Group see: https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&do=groupDetail.groupDetail&groupID=3636 (last access on 18.11.2022).

Cluster support through European Cluster Platforms

The **European Cluster Collaboration Platform (ECCP)** is the central cluster platform of the European Commission and gateway for the European cluster community to enhance cross-regional cluster collaboration through networking services and to increase knowledge transfer through information support. The ECCP regularly organises different types of networking events such as the *Clusters meet Regions*[32] or the *EU Clusters Talks*.[33] In addition, the ECCP maps cluster organisations and other types of cluster actors profiled on the ECCP by actor type, industry, region and policy.

Besides its regular services, the ECCP offers two different support and informative portals to react to global crises. On the one hand, the **ECCP COVID-19 Industrial Clusters Response Portal** provides clusters with essential EU updates for industry, solutions, events, and best practice examples, as well as COVID-related calls and post-COVID-19 considerations. On the other hand, the **EU Clusters support Ukraine Forum** aims at enhanced support deliveries of humanitarian aid for Ukraine caused by the Russian aggression.

Besides the ECCP, the **Smart Specialisation Platform** complements the activities of the ECCP by offering information to regional and national policymakers with regards to smart specialisation strategies. In the context of regional smart specialisation strategies, clusters are important regional economic players, which are often part of the Entrepreneurial Discovery Process (EDP).[34]

Cluster support initiatives in the 2014-2020 funding period

In the 2014-2020 funding period, one relevant EU support initiative to increase cross-border cooperation of EU cluster organisations and other intermediary organisations was the **European Strategic Cluster Partnership (ESCP) initiative** funded under the EU Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME). The ESCP initiative established partnerships between European clusters and intermediary organisations from the different EU27 or associated countries. Those partnerships focused on three different thematic areas, namely **internationalisation (ESCP for Going International)**, **cluster excellence (ESCP for Excellence)**, and **smart specialisation (ESCP for Smart Specialisation**).[35]

The ESCP were evaluated as part of the Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI (2021).[36] Overall, **findings** confirm that European cluster partnerships were supported successfully through a comprehensive set of cluster support initiatives in coherence with other EU and national cluster programmes. **Main outputs** were the development of joint internationalisation strategies (ESCP-4i), improved management excellence (ESCP-4x) and increase cooperation of clusters concerning regional smart specialisation strategies (ESCP.S3) (see Figure 13). However, the evaluation also formulates recommendations for future EU cluster initiatives

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[32] Within two years, 15 transnational workshops are organised in different EU regions to showcase the role of clusters in the different regional economies.

[33] The EU Cluster Talks is a live broadcast taking place every two weeks for an hour to discuss about breaking news in the cluster landscape and to boost the knowledge exchange.

[34] As a key element of the regional smart specialization strategies, Entrepreneurial Discovery Processes (EDP) are inclusive stakeholder engagement processes to support and inform regional policy makers and to empower regional stakeholders.

[35] For more information on the European Cluster Partnerships see: https://clustercollaboration.eu/eu-cluster-partnerships (last access 18.11.2022).

[36] European Commission (2021): Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI. Available under: https://op.europa.eu/en/publication-detail/-/publication/a2c3e9e1-3deb-11ec-89db-01aa75ed71a1 (last access 18.11.2022).

to further increase cooperation and partnering of clusters within Europe. One **recommendation** of the evaluation (2021) is that future initiatives should focus on the diversity of consortium composition by encouraging newcomer clusters (less experienced clusters with EU funding schemes) to join consortia, thus diversifying European cluster partnerships.

Figure 13: Key findings from the evaluation study (2021) for the ESCPs

INTERNATIONAL

ESCP-4i

- **64 partnerships targeting 32 different third markets**
- Effective support for development of **joint internationalisation strategies**
- Creation of **critical mass of cluster** as advantage when going to third countries
- Focus on the establishment of **sustainable partnerships**

EXCELLENCE

ESCP-4x

- **24 partnerhips with 147 cluster organisations**
- Relevant support for **enhancement of cluster managers skills**
- **Thematic focus** on urban mobility, smart city, emerging technologies, advanced manufacturing, ICT, …
- Optimise the **Cluster exchange mobility scheme** with involvement of SMEs

SMART SPECIALISATION

ESCP-S3

- **9 partnerships with 57 cluster organisations**
- Effective in strengthening **interregional & intersectoral cluster collaboration**
- Strong thematic focus on **digital transformation**
- Better **alignment of the ESCP-S3 with the smart specialisation strategy** process of DG Regio

Source: ECCP (2022) based on the Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI (2021).

Apart from the ESCPs, the **INNOSUP-1 initiative "Cluster facilitated projects for new value chains"** funded under the EU programme Horizon 2020 was a relevant EU support initiative that addressed the challenge to develop new cross-sectoral industrial value chains in Europe through European cooperation of cluster organisations and other relevant intermediaries. [37] In total, 30 projects were funded with 222 consortium partners and 1,687 direct beneficiaries (SMEs).

The INNOSUP-1 initiative aimed at boosting the cross-sectoral and cross-border cooperation in consortia of European cluster organisations and other relevant innovation intermediaries.[38] An innovative approach of the INNOSUP-1 initiative was that it consisted of the so-called cascade funding approach, meaning that cluster organisations served as intermediaries to support their SME members through different support instruments like direct financial support or capacity-building training. Evaluation findings (2021) of the INNOSUP-1 initiative show that the cascade funding significantly decreased the administrative burden for the direct beneficiaries (SMEs) of the INNOSUP-1 projects. Moreover, the **transnational and transregional components** were major advantages. Nevertheless, future cluster initiatives are recommended to **improve the geographic distribution of consortium** members and to enhance the longevity/sustainability of INNOSUP-1 partnerships

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[37] For more information on the ESCPs and the INNOSUP-1 initiative see: https://clustercollaboration.eu/eu-cluster-partnerships (last access 18.11.2022).

[38] European Commission (2020): Study on the effectiveness of public innovation support for SMEs in Europe . Annex E, INNOSUP evaluations. Available under: https://op.europa.eu/en/publication-detail/-/publication/888d351a-9d97-11eb-b85c-01aa75ed71a1/language-en (last access 18.11.2022).

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With regards to the participation of European cluster organisations in the ESCP and INNOSUP-1 initiatives, Spanish clusters were the most successful European organisations with 180 project participations[39] followed by France (151 participations) and Italy (96 participations). However, the geographic distribution of cluster organisations within the consortia remains a challenge, as well as the low representation of smaller countries, especially from the EU15.

Figure 14: Number of project participations in the European Cluster Partnerships and INNOSUP-1 by country, 2014-2020
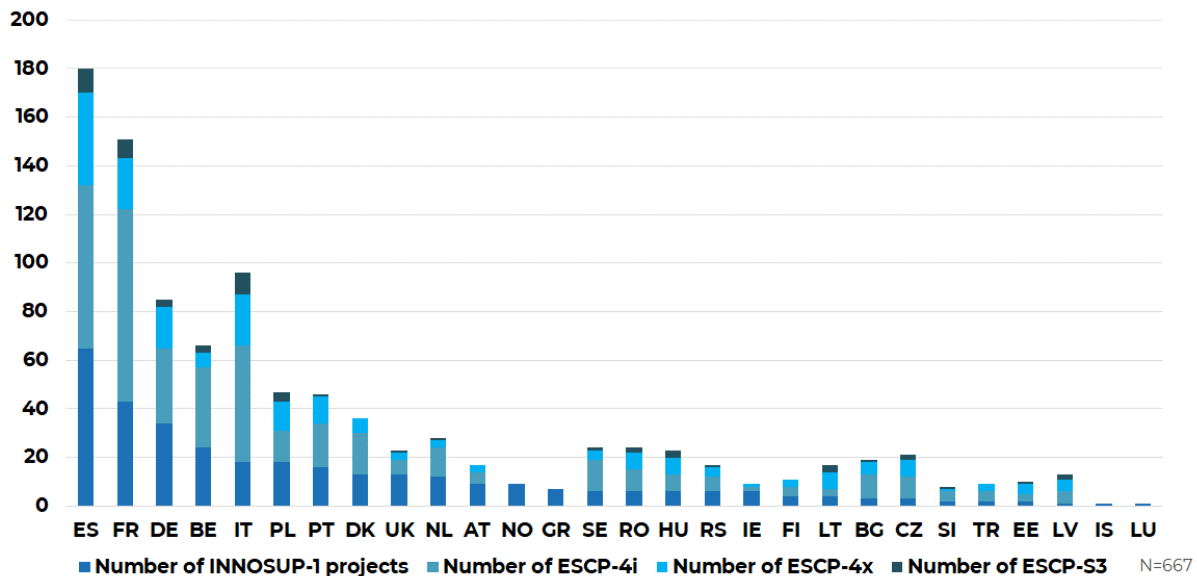
Source: ECCP (2022), based on data extracted from the COSME and Horizon2020 data hub; extraction date: November 2022.

Cluster support initiatives in the 2021-2027 funding period

In the current funding period from 2021 to 2027, the European Commission has launched the implementation of the EU Industrial Strategy. In this context, so-called **Joint Cluster Initiatives (Euroclusters)** are funded under the Single Market Programme.

In September 2022, the first 30 Euroclusters have started their activities in specific industrial ecosystems or across several industrial ecosystems. A total of EUR 42 million was allocated to 171 European clusters and their partners (e.g. business agencies) from 22 different EU27 Member States and one partner from Norway covering all 14 industrial ecosystems. The Euroclusters aim at contributing to the priorities of the European Commission which are resilience building and further development supporting the green and digital transition. Spanish clusters are the most active with 30 project participations followed by Italy (23) and France (21).

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[39] The figure indicates the number of project participations and not the number of clusters that have received funding.

Figure 15: Overview of the 30 Euroclusters by industrial ecosystem

Source: ECCP (2022).

Relevance of clusters within the National Resilience Plans and the ERDF Partnership Agreements

In addition to cluster-specific EU policies and initiatives, European cluster organisations are also supported in some EU27 Member States as part of the National Recovery and Resilience Plans and the European Regional Development Fund (ERDF).

As a response to the economic and social impact of the COVID-19 pandemic, the EU introduced the Next Generation EU programme which includes so-called the **National Recovery and Resilience Plans**. The analysis of these National Recovery and Resilience Plans (November 2022) shows that 17 EU27 Member States directly or indirectly address cluster actors.[40] For instance, the Spanish Recovery Plan includes ambitious measures to promote the clusters of the Associations of Innovative Companies, the modernization of companies, the training of managers, and the promotion of entrepreneurship, through the Spain Entrepreneurial Nation agenda. In other countries such as Cyprus and Latvia, clusters are eligible for financial support through grants or other dedicated support tools.

The **European Regional Development Fund (ERDF)** is a shared management support programme offering financial funding support in all EU regions to improve EU-wide cohesion. Investments are done through national or regional programmes. The screening of the available ERDF Partnership

[40] National Recovery and Resilience Plans referring to clusters are from Austria, Belgium, Croatia, Cyprus, Czechia, Estonia, Greece, Ireland, Italy, Latvia, Netherlands, Poland, Portugal, Slovakia, Finland, and Spain.

Agreements (October 2022) shows that ten of all the EU27 refer to cluster organisations.[41] In the scope of the report, no information are gathered on ERDF Operational Programmes. As part of the ERDF Partnership Agreements, Danish clusters are for instance regarded as channels for the participation of SMEs and entrepreneurs in international value chain collaborations, which can contribute to green and digital transformation. As part of the Danish ERDF Partnership Agreement, cluster development aims for international cluster-to-cluster cooperation and to create synergies with the Euroclusters initiative.[42] The French Partnership Agreement aims at boosting the creation of jobs in SMEs by supporting clusters as an intermediary structure to strengthen research and innovation capacities in France by organising and animating a group of enterprises and regional sectors.[43]

Figure 16: Overview of countries mentioning clusters in their National Recovery and Resilience Plans and/or the ERDF Partnership Agreements 2021-27
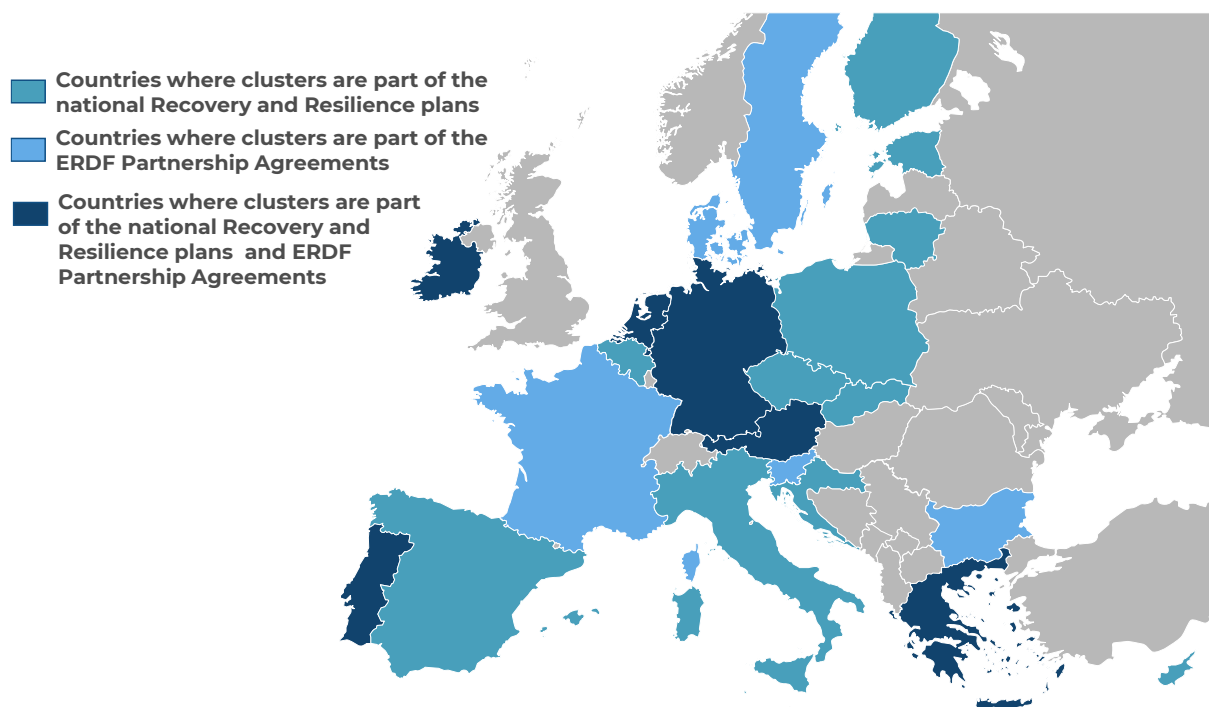
Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities. The figure is not displaying if cluster organisations are supported or part of the ERDF Operational Programmes.

[41] ERDF Partnership Agreements referring to clusters are from Austria, Bulgaria, Denmark, France, Greece, Ireland, Netherlands, Portugal, Slovenia, and Sweden.
[42] European Commission (2022). Partnership Agreement with Denmark – 2021-2027. Available under: https://ec.europa.eu/info/publications/partnership-agreement-denmark-2021-2027_en (last access 29.11.2022).
[43] European Commission (2022). Partnership Agreement with France – 2021-2027. Available under: https://ec.europa.eu/info/publications/partnership-agreement-france-2021-2027_en (last access 29.11.2022).

03

National cluster policy, programmes and initiatives

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3. National cluster policy, programmes and initiatives across Europe and third countries

The following chapter gives an overview of the main findings and policy trends of cluster policies and programmes across Europe and selected third countries in 2022. Findings presented in this chapter are on the type of cluster support policies, objectives and focus of cluster policies, the budget, duration, and alignment with the European Commission priorities.

In total, the findings of 56 countries[44] are presented in a summarized manner. Besides the 27 EU Member States, this chapter provides insights on 29 selected third countries including 13 COSME countries supported by the EU funding programme on the Competitiveness of Enterprises and Small and Medium-sized Enterprises.[45] In sum, 90 policies were analysed of which 35 were national and 9 regional cluster policies, 38 broad and 8 sectoral policies.

Figure 17: Overview of cluster support policies across Europe
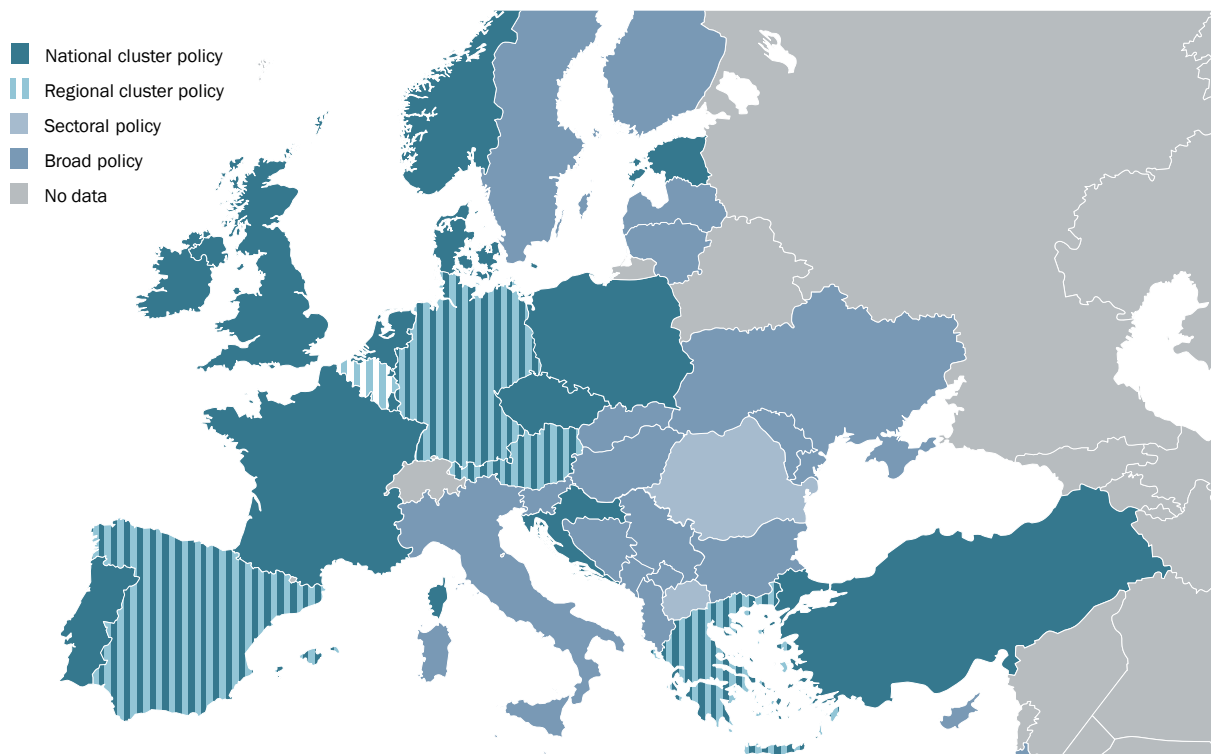
Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

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[44] For a full list of analysed countries, refer to Table 3 in the Annex.
[45] For more information on the COSME programme see: https://single-market-economy.ec.europa.eu/smes/cosme_en (last accessed 28.11.2022).

Overview of cluster support policies

The research on cluster policies and programmes across Europe and third countries showed that the policy frameworks for cluster support can be distinguished into two main categories.

1. **National and/or regional cluster policies** are dedicated policies or programmes which are designed to foster the development and/or creation of clusters. Such policies are in line with the European Commission's definition of cluster policies as "an expression of political commitment, composed of a set of specific government policy interventions that aim to strengthen existing clusters and/or facilitate the emergence of new ones" effectively functioning as "a framework policy that opens the way for bottom-up dynamics".[46] Out of 56 countries analysed, 28 (50%) have a dedicated cluster policy at the national and 8 (14%) at the regional level. Combined, **(50%) countries have a dedicated cluster policy either at the national and/or regional level.**

2. In the absence of dedicated cluster policies, different types of **broad policies** and **sectoral policies** take their place in supporting collaborative efforts between businesses, research institutions, and government institutions. Those broad or sectoral policies represent a wide range of policy sub-types from science, technology, and innovation policies and smart specialisation strategies to industrial policies, regional development policies and, more sectorial, maritime or tourism policies. Cluster development is often, implicitly, or explicitly, part of but not the main thrust of the policy. **Out of the 56 countries analysed, for 29 (52%) a broad and for 8 (14%) a sectoral policy has been registered** standing in for or complementing more dedicated cluster approaches.[47]

Figure 18: Number of polices per policy type and country group
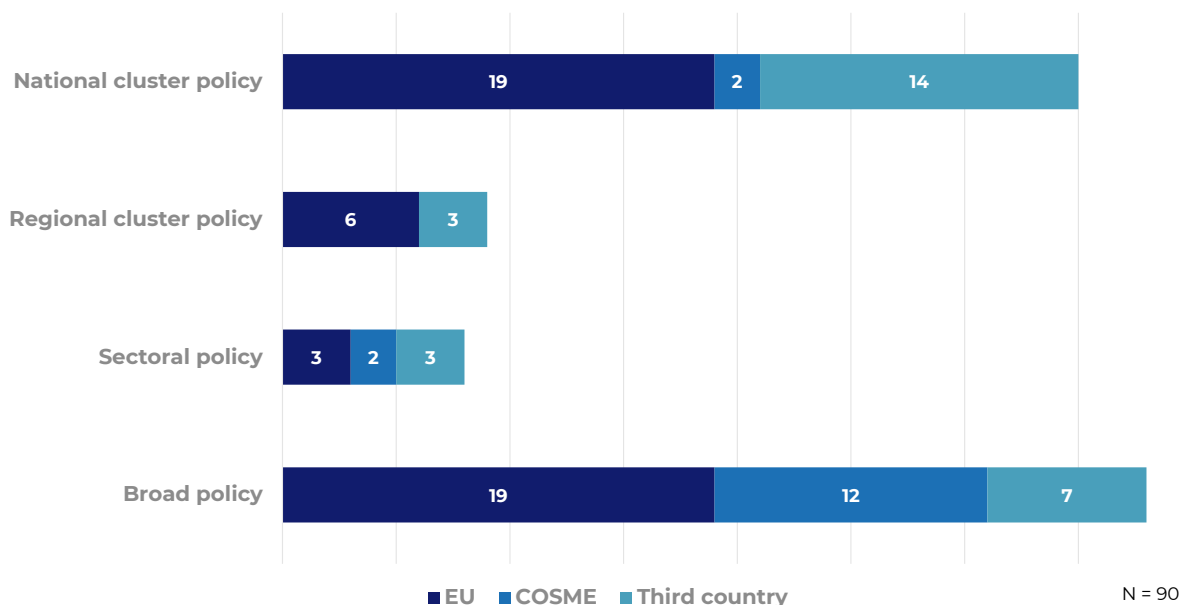
Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

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[46] European Commission (2016). Smart Guide to Cluster Policy, p. 11. Available at:
https://op.europa.eu/en/publication-detail/-/publication/e1fb9f84-2ba9-11e6-b616-01aa75ed71a1 (last accessed 10.11.2022).
[47] On a methodological note: The number of broad and sectoral policies is far from exhaustive as they were mostly registered in cases where there either was no dedicated cluster policy available and/or the cluster policy was part of a broad or sectoral policy.

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Figure 18 shows the prevalence of the different policy types across EU member states, COSME countries and other third countries. It should be noted these numbers differ from the numbers per country as there can be more than one policy per country, even of the same policy type. One apparent finding is that **national cluster policies are almost exclusively the realm of EU27 and third countries while COSME countries only rarely** have dedicated cluster policies on a national level. On the regional level, the pattern is even more clear-cut as none of the COSME countries has dedicated **regional cluster policies**.[48]

Figure 19 offers another view of the distribution of policy types from a different perspective as it shows the presence of different policy types per country. It **confirms the previous analysis** of the pure number of policies in several ways. While 75% of the selected third countries have developed a national and 19% a regional cluster policy, the EU27 countries – which are a far less selective sample – there are 52% with a national cluster policy and 19% with a regional cluster policy in place. While EU27 countries approximate the overall average with regard to broad policies, COSME countries are standing out here with 77 % of them relying on broad policies to promote clustering. When it comes to **sectoral policies**, COSME and third countries rely more on these targeted approaches while EU27 countries seem more reluctant to be as openly selective and stick more to sector-neutral policy approaches.

Figure 19: Percentage of countries per policy type
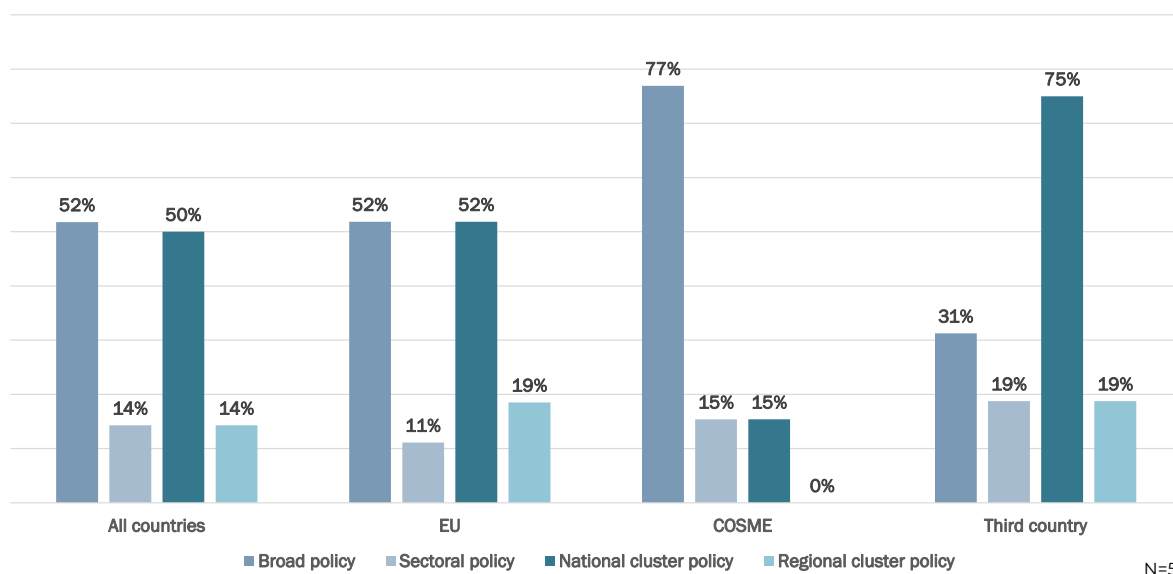
■ Broad policy ■ Sectoral policy ■ National cluster policy ■ Regional cluster policy   N=56

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Table 11 in the Annex provides a breakdown of the **subtypes of broad and sectoral policies**, lending an additional layer of detail. Most prevalent are regional development policies (13; 28%), industrial policies (11; 24%) followed by smart specialisation strategies (9; 20%), SME policies (4; 9%), Science, technology and innovation (STI) policies (2; 4%), and three singular occurrences of a digital transition focus, a maritime policy, and a tourism policy.

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[48] See Table 12 in the Annex for a list of the analysed regional cluster policies.

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Objectives and focus of cluster policies

To begin with, the policies that are in place to support clustering and cluster initiatives vary significantly on their stated objectives and focus. Based on the pre-defined answers from the factsheet, this chapter will give an overview of the objectives of cluster policies (e.g., fostering R&D activities, supporting internationalisation activities, etc.) as well as their more or less specific policy focus (i.e., without any specific focus, with a cross-sectoral purview of a defined set of sectors, or with a focus on one specific sector).

Figure 20: Policy Objectives across all policies

Objective	%
Fostering innovation and strengthening innovation ecosystems	89%
Increasing competitiveness and boosting scale up of SMEs	89%
Fostering R&D activities, technology development and implementation	88%
Strengthening cooperation between companies or industry and RTDI actors	85%
Supporting internationalisation activities	82%
Promoting employment and upgrading skills and competences	80%
Promoting entrepreneurship, start-ups and spin-offs	60%
Promoting resilience and sustainable economy and other solidarity-based initiatives	56%
Strengthening the network of cluster organisations/cross-clustering	55%
Enhancing the visibility of clusters	48%
Increase supply chain resilience	42%
Supporting the creation of new cluster organisations	41%
Supporting the consolidation of existing cluster organisations	38%
Supporting cluster excellence and professionalisation of cluster management	38%
Enhancing territorial cohesion (through RIS3)	25%
Cluster analysis and support for policymaking	21%

N = 90

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Figure 20 provides a first overview of the prevalence of policy objectives across all types of policy. Objectives which are present across the board can all be described as **general business and innovation support measures**: Strengthening innovation ecosystems (89%), SME support (89%), R&D support (88%), industry-research collaboration (85%), internationalisation (82%), and upskilling (80%). Looking at **cluster-specific measures**, they rank generally in the lower half of supported measures. While support for cluster networks (55%) and visibility of clusters (48%) are still a part of around half the policies, support for the creation (41%), consolidation and professionalisation (both 38%) of cluster organisations and, finally, cluster analysis and support for policymaking (21%).

If we break down the distribution of policy objectives for each policy type, patterns already visible in the previous figure become more pronounced. As Figure 21 shows, cluster-related objectives consistently rank lowest among the objectives pursued by broad policies, while they are – as one would expect – among the top objectives for dedicated national cluster policies. The more general business and innovations support policies can be found in the mid-field this time, as they are equally part of broad and of national cluster policies. Towards the lower end of the figure are those objectives, which are more in focus for broad policies and less so for national cluster policies such as territorial cohesion, supply chain resilience and employment and upskilling.

There is, however, **one curious outlier: Support for the creation of new cluster organisations** is at least as much an objective for broad and sectoral as it is for national and regional cluster policies. An explanation could be that it is attractive and easy to profess the intent to create cluster organisations while it is much more difficult and a question of more detailed policy support to develop and professionalise cluster organisations in the next step. Yet, it might only become necessary to have more comprehensive policies for cluster development once there are some cluster organisations in the first place. Therefore, including the creation of cluster organisations in a broad policy might be considered a sensitive first step, after which more elaborated and dedicated cluster policies should follow.

Another way of looking at the different policies is to analyse their **sectoral focus**. As Table 2 sets out, across all registered policies there is no clear trend, neither is for national cluster policies. By contrast, broad policies are often without any specific focus or with a cross-sectoral purview while they are rarely focused on any specific sector. Sectoral policies are – unsurprisingly – exclusively with sectoral focus. Regional cluster policies are, in contrast to their national pendants, more often focused on a cross-sectoral set of industries. This might reflect the clearer sectorial profiles of certain regions allowing for a more specific choice while on a national level cluster there often is a greater necessity to provide support for a broader set of industries.

Table 2: Policy focus per policy type

(N=90)	Broad policy	Sectoral policy	National cluster policy	Regional cluster policy	All policies
No specific focus	45%	0%	37%	11%	34%
Cross-sectoral	39%	0%	34%	56%	36%
Sectoral	16%	100%	29%	33%	30%

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

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Figure 21: Policy objectives per policy type

Policy objective	National cluster policy	Regional cluster policy	Sectoral policy	Broad policy
Enhancing the visibility of clusters	53%	16%	12%	19%
Supporting cluster excellence and professionalisation of cluster management	51%	9%	11%	29%
Supporting the consolidation of existing cluster organisations	49%	11%	6%	34%
Strengthening the network of cluster organisations/cross-clustering	46%	8%	10%	36%
Cluster analysis and support for policymaking	42%	11%	11%	37%
Fostering innovation and strengthening innovation ecosystems	39%	11%	9%	41%
Strengthening cooperation between companies or industry and RTDI actors	38%	11%	8%	43%
Fostering R&D activities, technology development and implementation	38%	11%	9%	42%
Promoting entrepreneurship, start-ups and spin-offs	35%	9%	6%	50%
Increase supply chain resilience	35%	5%	8%	51%
Supporting internationalisation activities	35%	11%	8%	46%
Increasing competitiveness and boosting scale up of SMEs	35%	9%	10%	46%
Promoting resilience and sustainable economy and other solidarity-based initiatives	34%	8%	14%	44%
Promoting employment and upgrading skills and competences	31%	10%	10%	50%
Enhancing territorial cohesion (through RIS3)	26%	9%		65%
Supporting the creation of new cluster organisations	25%	8%	14%	53%

■ National cluster policy   ■ Regional cluster policy   ■ Sectoral policy   ■ Broad policy

N=90

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

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Beneficiary types of the different cluster policies

Based on the answers from the country factsheets, this Chapter gives an overview of the most important beneficiary types of the different cluster policies. Figure 22 shows the percentage of policies within each category that is providing support for a certain group of beneficiaries. In general, broad, and sectoral policies appear to be much more permissive regarding their target groups than dedicated cluster policies. The **most targeted groups of beneficiaries across policy types** are SMEs (94%), research organisations (87%), cluster organisations (81%) and academic institutions (79%), followed by large firms (72%), start-ups (70%), and technology centres (67%). Less targeted are business associations (48%), the general population (44%), policy makers (27%) and NGOs (26%). Looking at the **distribution per policy type**, national cluster policies have similar beneficiaries to broad or sectoral policies around business and innovation support (SMEs, cluster organisations, research organisations, and academic institutions) presented at the top of the figure but are less invested when it comes to support for start-ups, business associations, NGOs and the general population. This finding affirms that **dedicated cluster policies are indeed more focused** on their core business of supporting specific innovation ecosystems and not the broader socio-economic development.

Figure 22: Beneficiaries per policy type

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

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Cluster policy duration

While investigating national, broad, sectoral as well as regional-level cluster policies, a significant characteristic noticed was its duration. Based on pre-defined answers in the factsheet, cases are defined for its "limited" or "unlimited" policy duration. This chapter delves into the state of clusters regarding their duration as it considers the implications of its "limited" or "unlimited" trajectory, whilst providing information on relevant historic backdrops that inform this condition.

Duration

Figure 23 provides a broad breakdown of cluster policies based on their duration period. Regarding cluster policies that have an established starting and ending year, most cluster policies (69%) are set with a limited duration period and 31% with an unlimited duration. It is also notable how cluster policies hailing from EU Member States are usually set within a fixed time frame (**77%**) as opposed to unlimited time frames (**23%**). There is a similar occurrence among COSME-countries, where a total of 11 policies were limited and five were unlimited. Meanwhile, third countries showcase a more balanced proportion of policies as **56% are limited** and **44% are unlimited**

Figure 23: Duration period of cluster policies differentiated by the EU27, COSME and Third countries
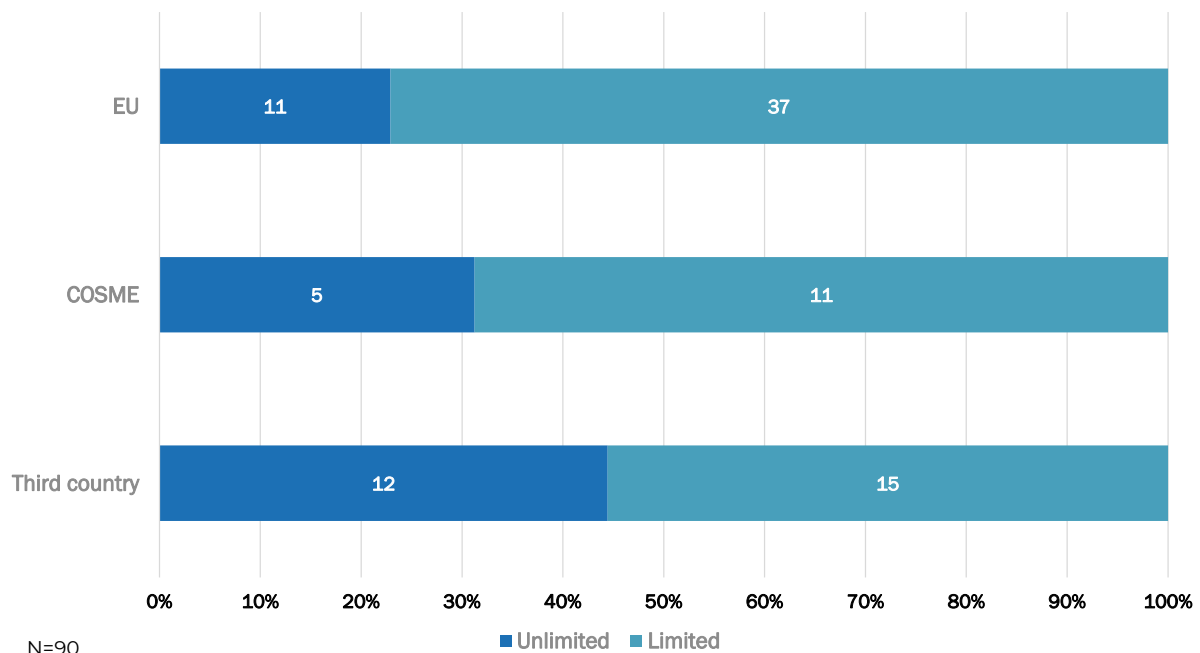
N=90

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Timeframe

As seen in Figure 24, statistics pertaining to programmes with **unlimited durations** showcase interesting cases of the respective country groups. A notable statistic in this category is a large amount of third countries (10) represented in national cluster policies, followed by EU-countries (5). On the other hand, programmes with **limited time durations** are prevalent among broad policies, with the EU27 (14) and COSME (9) making up the majority. EU countries also constitute most cases in national (16) and regional-level (6) cluster policies, underscoring the diversity in programmes across the EU27. Meanwhile, it is interesting how both national (5) and regional (4) cluster policies are also

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found among Third countries. Hereby it is also apparent how COSME countries showcase neither national nor regional-level cluster policies

On a general note, one can bear in mind how cluster policies with initial limited time frames can be subject to time extensions. This is exemplified with cluster policies such as the Italian regional policy "Strategia di Specializziaone Intelligente" which initially ran from 2014 to 2021 and was later extended to 2027. Nevertheless, extension periods can vary in time depending on the goals or resources of the respective cluster policy.

Figure 24: Unlimited (left) and Limited (right) policy durations from the EU27, COSME and Third countries
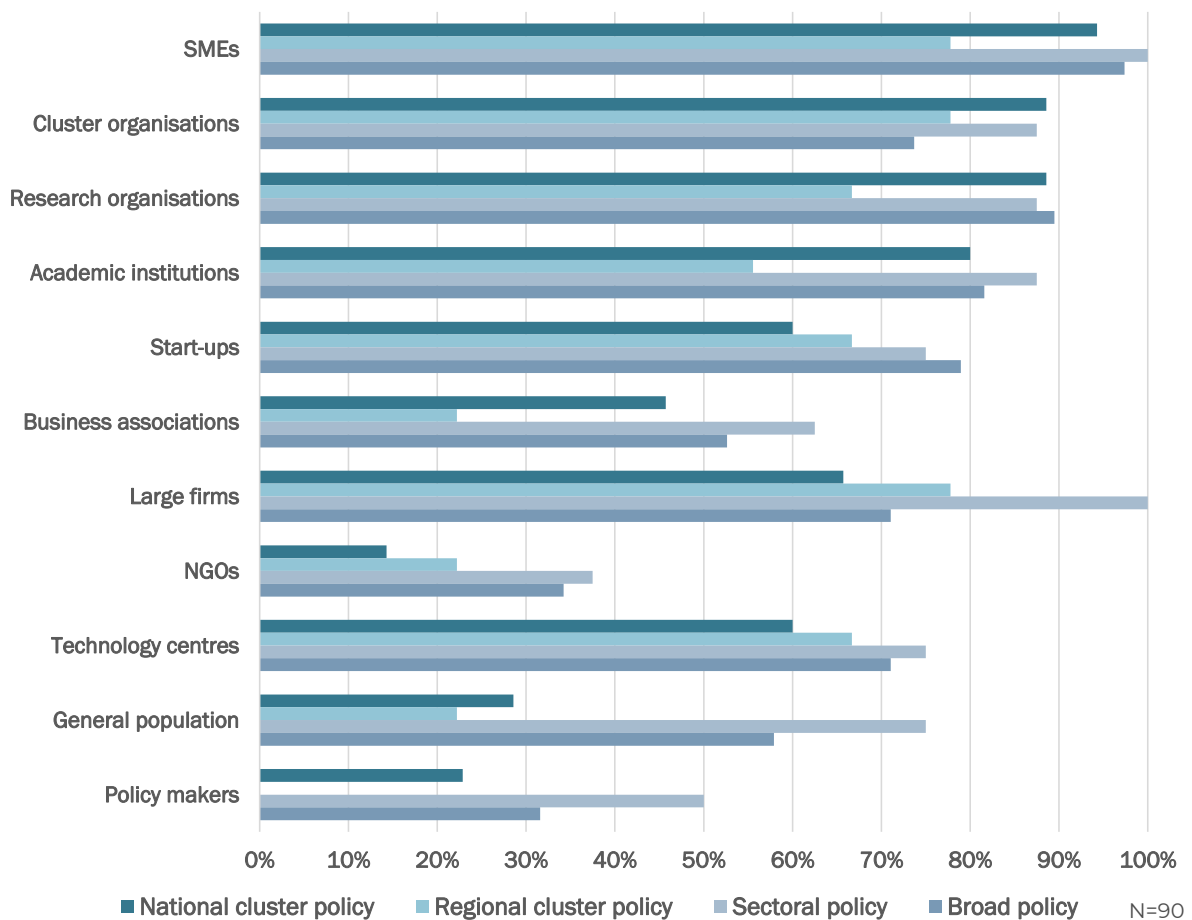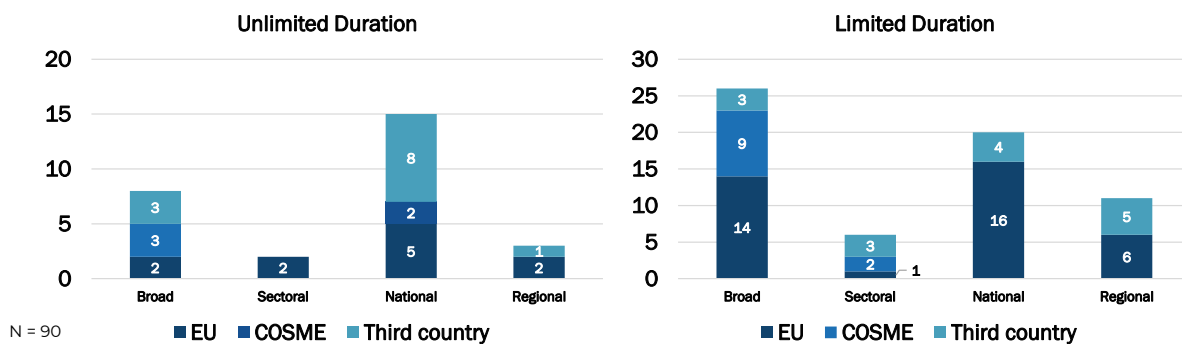

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Budget for cluster policies

The allocated budget from public funds is a significant element with regards to the financing of cluster policies and cluster organisations.

Based on the analysis of available budget information on national and regional cluster policies, we find that the publicly available information on allocated financial resources varies significantly by country. In many cases, budgetary information on policies were not publicly available at all (for 57 out of 91 policies). This has resulted in a lack of data for a comprehensive analysis of financial resources. Consequently, the following chapter only showcases validated information from national authorities or desk research. Taking this into consideration, no clear conclusions can be drawn on the budget for cluster and broad/sectoral policies.

Budget for national or regional cluster policies

Regarding cluster policies on both national and regional levels, a plethora of programmes and initiatives are financially supported. Out of 45 regional and national cluster policies analysed, verified **information on the budget allocation is available for 14 national and regional cluster policies**.

Overall findings from our analysis show that in most of the national cluster policies, for which information are available, the responsible organisation for allocating the budget was a national authority.[49] Other sources of funding were membership fees (i.e. in the case of the Austrian regional

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[49] This is the case for national cluster policies implemented by Canada, Denmark, Germany, Greece, Poland and Singapore.

cluster policy of Tyrol), private investors (i.e. in Belgium and Spain) or ERDF funding (e.g. in Austria, Czechia, Poland, Greece).

With regards to the total amount of budget spent for national and regional cluster policies, a **total indicative amount of around EUR 6 billion** has been identified in the scope of this report. This includes the following key programmes from the EU27 member states:

- **Denmark's Power of innovation - Danish clusters for knowledge and business 2021- 2024** (Innovationskraft Danske klynger for viden og erhverv) has a budget totalling EUR 86 million.[50]
- Germany's Zukunftscluster-Initiative **"Clusters4Future"** has a total budget of EUR 450 million and represents the predecessor of the German Spitzencluster competition. The budget is allocated within ten years between 2020 and 2030.[51]
- The Polish cluster programme *Internationalisation of key national cluster 2014-2023* is financed with around EUR 33 million.[52] The budget for the cluster strategy consists of national resources as well as ERDF funding.
- Moreover, budget information is also available for the **regional cluster policies in Belgium**. While Flanders is financing regional clusters and their projects with an overall budget of EUR 100 million, the Walloon regional government supports clusters and their projects together with private investors with an overall budget of ~ EUR 946 million.[53]

Overall, available information show that national and regional cluster policy budgets and their funding source vary by each country. While in most of the cases, national or regional governments are subsidising the biggest part, other sources are private investors or EU funds. Besides varying funding sources, the budget amount differs also for each country depending on its size and available resources.

Budgets for broad policies & sectoral policies

The findings from the desk research showcase a generally high budget among broad policies, which is due to a wider scope and set of activities and objectives pertaining to the programmes. As broad and sectoral policies consist of a wide variety of programmes, activities, and objectives (e.g. ERDF Operational Programmes or smart specialisation strategies), it is difficult to determine the actual budget that was spent on cluster-related activities within such policies.

In the context of the report, data are available for ten broad and sectoral policies. The **total budget for the broad and sectoral policies amount to around EUR 66 billion**. For instance, **Lithuania's "Programme for the European Union funds' investments in 2021-2022"** boasts one of the largest budgets with EUR 7,5 billion. This fund includes investments of the European Regional Development Fund, the Cohesion Fund, the "European Social Fund +". However, it is important to note that cluster organisations are only one among many different potential beneficiaries of the fund.[54] In **Czechia**, cluster-related activities are financed through the ERDF *Technologies and Applications for Competitiveness 2021 – 2027 (OP TAC) which* has a total budget of EUR 3.2 billion. Similar like in

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[50] For more information on the Danish cluster programme see: https://erhvervsfremmebestyrelsen.dk/sites/default/files/2020-12/Innovationskraft%20-%20danske%20klynger%20for%20viden%20og%20erhverv%202021-2024.pdf (last access on 12.12.2022).
[51] Information was validated by National Authorities. For more information on the budget see: https://www.clusters4future.de/foerderinitiative/eckpunkte-der-foerderung (last access on 12.12.2022).
[52] For more information on the Polish cluster programme see: https://stip.oecd.org/stip/interactive-dashboards/policy-initiatives/2021%2Fdata%2FpolicyInitiatives%2F5361 (last access on 12.12.2022).
[53] Information was validated by regional authorities.
[54] For more information on the Lithuanian broad policy see: https://finmin.lrv.lt/en/news/the-european-commission-approved-lithuanias-plans-for-eur-7-5-billion-investments (last access on 12.12.2022).

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Lithuania, the allocated budget is not only foreseen for clusters but for projects in different thematic fields such as research, development, clean economy, and mobility.[55] We expect further details to become available on ERDF 2021-2027 support directed to clusters directly or indirectly in the next months and more information can be included in the Summary Report 2023.

Alignment with the European Commission priorities for 2019-2024

To finalise this section that reports on national cluster policies, programmes, and initiatives across Europe and third countries, it is also important to analyse how the select policies are made to tackle and deal with disruptive challenges in the future on both short- and long-term bases. Hereby, one can specifically investigate how these align with the strategic priorities of the European Commission for the 2019-2014 period, specifically: Green Transition, Digitalisation, and Resilience (see Figure 25). Considering all policies from EU Member States, COSME- and Third countries, 63% aligned with the goals and priorities directed at transitioning to a green and resource-efficient economy, whereas 65% corresponded to aims in adapting to a digital future and 66% promoting resilience.
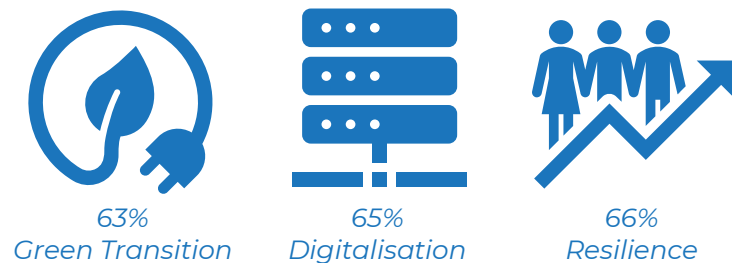
Figure 25: Policy alignment with European Commission priorities for 2019-2024 by percentage (aggregated percentage across EU27, COSME and Third countries)

63%
Green Transition

65%
Digitalisation

66%
Resilience

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities

Figure 26 further provides a detailed outlook on how much the respective country groups largely correspond to the European Commission strategic priorities of 2019-2024. Policies, programmes or initiatives hailing from EU Member States appear to align with the EC priorities most consistently, with 77% of cases corresponding to Digitalisation' and 'Green Transition', and 73% of cases aligning with goals attributed to 'Resilience'. Given the link between European Commission and EU Member States and how countries are direct recipients of European Commission development funds, it is reasonable to have this alignment.

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[55] For more information on the Czechian broad policy see: https://www.agentura-api.org/en/op-tak/ (last access 12.12.2022).

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Figure 26: Country type policy alignment with the European Commission priorities for 2019-2024, by percentage

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities

Meanwhile, policies of COSME countries exhibit less alignment with EC priorities, with 63% of the cases standing in accordance with 'Green Transition'. On a further note, less than half of its policies match the priority pertaining to 'Digitalisation', which also stands out as the lowest score (44%) among all country categories. As mentioned earlier in the former sub-section concerning the Overview of cluster support policies, COSME-country policies were predominantly categorised as "Broad Policies" (12 out of 16), with sectoral policies and regional cluster policies accounting for 2 cases each. This is an interesting matter, as broader development programmes can have wider scopes concerning their aims and focus areas. Nevertheless, one could be inclined to think that an overemphasis on broad policies and lack of specific organisational focus through national or regional cluster policies could reflect less capacity in tackling wider societal "Grand Challenges"[56], such as the sustainable economies, or the digital future.

Regarding Third countries, 63% of the select policies stand in accordance with both 'Digitalisation' and 'Resilience' EC priorities. Furthermore, 52% of policies correspond to the goals attributed to the 'Green Transition', which could point to less oversight in Sustainability and Green Transition-driven policies and initiatives.

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[56] Drawing on the 2018 "Grand Challenges: The New Mission-Oriented Innovation Frontier", Mazzucato outlines 21st century 'Grand Challenges', ranging from environmental, economic to social dimensions and how these can be effectively tackled with 'mission-oriented policy'.

04

State of play of cluster policy

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4. State of play of cluster policy

The following chapter gives an overview of the state of play of the cluster and cluster-dedicated policies in the EU Member States, former COSME countries and selected third countries. The state of play is presented in a form of a quantitative and qualitative assessment. It summarises the policy approach, the cluster policy continuity, the evidence of the performance of cluster or cluster-dedicated policies and the cluster support instruments of the 56 analysed countries. The last section of this chapter presents an overall summary by showing the maturity level of cluster policies for all analysed countries.

Policy approach

The policy approach has been the first and crucial distinction for the level of maturity of cluster development policies across countries. In contrast to the overview of cluster support policies in chapter 3, the chapter distinguishes between countries which support clusters through broad policies, sectoral policies or a dedicated cluster policy, be it at the national or the regional level.

The **categorisation** of countries is ranked, i.e., the country is categorised according to its most specific policy approach, even if other approaches might be present in parallel. For example, Germany exhibits both a sectoral and a national cluster policy and is ranked at the level of national cluster policy for the purpose of the score presented in this chapter. Colombia has both a sectoral and a broad policy is consequently counted in the category sectoral policy.

Figure 27: Countries per policy approach

- Broad policy
- Sectoral policy
- National and/or regional cluster policy
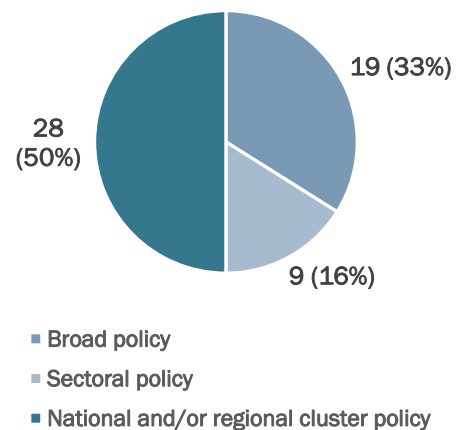
Out of the 56 analysed countries, 19 (33%) have broad policies in place that target also cluster organisations. Of these 17 countries, nine are EU27 Member States and eight are COSME countries. The EU27 countries in the category are either Nordic (Sweden, Finland), or countries of the 2004 and 2007 expansions. In Sweden, Finland, and Lithuania broad regional development and science, technology, and innovation programmes are in place to foster cluster development, similar to Israel, one of the COSME countries in this category. The other EU27 and COSME countries and the Ukraine, as the only third country in this category, employ more general policies to support growth and development.

A small group of 9 countries (16%) has sectoral policies to foster cluster development. The three EU27 Member States in this group are Romania, with an industrial policy focused on manufacturing, and Malta with a maritime policy. Of the COSME countries, both North Macedonia and Serbia employ industrial policies to support the manufacturing sector in a similar way as Romania while Iceland is relying on a dedicated tourism policy to support one of its most important sectors. In the group of third countries, Colombia and Morocco support their industrial production capacities with sectoral policies while Malaysia has a policy in place aiming at the ICT sector.

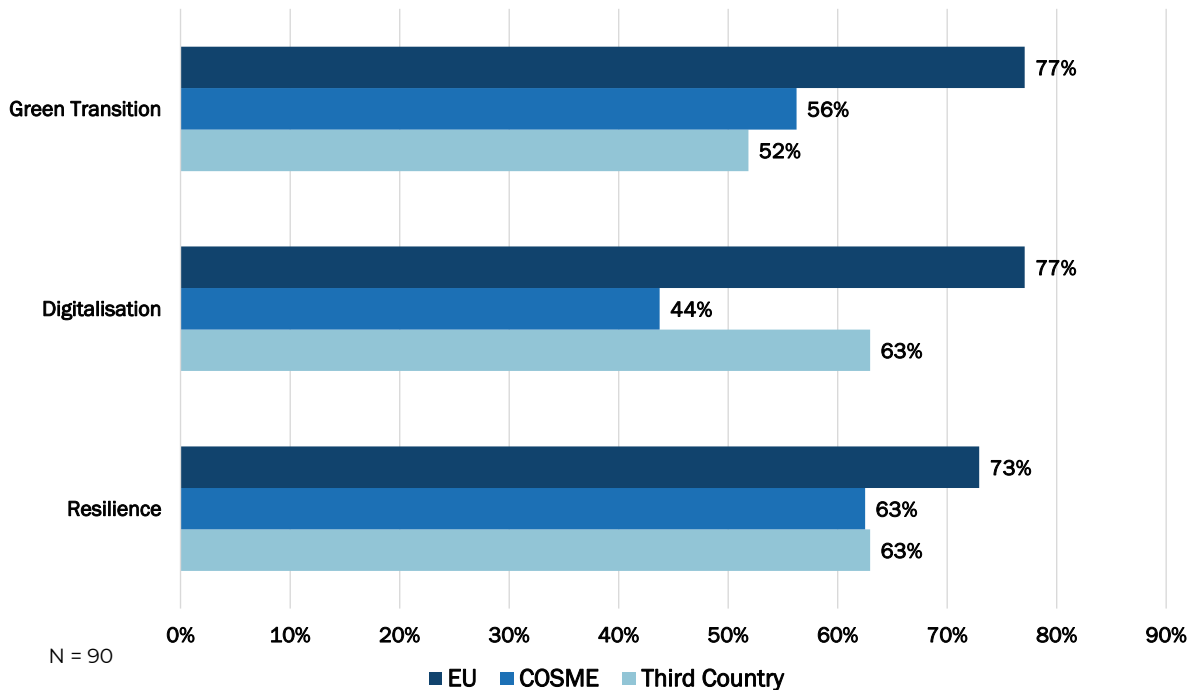EUROPEAN CLUSTER
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Figure 28: Policy approach by country group
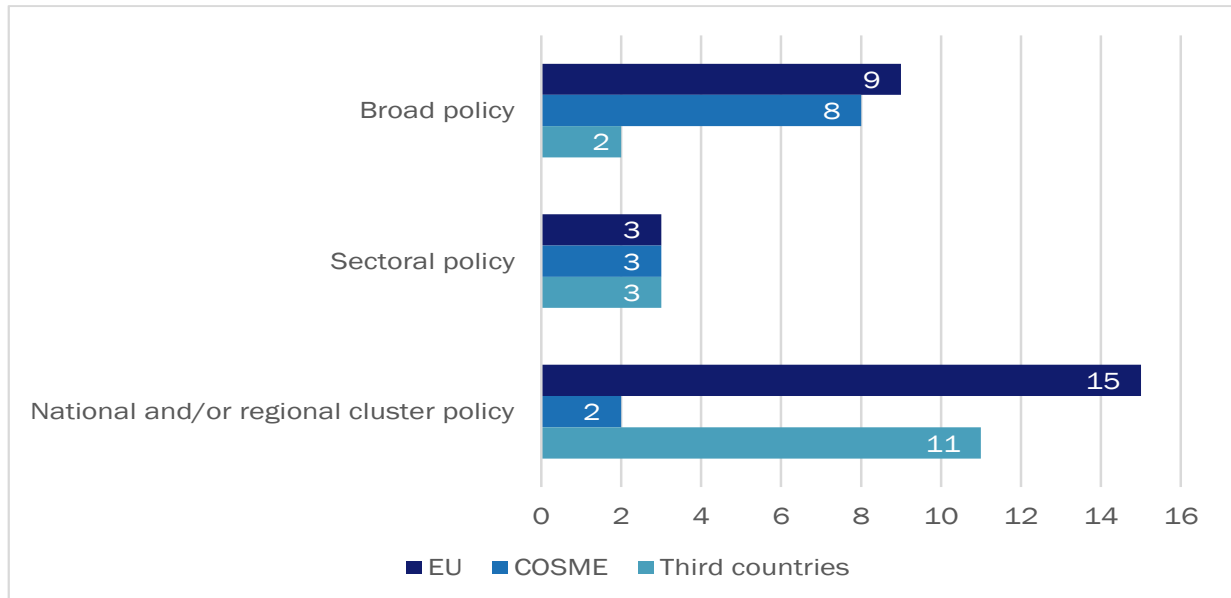
Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

A majority of 28 (50%) of the 56 countries analysed has either national and/or regional cluster policies in place. Interesting examples from the **15 EU27 Member States** include Denmark, where cluster policy has been deliberately centralised and developed cooperatively between the government and the top-level business association to avoid redundancies and overlaps in cluster development. Another highly centralised approach can be found in the French *Pôles de Competitivité* policy where cluster organisations in the regions are governed by representatives from the national level. The opposite case would be Germany, where the regional states, the Länder, run their own regional cluster policies while the federal level provides complementary support programmes with a special focus on networking.

Two COSME countries are represented with the Turkish Cluster Support Programme and with Norway's *Norwegian Innovation Clusters*, a highly elaborated national cluster policy with three tiers of subprogrammes to support clusters at different stages from their creation to global leadership.

In the remaining group of **11 third countries**, Canada stands out with its ambitious *Global Innovation Clusters* policy supporting five so-called superclusters focused on different thematic fields from AI to the maritime economy. In a similar vein, Singapore's *RIE2025* cluster programme is organised around four strategic domains and the Australian *Industry and Growth Centres* are also targeting specific sectoral domains. National cluster policies in the USA and Japan, by contrast, are less thematically organised but focus instead explicitly on regional development.

Cluster policy continuity

The following section provides an overview of the duration and experience of the 56 analysed countries in carrying out cluster policies. Based on the assessment of the policy approach, the policy continuity evaluates only the continuity of cluster-specific cluster policies and is not showing the policy continuity of broader or sectoral policies.

Figure 29: Cluster policy continuity by country type
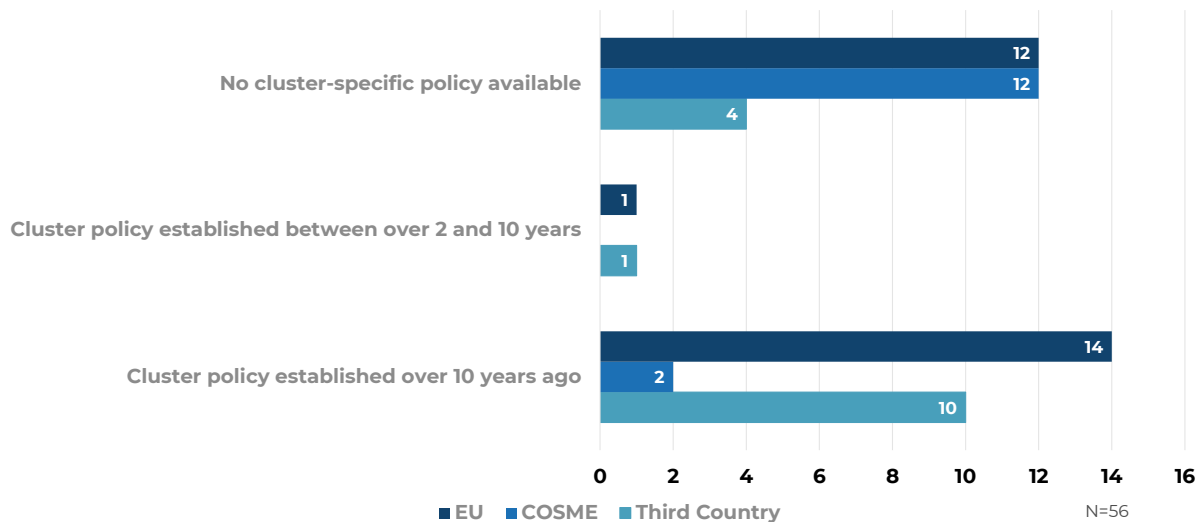
N=56

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Out of the 56 analysed countries, no cluster-specific policy was found for 28 countries (50%). Of these 28 countries, 12 countries are EU27 Member States which have either a broad or sectoral policy with a dedicated focus on clusters. For instance, in Malta, the Integrated Maritime Policy has been introduced in 2016. In other cases, like Bulgaria, Romania, Slovenia and Slovakia, smart specialisation strategies (2014 – 2020 & 2021 – 2027) support cluster organisations. In Czechia, cluster support is linked to the ERDF Operational Programmes of the funding period 2014-2020 and 2021-2027 (Operational Programme Technologies and Applications for Competitiveness).

A minority of two out of 56 countries have established their cluster policy between over 2 and 10 years (3%). This concerns the cluster policies of Australia and Czechia. In Australia, the Industry Growth Centre Initiative started its activities in 2020.

26 countries out of 56 countries have more than 10 years of experience in implementing cluster policies (46%). Out of these 26 countries with a long-developed cluster policy, 15 countries are EU27 Member States. The Luxembourg Cluster Initiative, which started in 2002 and the French Competitiveness cluster policy *Pôle de Compétitivité* with its starting year in 2004 belong to the oldest, currently running EU-wide national cluster policies. Other National cluster initiatives from EU with a long tradition are the Spanish cluster support programme *Programa de apoyo a Agrupaciones Empresariales Innovadoras* (2007), the Portuguese Competitiveness Clusters *Clusters de Competitividade* (2008) and the Austrian Cluster Platform (2008).

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Evidence of performance

Continuous monitoring and evaluation are essential elements of policy cycles to further improve policy design and implementation processes. To analyse the existence of monitoring and evaluation mechanisms in the context of cluster policy, the following section provides an overview of the evidence of performance of the different broad, sectoral policies as well as national cluster policies.

Figure 30: Evidence of performance by country type
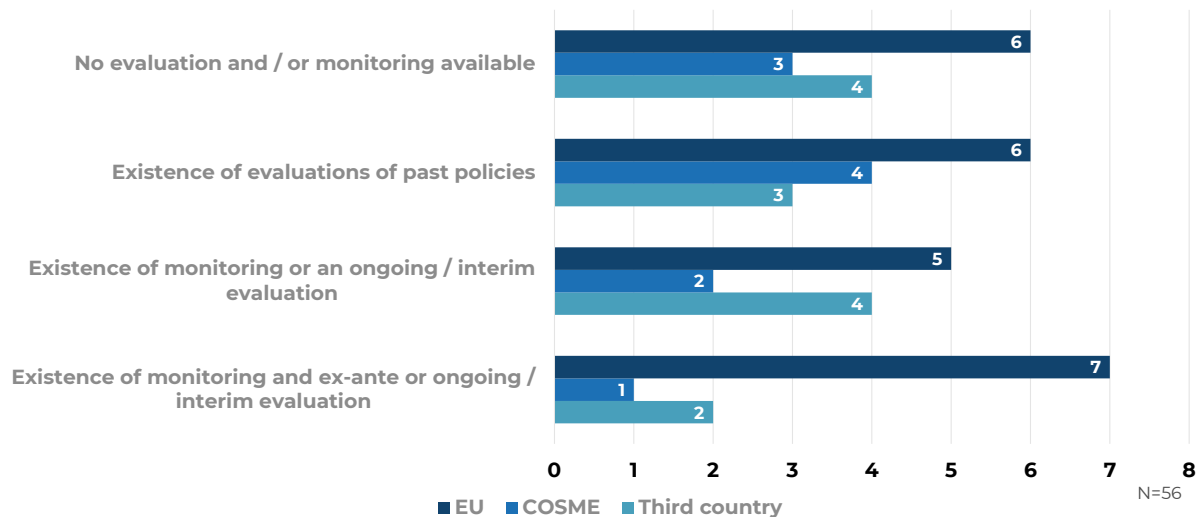
Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Findings from the 56 individual factsheets show that in total **13 out of 56 countries (23%) do not have an evaluation and / or monitoring available for their current and past policies**.

In 13 out of 56 countries (23%), evaluations exist for past policies. Out of the 13 countries, three countries are EU27 Member States. Past evaluations are either on previous cluster policies or on the overall national cluster landscape. For instance, Polish Authorities conducted in 2018 an evaluation of the system of National Key Clusters. As part of this evaluation strategic development areas of cluster policy in Poland were designed.[57]

In eleven countries (20%), cluster or cluster-dedicated policies are ongoing monitored / evaluated or had been evaluated in the context of an interim evaluation. While no ex-ante evaluation is available for the Spanish national cluster programme *Programa de apoyo a Agrupaciones Empresariales Innovadoras,* the Spanish national authorities published the article "Cluster policy in the Ministry of Industry, Commerce and Tourism. Evolution, results, and perspectives." in 2020 illustrating the results of the programme since its start.

In ten countries (18%), policies are monitored and have either been evaluated ex-ante or as ongoing / interim evaluation. This is the case for the Slovenian related cluster-policy which is implemented as part of the current smart specialisation strategy. Regular Interim evaluation reports of the Strategic Research and Innovation Partnerships (SRIPs) as part of the RIS3, including a detailed description of each SRIP, that were and are going to be published by an external contractor. A full analysis of the implementation of the SRIPs is expected to be finalised by the end of 2022.

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[57] Results of the Polish evaluation are not publicly available, and information was provided by Polish Authorities.

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Cluster support instruments

Cluster support instrument consist of financial and technical support instruments helping cluster to support member organisations and to further develop skills. While financial instruments are i.e. support to R&D projects or funding of collaboration activities, technical support can be i.e. support of soft skill development or coaching activities. This chapter provides an overview on the policies that can draw from both financial and technical instruments in the analysed countries.

Figure 31 showcases the number of cases that received different forms of support, organised by country type. An aspect that is illustrated is the number of **broader and / or sectoral policies** that receive financial or technical support for cluster development, in which the **EU27 (11) make up most cases.** Meanwhile, policies hailing from COSME-countries also make up most of this section (**11**), emphasising the prevalence of specifically broad policies (**77% of its cases**) of said country group.

Figure 31: Cluster support instruments by country type
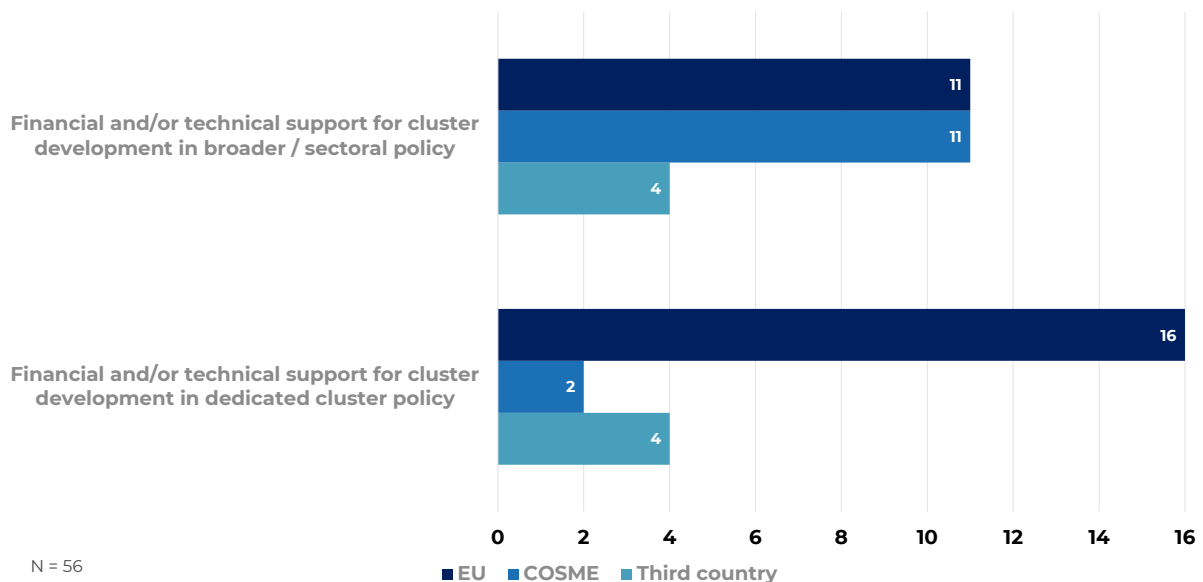
N = 56

■ **EU** ■ **COSME** ■ **Third country**

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Regarding statistics pertaining to the development of **dedicated cluster policies**, a stark contrast can be seen between policies that receive financial or technical support and those which receive both financial and technical support. Overall, **policies from the EU27** are **mostly supported with financial and technical support** (**81% of cases**), as opposed to policies where only financial or technical support is guaranteed (**19% of cases**), underscoring the merits that arise in dedicated cluster policies. An interesting case is that presented by the Flemish as well as the Walloon regions of Belgium, where cluster development is fostered through financial and technical support instruments. Particularly the Flemish region provided support in the form of R&D, business support and opportunities to network with knowledge sharers, for example. Furthermore, Estonia's "Development programme of Estonia" also receives financial and technical support, with a focus on hard skills, such as: intellectual property, entrepreneurships, and / or market intelligence.

Meanwhile, an interesting example that illustrates the financial and technical instruments provided to a broader or sectoral policy is that pertaining to Latvia's "Growth and Employment" programme.

The cluster development tools appear through the financing of cooperation initiatives, involving SMEs as cluster members and supporting R&D initiatives. On a further note, the "Programme on standardised service for micro, small and medium enterprises" fosters collaboration between traditional and ICT clusters, whilst building R&D clusters.

The inclination of complete support in dedicated cluster policies is mirrored with **third countries**, in which **92% of cases** received both financial and technical support. The one case of the sample that only received technical support was the National cluster policy "Maritime Blue Strategy", hailing from the USA in which crucial infrastructure and knowledge sharing spaces are offered through co-working spaces, incubators or accelerators.

Policy maturity index

The findings from chapter 3 allow an assessment of the policy maturity level in each country. The policy maturity level is based on four presented main dimensions which are scored from 0 to 2 points based on the existence of certain attributes:[58]

- **The policy approach** assesses whether countries have a dedicated cluster policy, or cluster creation and/or development is targeted through broader policies, i.e. foreign trade policies, labour and social policies or specific sectoral policies, i.e. industrial policy tourism policies, agriculture policies.
- **Cluster policy continuity** assesses the duration and experience of the countries in carrying out cluster policies. This criterion assesses only the existence of targeted cluster policies and not broader policies or sectoral policies.
- **Evidence of performance** assesses 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 countries.
- **Cluster policy instruments** assess whether the policies provide any instruments to support the policy implementation, being these financial and/or technical support.

It is important to note that the maturity assessment does not reflect the performance of a country, but only the degree of development of their national cluster policy during 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).

Countries with full scores (8 points in total) in all four dimensions are France, Germany, Portugal, the Netherlands, Norway, and India. Cluster policies in these countries prove to have already a clear continuity with over 10 years of implementation duration and are regularly monitored and evaluated. In addition, cluster organisations are financially and technically supported by the national cluster programmes. Other cluster policies with a high level of maturity with 7 out 8 points in the maturity scoring are Spain, Hungary, Belgium, Austria, Canada, Mexico, the United Kingdom and Turkiye.

When looking at the average scoring per country category, main point for improvement remains the evidence of performance for the EU27 as well as COSME and third countries (see Figure 32). While 20 out of 56 countries (36 %) have a dedicated monitoring or evaluation process for their cluster or cluster-related policies in place, there are still 25% of countries that only have evaluation available for past policies and 23% with no monitoring or evaluation at all.

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[58] For more information on the maturity scoring see Table 17 in the Annex.

Figure 32: Average scoring per country category (EU, COSME, Third countries) in 2022
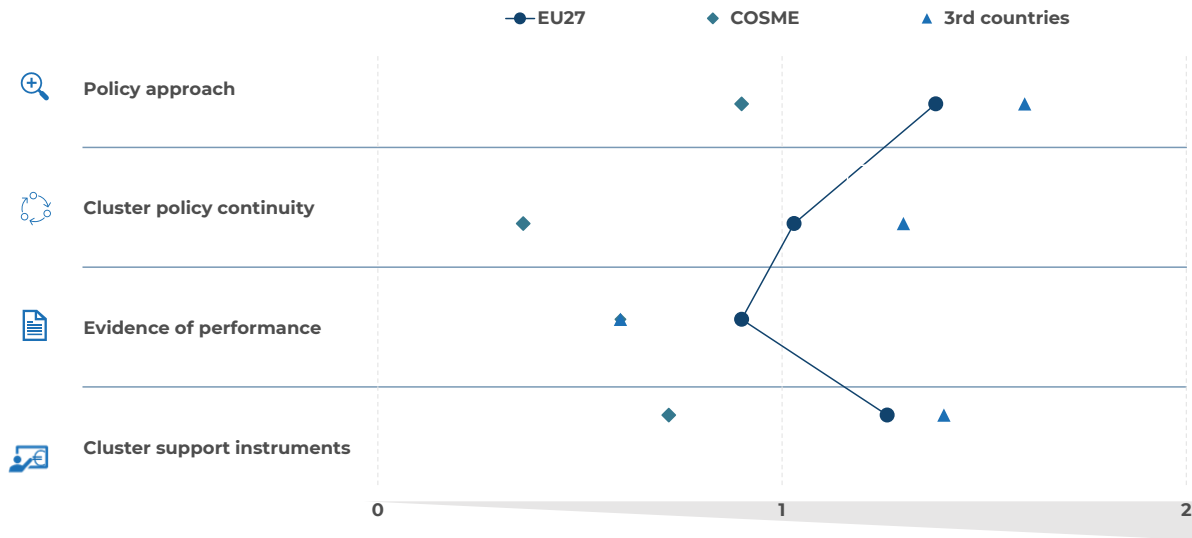
Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

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05

Conclusions and recommendations

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5. Conclusions and recommendations

The 2022 edition of the summary report underlines the diverse approaches of national cluster policies in the EU27 and additional 29 COSME and third countries. Below, the key takeaways from the analysis are summarised, followed by some conclusions.

Figure 33: Key takeaways from the state of play of cluster policy in analysed countries

Out of 56 countries analysed, **50% have a dedicated cluster policy** at the national and **14% at the regional level.**

26 countries out of 56 countries (46%) have **more than 10 years of experience** in implementing cluster policies.

In ten countries (18%), policies are **monitored** and have either been **evaluated** ex-ante or as ongoing / interim evaluation.

In 51 out of 56 countries (91 %), **financial and technical support** is provided for cluster development in dedicated cluster policies or as part of broader / sectoral policies.

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

With 50% of countries having a **dedicated cluster policy on their national and/or regional level,** most analysed countries provide cluster support through dedicated programmes or initiatives. Within the EU27, this concerns mostly bigger EU countries (DE, FR, ES, IT, PL) as well as the EU27 having a critical mass of active cluster organisations (AT, NL, BE). In other cases, cluster support is part of other broad or sectoral policies such as the regional smart specialisation strategies (SI, RO), maritime policy (MT), SME policies (CZ) or the science, technology, and innovation policy (LT).

Most of the analysed cluster policies, no matter if dedicated or not-specific cluster policy, have set a limited **duration** for the policy implementation (65%). However, most of the cluster policy also prove to have a **clear continuity** as 46% of analysed cluster policies have been established over 10 years ago. Around 18% of the 56 countries are having a **monitoring**, and ex-ante **evaluation** or are interim evaluation for their cluster policies or cluster-related policies in place. However, no evaluation and / or monitoring is available in 23% of the 56 countries.

Cluster support instruments aim in the different countries at strengthening innovation ecosystems (89%), SME support (89%), R&D support (88%), industry-research collaboration (85%), internationalisation (82%), and upskilling (80%). Other cluster-specific measures are offered in the different countries for cluster networks (55%) and visibility of clusters (48%) followed by support for the creation (41%), consolidation and professionalisation (both 38%) of cluster organisations and, finally, cluster analysis and support for policymaking (21%).

Based on the main findings from the summary report and findings from the Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI (2021), the following **recommendations** can be provided:

Recommendation 1: Enable EU27 policy makers to further elaborate their cluster policies through exchange of good practices (e.g. ECCP Policy Toolkit).

Findings confirm that national cluster support measures are implemented through different types of cluster policy approaches within the EU27. While national cluster policies are almost exclusively the realm of the EU27, 37% of the EU27 do not have a dedicated cluster policy. Overall, it is important that countries implement cluster policies according to their national circumstances and development level. It is important to note that there is no one-size-fits-all approach. However, less experienced EU Member States should be further supported to develop a critical mass of clusters. In this context, the ECCP Policy Toolkit is a relevant reference point for policy makers to get inspired by other national / regional good practices.

Recommendation 2: Improve monitoring and evaluation of cluster policies and cluster-relevant policies to further refine future national / regional cluster support.

As outlined in the summary report (chapter 4), there is no monitoring or evaluation mechanism in around 23% of the analysed countries to track results and outputs of cluster policies. To increase evidence-based policy development, it is recommended to regularly monitor outputs and results from cluster policies to use these results when further elaborating the national / regional cluster policy. In this context, the right selection of indicators should be considered, e.g. rather indicators focusing on the output than on long-term impacts which are difficult to measure.

Recommendation 3: Increase involvement of the start-up community und innovation hub scene into the activities of cluster organisations.

Findings on the beneficiaries of different cluster policies (chapter 3) reveals that start-ups less often part of cluster organisation activities compared to other stakeholders such as SMEs, research and academic institutions. However, start-ups are relevant stakeholder of the innovation ecosystems and cluster organisations should aim at a greater involvement of start-ups and innovation hubs into their activities. Especially in the context of the twin transition, the development of capacities of i.e. digital skills would be an advantage for both sides.

Recommendation 4: Development of sustainable cluster business models for the financing of cluster organisations independently from public financing support.

Findings from the Retrospective evaluation of State aid rules for RDI (2020) by the European Commission show that support for innovation clusters under Article 27 GBER has increased significantly in the last years. However, the maximum funding period allowed is ten years regarding operating aid.[59] To increase the longevity of cluster organisations, long-term and sustainable business models need to be introduced. Sustainable cluster development and business models could be i.e. by financing their activities through public base funding for activities creating public goods (e.g. open trainings, location promotion, open networking events), and a mix of commercialized services (e.g. advisory services for their members) and membership fees.

Recommendation 5: Consider geographical diversity and access for "newcomers" in EU cluster partnerships to diversify the EU cluster landscape

The Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI (2021) points out that European cluster partnerships are often consisting of previous funded clusters. To diversify the EU cluster landscape and networks, EU cluster initiatives should try to balance future consortia with experienced, already funded clusters and less-experienced newcomer clusters. In this context, the geographical distribution of cluster organisation should be considered to facilitate cross-cluster learning experiences.

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[59] European Commission (2020): Retrospective evaluation of provisions applicable to RDI of State aid rules for RDI and the State aid of the GBER applicable in 2014 – 2020. Available under: https://op.europa.eu/de/publication-detail/-/publication/41003c11-a930-11ea-bb7a-01aa75ed71a1 (last access 8.12.2022).

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Recommendation 6: Further alignment of national / regional cluster policies with the European Commission priorities.

Cluster play a significant role as intermediary and facilitator within the industrial ecosystem. To tackle global challenges such as climate change, digital transformation and the COVID-19 recovery, cluster organisations are important drivers. Thus, national / regional cluster policies should further align with the European Commission priorities (green transition, digital transition, and resilience).

Recommendation 7: Better coordination between different authorities (e.g. national and regional ministries) involved in the cluster policy implementation to increase synergies.

While in some countries, a viable exchange exists between authorities involved (e.g. regional and national ministries), other countries could still improve the coordination between the different stakeholders involved in the implementation process to better guarantee synergies within different cluster policies.

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Annex

Table 3: Overview of the 56 analysed countries by country type (alphabetical order)

Country	Country type
Albania	COSME
Armenia	COSME
Australia	Third country
Austria	EU
Belgium	EU
Bosnia and Herzegovina	COSME
Bulgaria	EU
Canada	Third country
China	Third country
Colombia	Third country
Croatia	EU
Cyprus	EU
Czechia	EU
Denmark	EU
Estonia	EU
Finland	EU
France	EU
Germany	EU
Greece	EU
Hungary	EU
Iceland	COSME
India	Third country
Ireland	EU
Israel	COSME
Italy	EU

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Japan	Third country
Kosovo	COSME
Latvia	EU
Liechtenstein	COSME
Lithuania	EU
Luxembourg	EU
Malaysia	Third country
Malta	EU
Mexico	Third country
Moldova	COSME
Montenegro	COSME
Morocco	Third country
Netherlands	EU
North Macedonia	COSME
Norway	COSME – SMP
Poland	EU
Portugal	EU
Romania	EU
Serbia	COSME
Singapore	Third country
Slovakia	EU
Slovenia	EU
South Africa	Third country
South Korea	Third country
Spain	EU
Sweden	EU
Taiwan	Third country
Turkey	COSME
Ukraine	Third country

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United Kingdom	Third country
United States	Third country

Source: ECCP (2022).

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EU Cluster landscape and the economy

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Table 4: ECCP Profiles by Actor Type and Country

	Cluster Organisations	Cluster Members	European Cluster Partnerships	Cluster Networks	National Cluster Associations	Policy Institutions	Resource Efficiency Providers	Training Providers
EU27	1091	399	203	34	19	17	129	22
Austria	28		2	1	1		8	1
Belgium	47	2	14	8		6	8	2
Bulgaria	31	10	3		1		8	
Croatia	15		1				2	
Cyprus	3						3	1
Czechia	22	11	1	1	1		4	
Denmark	21	5	4		1		1	2
Estonia	14	4	2		1	1	1	
Finland	34	1	1	2		2	2	
France	110	63	51	5	3	1	4	2
Germany	123	2	12	3	1		9	4
Greece	18		2	1			5	
Hungary	28	1	2			1	4	1
Ireland	13	15	1		1		2	1
Italy	88	22	30	3		2	12	1
Latvia	14	4	1		1		1	
Lithuania	29	38	5		1		5	1
Luxembourg	1	1				1	2	
Malta	1							
Netherlands	31	5	2	1		1	3	1
Poland	79	36	3		1	1	9	1
Portugal	24	12	5		1		5	
Romania	62	116	3	1	1	2	8	
Slovakia	25	22			1		2	
Slovenia	19	7	4				6	
Spain	172	22	52	6	1		13	3
Sweden	39		2	2	1		2	1
Non-EU COSME	84	21	3		2	1	3	3
Albania	2							
Armenia	1							
Bosnia & Herzegovina	1					1		
Iceland	2		1					
Kosovo	1							
Moldova, Republic of	3	2						
Montenegro	2							
North Macedonia	2							
Serbia	25		1		2		2	1
Türkiye	29	4	1				1	1
Ukraine	16	15						
Third Countries	213	8	9	1	1	1	1	
Total general	1,398	427	276	46	22	19	136	25

Source: ECCP; Data extracted from ECCP Platform on 14/10/2022.

Table 5: European cluster organisations by Member State and size group

Country	1-100	101-200	201-300	301-400	401-500	Above 500	Grand Total
Austria	7	10	6	5	0	0	28
Belgium	19	17	5	4	0	2	47
Bulgaria	29	0	2	0	0	0	31
Croatia	14	1	0	0	0	0	15
Cyprus	0	2	1	0	0	0	3
Czechia	21	1	0	0	0	0	22
Denmark	3	4	8	3	1	2	21
Estonia	12	1	1	0	0	0	14
Finland	19	8	4	1	1	1	34
France	28	32	18	12	9	11	110
Germany	54	34	10	12	4	9	123
Greece	18	0	0	0	0	0	18
Hungary	28	0	0	0	0	0	28
Ireland	9	3	0	0	0	1	13
Italy	48	29	4	1	2	4	88
Latvia	12	2	0	0	0	0	14
Lithuania	27	2	0	0	0	0	29
Luxembourg	1	0	0	0	0	0	1
Malta	1	0	0	0	0	0	1
Netherlands	14	12	4	0	0	1	31
Poland	58	18	1	2	0	0	79
Portugal	13	9	0	0	1	1	24
Romania	60	2	0	0	0	0	62
Slovakia	24	1	0	0	0	0	25
Slovenia	15	1	3	0	0	0	19
Spain	110	46	6	4	1	5	172
Sweden	27	10	0	0	1	1	39
Grand Total	671	245	73	44	20	38	1091

Source: ECCP (2022). Data extracted from ECCP Platform on 14/10/22

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Table 6: Cluster management team size and number of members of European cluster organisations

	1-100	101-200	201-300	301-400	401-500	Above 500	Grand Total
1-5	540	129	24	10	3	6	712
6-10	98	82	29	14	1	6	233
11-20	24	26	14	14	9	15	102
21-30	4	3	5	5	4	3	24
Over 30	4	5	1	1	0	8	19
Grand Total	670	245	73	44	20	38	1090

Source: ECCP (2022). Data extracted from ECCP Platform on 14/10/22.

Table 7: Top 25 Sectors in which European cluster organisations are active (and membership size group)

	1-100	101-200	201-300	301-400	401-500	Above 500	Grand Total
J62	54	7	3	2	0	3	69
M72	40	14	4	2	1	1	62
S94	30	18	6	2	3	2	61
C28	28	9	5	2	1	0	45
A01	27	9	1	1	2	2	42
C10	19	17	2	1	0	2	41
C26	20	5	3	4	0	3	35
C22	25	6	1	0	1	1	34
C27	23	6	3	0	0	0	32
J63	25	5	1	0	0	1	32
C13	21	8	1	1	0	0	31
F41	16	8	3	2	0	0	29
Q86	13	8	3	2	1	1	28
C25	15	7	1	3	0	0	26
A03	13	6	1	2	2	1	25
D35	13	8	2	0	0	2	25
C20	14	5	1	1	1	1	23

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C21	11	5	2	3	0	1	22
J61	14	4	2	0	0	2	22
C30	8	7	3	1	1	1	21
M74	13	3	3	0	0	2	21
F42	14	4	0	0	0	0	18
C14	10	5	0	0	0	0	15
C29	7	6	1	0	1	0	15
C32	11	2	1	0	0	1	15
E36	6	5	3	1	0	0	15
Grand Total	**490**	**187**	**56**	**30**	**14**	**27**	**804**

Source: Data extracted from ECCP Platform on 14/10/22.

Industry Classification Codes

The following list shows the 88 NACE 2-digit codes and names. The Top 25 economic Sectors by the number of Cluster Organisations as shown in Figure 4 are highlighted in bold letters.

A01 - Crop and animal production, hunting and related service activities
A02 - Forestry and logging
A03 - Fishing and aquaculture
B05 - Mining of coal and lignite
B06 - Extraction of crude petroleum and natural gas
B07 - Mining of metal ores
B08 - Other mining and quarrying
B09 - Mining support service activities
C10 - Manufacture of food products
C11 - Manufacture of beverages
C12 - Manufacture of tobacco products
C13 - Manufacture of textiles
C14 - Manufacture of wearing apparel
C15 - Manufacture of leather and related products
C16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
C17 - Manufacture of paper and paper products
C18 - Printing and reproduction of recorded media
C19 - Manufacture of coke and refined petroleum products
C20 - Manufacture of chemicals and chemical products
C21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations
C22 - Manufacture of rubber and plastic products
C23 - Manufacture of other non-metallic mineral products
C24 - Manufacture of basic metals
C25 - Manufacture of fabricated metal products, except machinery and equipment
C26 - Manufacture of computer, electronic and optical products

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C27 - Manufacture of electrical equipment

C28 - Manufacture of machinery and equipment n.e.c.

C29 - Manufacture of motor vehicles, trailers and semi-trailers

C30 - Manufacture of other transport equipment

C31 - Manufacture of furniture

C32 - Other manufacturing

C33 - Repair and installation of machinery and equipment

D35 - Electricity, gas, steam and air conditioning supply

E36 - Water collection, treatment and supply

E37 - Sewerage

E38 - Waste collection, treatment and disposal activities; materials recovery

E39 - Remediation activities and other waste management services

F41 - Construction of buildings

F42 - Civil engineering

F43 - Specialised construction activities

G45 - Wholesale and retail trade and repair of motor vehicles and motorcycles

G46 - Wholesale trade, except of motor vehicles and motorcycles

G47 - Retail trade, except of motor vehicles and motorcycles

H49 - Land transport and transport via pipelines

H50 - Water transport

H51 - Air transport

H52 - Warehousing and support activities for transportation

H53 - Postal and courier activities

I55 - Accommodation

I56 - Food and beverage service activities

J58 - Publishing activities

J59 - Motion picture, video and television programme production, sound recording and music publishing activities

J60 - Programming and broadcasting activities

J61 - Telecommunications

J62 - Computer programming, consultancy and related activities

J63 - Information service activities

K64 - Financial service activities, except insurance and pension funding

K65 - Insurance, reinsurance and pension funding, except compulsory social security

K66 - Activities auxiliary to financial services and insurance activities

L68 - Real estate activities

M69 - Legal and accounting activities

M70 - Activities of head offices; management consultancy activities

M71 - Architectural and engineering activities; technical testing and analysis

M72 - Scientific research and development

M73 - Advertising and market research

M74 - Other professional, scientific and technical activities

M75 - Veterinary activities

N77 - Rental and leasing activities

N78 - Employment activities

N79 - Travel agency, tour operator and other reservation service and related activities

N80 - Security and investigation activities

N81 - Services to buildings and landscape activities

N82 - Office administrative, office support and other business support activities

O84 - Public administration and defence; compulsory social security

P85 - Education

Q86 - Human health activities

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Q87 - Residential care activities
Q88 - Social work activities without accommodation
R90 - Creative, arts and entertainment activities
R91 - Libraries, archives, museums and other cultural activities
R92 - Gambling and betting activities
R93 - Sports activities and amusement and recreation activities
S94 - Activities of membership organisations
S95 - Repair of computers and personal and household goods
S96 - Other personal service activities
T97 - Activities of households as employers of domestic personnel
T98 - Undifferentiated goods- and services-producing activities of private households for own use
U99 - Activities of extraterritorial organisations and bodies

Table 8: European cluster organisations in industrial ecosystems and alliances (and size group)

	1-100	101-200	201-300	301-400	401-500	Above 500	Grand Total
Alliance	102	48	15	9	5	6	185
Low carbon industries	31	12	5	2	0	0	50
Hydrogen	21	7	3	3	2	1	37
Micro-electronics	18	5	1	2	1	3	30
Circular Plastics	13	12	3	0	1	1	30
Batteries	7	5	1	1	0	0	14
Raw Materials/Rare Earth	8	3	1	0	0	0	12
Pharmaceutical Ingredients	4	4	1	1	1	1	12
Industrial ecosystem	297	117	36	19	13	21	503
Digital	64	18	9	4	3	8	106
Agri-food	35	19	5	2	2	2	65
Health	29	17	5	6	1	3	61
Renewable Energy	40	11	5	2	0	0	58
Mobility-Transport-Automotive	23	14	6	2	2	3	50
Aerospace & Defence	19	9	2	1	2	1	34
Creative & Cultural Industries	23	7	0	0	1	2	33
Construction	18	11	1	1	0	1	32
Tourism	12	2	1	0	0	1	16
Energy Intensive Industries	11	2	0	0	1	0	14
Electronics	11	1	1	0	0	0	13
Textile	7	3	1	1	1	0	13
Proximity & Social Economy	5	3	0	0	0	0	8

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| Retail	0	0	0	0	0	0	0
Grand Total	399	165	51	28	18	27	688

Source: Data extracted from ECCP Platform on 14/10/22.

Table 9: Types of members of EU cluster organisations by industrial ecosystem

	Large firms		SMEs		Research Organisations		Total #
	#	%	#	%	#	%	
Alliance	3522	13	20907	75	2644	10	27703
Raw Materials/Rare Earth	84	10%	619	72%	161	19%	864
Pharmaceutical Ingredients	238	12%	1611	79%	183	9%	2032
Micro-electronics	880	10%	6960	82%	656	8%	8496
Low carbon industries	636	15%	3188	74%	511	12%	4335
Hydrogen	839	17%	3347	69%	632	13%	4818
Circular Plastics	523	10%	4215	83%	316	6%	5054
Batteries	322	22%	967	66%	185	13%	1474
Industrial ecosystem	7,813	12%	52,911	80%	5,763	9%	66,487
Aerospace & Defence	701	16%	2978	70%	576	14%	4255
Agri-food	1017	11%	7454	81%	756	8%	9227
Construction	292	6%	4435	89%	249	5%	4976
Creative & Cultural Industries	209	6%	2932	86%	253	7%	3394
Digital	1827	10%	15043	83%	1163	6%	18033
Electronics	86	9%	789	80%	115	12%	990
Energy Intensive Industries	227	21%	678	64%	152	14%	1057
Health	924	10%	7123	79%	932	10%	8979
Mobility-Transport-Automotive	1581	22%	5090	69%	653	9%	7324
Proximity & Social Economy	55	14%	308	80%	20	5%	383
Renewable Energy	732	16%	3116	69%	678	15%	4526
Retail	0		0		0		0
Textile	106	6%	1557	87%	126	7%	1789
Tourism	56	4%	1408	91%	90	6%	1554
Grand Total	11,335	12%	73,818	79%	8,407	9%	93,560

Source: Data extracted from ECCP Platform on 14/10/22.

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Figure 34: Evolution of employment in 11 categories of economic activity in the EU27, 2010 - 2020
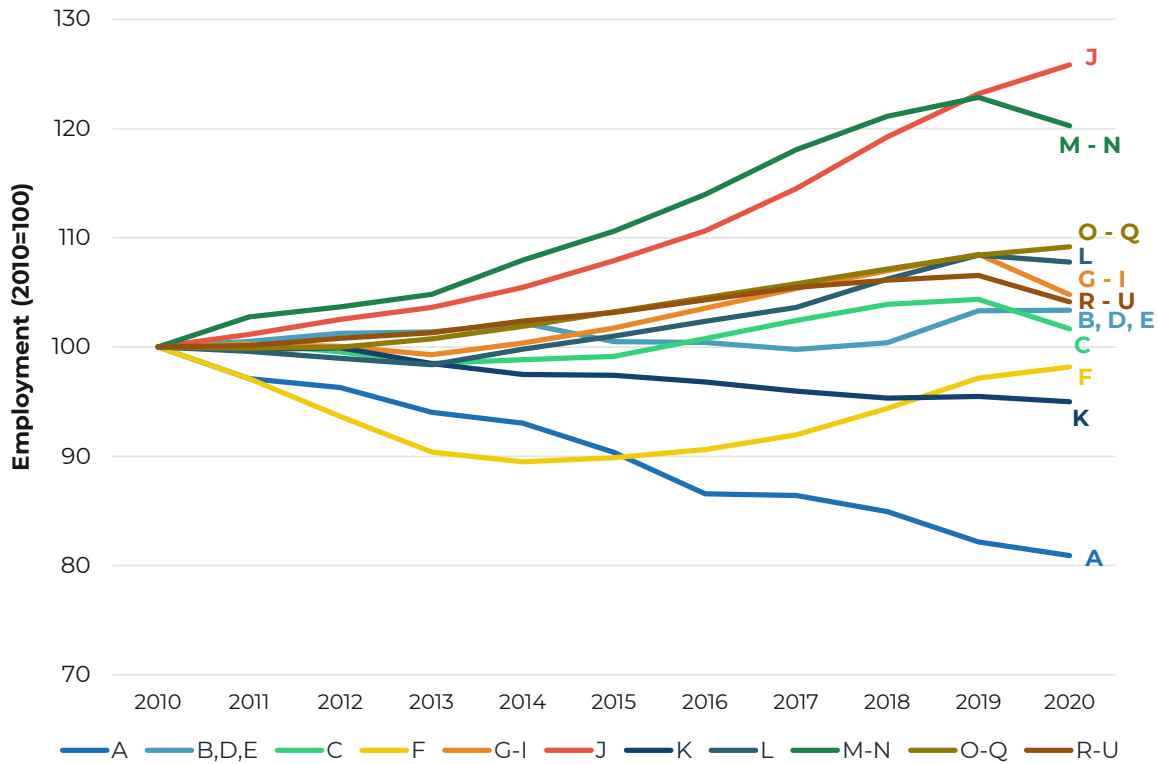
Source: ECCP (2022); based on data from Eurostat. Note: A: Agriculture, forestry and fishing; B,D,E: Mining, Energy and Water supply; C: Manufacturing; F: Construction; G-I: Domestic trade, transport, accommodation and food service; J: Information and communication; K: Financial and insurance; L: Real estate; M-N: Professional, scientific and technical; administrative and support service; O-Q: Public admin., defence, education, human health and social work; R-U: Arts, entertainment and recreation; other services; act. of households and extra-territorial.

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Table 10: Correlation table for presence of clusters and regional competitiveness

Dimension	Regional competitiveness indicators	Number of cluster organisations	Number of Regional relevant nodes	Number of Industry relevant nodes
Business Environment	Number of recovery & recycling facilities	-0,0259	**0,1970**	0,0282
	Individuals who have above basic overall digital skills	0,0107	-0,0777	**-0,1652**
	Quality of Government Index	0,0169	-0,1286	-0,1208
	Survival rate of enterprises	-0,0717	**-0,2228**	-0,1043
	Birth of enterprises	0,1052	**0,2250**	**0,2131**
	Human resources in science and technology	**0,1672**	**0,2305**	**0,2880**
	Public R&D expenditure	**0,1434**	0,0403	**0,1621**
Firms' behaviour	Green Employment	0,0795	**0,4572**	0,0252
	Employed ICT specialists	**0,2059**	**0,2680**	**0,4171**
	Public-private co-publications	0,1111	0,0749	**0,1543**
	Innovative SMEs collaborating with others	0,0426	**-0,1585**	-0,0848
	SMEs that introduced a business process innovations	-0,0739	**-0,1878**	-0,0778
	SMEs that introduced a product innovation	-0,0820	-0,1421	-0,0225
	Business R&D expenditure	**0,3068**	0,0446	**0,2777**
Intermediate performance	Green PCT patents	-0,073252	-0,117277	-0,118025
	ICT patents	**0,178181**	0,136832	**0,223279**
	PCT patents per million population	**0,201895**	0,022422	**0,179208**
	Gross fixed capital formation	0,0207	0,0303	-0,0871
	Apparent labour productivity	**0,1954**	-0,0542	**0,1676**
	Employment rate	0,1196	**0,2470**	0,1205
Outcome	Share of ICT in GVA	**0,2208**	**0,2873**	**0,4407**
	Air emissions in fine particulates (PM2.5) in Industry	0,0398	**0,2008**	**0,2932**
	Sales of new-to-market and new-to-enterprise product innovations as percentage of total turnover	0,0255	**-0,1557**	-0,1025
	Employment in technology and knowledge-intensive sectors	**0,2470**	**0,3233**	**0,3874**
	GDP per Capita	**0,2049**	0,1103	**0,2661**

Source: ECCP (2022); cluster organisation data based on information from 1087 cluster organisation in the EU27 extracted from ECCP Platform on 14/10/22, sources of regional competitiveness indicators provided in Table 15 in the Annex. Note: The numbers in **bold** indicate Pearson correlation coefficients that are significant at 95% level

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Additional data on National cluster policies, programmes and initiatives

Table 11: Sub-types of broad and sectoral policies

Sub-type of broad/sectoral policy	Policies	Percentage
Regional development policy and structural change	13	28%
Industrial policy	11	24%
RIS3, smart specialisation strategy	9	20%
Science, technology and innovation policy	4	9%
SMEs Policies	2	4%
Digital transition	1	2%
Maritime policies	1	2%
Tourism Policies	1	2%
Unspecified	4	9%
Total	46	100%

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Table 12: Countries with regional cluster policies and a selected regional example

EU		Third Countries	
Country	**Region**	**Country**	**Region**
Austria	Tyrol	**Australia**	New South Wales
Belgium	Flanders	**Canada**	Québec
Belgium	Wallonia	**China**	Guangdong-Hong Kong-Macao Greater Bay Area
Germany	Saxony		
Greece	Attica		
Spain	Catalonia		

Source: ECCP (2022), based on information gathered through desk research and validation by National Authorities.

Country-specific information on state of play of cluster policy

Table 13: Overview of cluster policy continuity by duration and countries

Duration in designing & implementing cluster policies	Number of countries	Countries*
No cluster-specific policy available	26	Albania, Armenia, Bosnia & Herzegovina, Bulgaria, Colombia, Cyprus, *Finland*, Iceland, Israel, Kosovo, Latvia, Liechtenstein, *Lithuania*, Malaysia, *Malta*, Moldova, Montenegro, Morocco, North Macedonia, Romania, Serbia, *Slovenia, Slovakia, Sweden*, Turkey, Ukraine
Cluster policy established between over 2 and 10 years	3	Australia, *Czechia*, Mexico
Cluster policy established over 10 years ago	27	*Austria, Belgium*, Canada, China, *Croatia, Denmark, Estonia, France, Germany, Greece, Hungary*, India, *Italy, Ireland*, Japan, South Korea, *Luxembourg, Netherlands*, Norway, *Poland, Portugal*, Singapore, South Africa, *Spain*, Taiwan, United Kingdom, United States

Source: ECCP (2022) based on findings from the 56 individual factsheets and validation by National Authorities. * EU countries in italic letters.

Table 14: Maturity index by country

Country	Policy approach (max. score: 2 points)	Continuity (max. score: 2 points)	Evidence of performance (max. score: 2 points)	Cluster support instruments (max. score: 2 points)	Total score (max. score: 8 points)
Albania	0,5	0	1	0,5	**2**
Armenia	0,5	0	0	0,5	**1**
Australia	2	1	0,5	2	**5,5**
Austria	2	2	1	2	**7**
Belgium	2	2	1	2	**7**
Bosnia & Herzegovina	0,5	0	1	0,5	**2**
Bulgaria	0,5	0	0,5	0,5	**1,5**
Canada	2	2	1	2	**7**
China	2	2	0	2	**6**
Colombia	1	0	0	0,5	**1,5**
Croatia	2	2	1	2	**7**

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Cyprus	0,5	0	0,5	0,5	**1,5**
Czechia	2	1	1	2	**6**
Denmark	2	2	0,5	2	**6,5**
Estonia	2	2	0,5	2	**6,5**
Finland	0,5	0	1	0,5	**2**
France	2	2	2	2	**8**
Germany	2	2	2	2	**8**
Greece	2	2	0	1	**5**
Hungary	1	0	2	0,5	**3,5**
Iceland	1	0	0,5	0,5	**2**
India	2	2	2	2	**8**
Ireland	2	2	0,5	2	**6,5**
Israel	0,5	0	0	0,5	**1**
Italy	0,5	0	1	0,5	**2**
Japan	2	2	0,5	2	**6,5**
South Korea	2	2	0,5	2	**6,5**
Kosovo	0,5	0	1	0,5	**2**
Latvia	0,5	0	0	0,5	**1**
Liechtenstein	0,5	0	0	0,5	**1**
Lithuania	0,5	0	0	0,5	**1**
Luxembourg	2	2	0	2	**6**
Malaysia	1	0	0	0,5	**1,5**
Malta	1	0	0	0,5	**1,5**
Mexico	0,5	0	2	0,5	**4**
Moldova	0,5	0	0	0,5	**1**
Montenegro	0,5	0	0,5	0,5	**1,5**
Morocco	1	0	1	0,5	**1,5**
Netherlands	2	2	2	2	**8**
North Macedonia	1	0	0,5	0,5	**2**

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Norway	2	2	2	2	**8**
Poland	2	2	0,5	2	**6,5**
Portugal	2	2	2	2	**8**
Romania	1	0	0,5	0,5	**2**
Serbia	1	0	0,5	0,5	**2**
Singapore	2	2	0	2	**6**
Slovenia	0,5	0	2	0,5	**3**
Slovakia	0,5	0	0	0,5	**1**
South Africa	2	2	0,5	2	**6,5**
Spain	2	2	1	2	**7**
Sweden	0,5	0	2	0,5	**3**
Taiwan	2	2	0	2	**6**
Türkiye	2	2	1	2	**7**
Ukraine	0,5	0	0	0,5	**1**
United Kingdom	2	2	1	2	**7**
United States	2	2	1	1	**6**

Source: ECCP (2022) based on findings from the 56 individual factsheets and validation by National Authorities. * EU countries in italic letters.

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Methodology

The following chapter presents the methodological approach used for the summary report of the 56 individual factsheets on the national and regional cluster policies, programmes and initiatives in Europe[60] and selected third countries.

In the following, the methodology used to collect and analyse data in the main three chapters of the factsheet is explained in a more detailed manner.

1. EU cluster landscape and the economy

2. National cluster policy, programmes and initiatives across Europe and third countries

3. State of play of cluster policy

EU cluster landscape and the economy

The ECCP contains data on the characteristics of 8 different types of cluster actors that are currently able to profile themselves on the platform:

1. Cluster Organisations
2. Members of cluster organisations
3. European cluster partnerships and initiatives
4. National associations of clusters
5. Meta clusters and networks of clusters
6. Training providers
7. Resource Efficiency Support Providers
8. Policy or Public Institutions

This report builds upon the **profile data** collected through the ECCP on these cluster actors. The data that is used in this report for the EU cluster landscape was extracted from the ECCP Platform on 14/10/2022.

For the overview of the **economy** in the EU27, data on employment (NAMA_10R_3EMPERS) and GVA (nama_10r_3gva) from Eurostat is used. Thereby, the 11 categories of economic activity follow the A*10 aggregation that is provided by Eurostat. This includes 10 non-overlapping categories of sectors plus C: Manufacturing, that is both part of B-E: Industry (except construction) and included as a separate category. Here B-E is separated into B,D,E: Mining and quarrying, Electricity, gas, steam and air conditioning supply and Water supply, sewerage, waste management and remediation activities (shortened to Mining, Energy and Water supply) on one hand and C: Manufacturing, on the other, to have 11 non-overlapping categories.

The following table provides an overview and description of the 25 **regional competitiveness indicators**. These indicators are used in a correlation analysis together with the number of cluster organisations as well as the number of industry relevant nodes and number of regional relevant nodes. Thereby, industry-relevant specialisation nodes indicate that the region is specialised in the ecosystem (LQ > 1.5) and regional employment in the ecosystem is relevant in the EU context (industry employment share > 1%). Regional-relevant specialisation nodes indicate that the region is specialised in the sector (LQ > 1.5) and the employment share of that sector is relevant for the region (regional employment share > 1%).

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[60] EU27 and countries supported under the COSME programme.

Table 15: Overview and description of the regional competitiveness indicators

Indicator group	Indicator	Description	Source
Outcome indicators	GDP per Capita	This indicator informs about the Gross Domestic Product per capita (PPP)	Eurostat
Outcome indicators	Employment in technology and knowledge-31ensive sectors	This indicator shows the share of employment in High-tech industries and knowledge-intensive services. Knowledge-intensive activities are defined, based on EU Labour Force Survey data, as all NACE Rev.2 industries at 2-digit level where at least 33% of employment has a higher education degree (ISCED 5-8)	Eurostat
Outcome indicators	Sales of new-to-market and new-to-enterprise product innovations as percentage of total turnover	This indicator measures the turnover of new or significantly improved products and includes both products which are only new to the firm and products which are also new to the market. The indicator thus captures both the creation of state-of-the-art technologies (new to market products) and the diffusion of these technologies (new to firm products)	Regional Innovation Scoreboard
Outcome indicators	Air emissions in fine particulates (PM2.5) in Industry	This indicator includes the Air emissions by fine particulate matter (PM2.5) in the Manufacturing sector in Tonnes divided by Value added in the Manufacturing sector. PM2.5 (particles with a diameter of 2.5 micrometres or less is considered by the WHO as the pollutant with the highest impact on human health.	Regional Innovation Scoreboard
Outcome indicators	Share of ICT in GVA	This indicator informs about the respective share of ICT in Gross Value Added relative to the total Gross Value Added. In other words, this indicator measures the value of goods and services produced that are related to the NACE sector "Information and communication"	Eurostat
Intermediate performance	Employment rate	This indicator informs about the employment rate of a region and covers the age class 15 to 64 years.	Eurostat
Intermediate performance	Apparent labour productivity	This indicator is calculated by dividing gross value income of a region by employment data. Hence, this indicator shows value added per person employed	Eurostat
Intermediate performance	Gross fixed capital formation	This indicator shows Gross fixed capital formation as a percentage of GDP. Gross fixed capital formation consists of resident producers´ acquisitions, less disposals, of fixed tangible or intangible assets.	Eurostat
Intermediate performance	PCT patents per million population	This indicator informs about the number of patents between 2017-2021 per million inhabitants of a region.	EPO
Intermediate performance	ICT patents	This indicator informs about the share of ICT patents relative to all patents between 2017-	EPO

		2021. The definition of ICT patents follows the OECD definition.	
Intermediate performance	Green PCT patents	This indicator informs about the share of green patents relative to all patents between 2017-2021. The definition of green patents follows the OECD definition. In the European Innovation Scoreboard Exploratory Report on environmental innovation[61] the indicator "development of environment-related technologies as a percentage share of all technologies" is discussed in the context of the Regional Innovation Scoreboard. However, since this indicator is based on patent data and the Green PCT Patents capture the green transition in a broader way and are better comparable to ICT patents the green PCT patent indicator is deemed as better suited.	EPO
Firms' behaviour	Business R&D expenditure	This indicator informs about the expenditure for Research & Development in the Business enterprise sector	Eurostat
Firms' behaviour	SMEs that introduced a business process innovations	SMEs that introduced a marketing or organisational innovation (percentage of SMEs). Many firms innovate not by improving new products but by improving their business processes. Business process innovations include process, marketing and organisational innovations	Regional Innovation Scoreboard
Firms' behaviour	SMEs that introduced a product innovation	Number of Small and medium-sized enterprises (SMEs) who introduced at least one product innovation. A product innovation is the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components, or sub-system. Product innovation is a key ingredient to innovation as they can create new markers and improve competitiveness. Higher shares of product innovators reflect a higher level of innovation activities	Regional Innovation Scoreboard
Firms' behaviour	Innovative SMEs collaborating with others	This indicator shows the number of SMEs with innovation co-operation activities by total number of SMEs. Firms with co-operation activities are those that have had any co-operation agreements on innovation activities with other enterprises or institutions. Hence, this indicator measures the degree to which SMEs are involved in innovation co-operation. Complex innovations often depend on companies' ability to draw on diverse sources of information and knowledge, or to collaborate on the development of an innovation. The indicator measures the flow of knowledge between public research institutions and firms, and between firms and other firms. The indicator is	Regional Innovation Scoreboard

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[61] see https://ec.europa.eu/docsroom/documents/45664 (last access 10.05.2022)

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		limited to SMEs, because almost all large firms are involved in innovation co-operation	
Firms' behaviour	Public-private co-publications	This indicator covers the number of public-private co-authored research publications with both domestic and foreign collaborators. The definition of the "private sector" excludes the private medical and health sector. It captures public-private research linkages and active collaboration activities between business sector researchers and public sector researchers resulting in academic publications	Regional Innovation Scoreboard
Firms' behaviour	Employed ICT specialists	Share of employment in ICT sectors relative to total employment. Defined as "Workers who have the ability to develop, operate and maintain ICT systems, and for whom ICT constitute the main part of their job". The indicator captures the use of Information technologies	Regional Innovation Scoreboard
Firms' behaviour	Green Employment	Share of employment the EU Industrial Ecosystem "Renewable Energy" relative to total employment. For the classification of employment in this Industrial Ecosystems, the NACE rev.2 classification that was developed in the Annual Single Market Report 2021[62] will be used.	Own elaboration based on Eurostat / Labour Force Survey
Business Environment	Public R&D expenditure	This indicator informs about the expenditure for Research & Development in the public sector	Eurostat
Business Environment	Human resources in science and technology	This indicator informs about the number of human resources in science and technology relative to the total population	Eurostat
Business Environment	Birth of enterprises	This indicator informs about the births of enterprises in a given year and region. A birth occurs when an enterprise starts from scratch and actually starts activity. An enterprise creation can be considered an enterprise birth if new production factors, in particular new jobs, are created. If a dormant unit is reactivated within two years, this event is not considered a birth	Eurostat
Business Environment	Survival rate of enterprises	This indicator shows the survival rate of enterprises (3 years). Survival occurs if an enterprise is active in terms of employment and/or turnover in the year of birth and the following year(s). In other words, it can be regarded as a success rate of newly funded enterprises.	Eurostat

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[62] European Commission (2021): Annual Single Market Report 2021. Commission Staff Working Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021SC0351

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Business Environment	Quality of Government Index	The Quality of Government Index focuses on both perceptions and experiences with public sector corruption, along with the extent to which citizens believe various public sector services are impartially allocated and of good quality in the EU	Quality of Government Institute (University of Gothenburg)
Business Environment	Individuals who have above basic overall digital skills	This indicator shows the number of individuals with above basic overall digital skills by the total number of individuals aged 16 to 74	Regional Innovation Scoreboard
Business Environment	Number of recovery facilities	This indicator shows the number of energy & recycling recovery facilities. The existence of such facilities provides an essential foundation for approaches related to the Circular Economy	Eurostat

Source: ECCP (2022)

National cluster policy, programmes and initiatives

This chapter provides **information on national cluster policies, programmes and initiatives**. Based on the findings from the previous 54 factsheets and summary report (2020), information has been updated and is provided on the current cluster policies in the 56 selected countries, their objectives and beneficiaries. In addition, the chapter gives an overview of the cluster policy duration, the allocated budget and the alignment with the priorities of the European Commission. Updates of the 54 factsheets occurred in August and September 2022.

Findings are mainly based on an extensive literature review (often in the national language), validation from National Authorities (only for EU27 and COSME countries) as well as expert input from members of the European Cluster Alliance (ECA). Validation processes took place in October and November 2022.

The main challenge posed by this chapter is the crossover between cluster policy and other policies focused on fostering collaboration (here named sectoral and broad policies). Therefore, the chapter presents cluster-specific and other cluster-related policies.

The following Table **16** gives an overview of the different categories of the third chapter:

Table 16: Categorisation of the national cluster policy, programmes and initiatives

Category/Dimension	Further definition/explanation
Type of cluster policy	All relevant policies identified are categorised as follows (broad, sectoral national and regional). If national and/or regional cluster policies were identified, the broad or sectoral policy is no longer explored in the country factsheet. The broad/sectoral policies are only illustrated in the absence of a clear national and/or regional cluster policy, and when this fosters collaboration between different actors. In some cases, the factsheets include both national cluster policies and broad policies, but the latter Relevant cluster policies are categorized under distinct groups, namely: • Regional policy • National policy • Broad policy • Sectoral policy

Policy objectives	This dimension provides information on the implementation instruments comprised in the programme(s) accompanying cluster policies. A comprehensive list of these instruments is provided below, but labels might be redefined, or new ones added, during the desk research stage.
	• **Company-specific measures**:
	- Strengthening cooperation between companies, industry & RTDI actors
	- Increasing competitiveness and boosting scale-up of SMEs
	- Fostering R&D activities technology development & implementation
	- Promoting entrepreneurship, start-ups and spin-offs
	- Promoting employment & upgrading skills and competences
	- Promoting social and sustainable economy and solidarity-based initiatives
	• **Cluster-specific measures:**
	- Enhancing visibility of clusters
	- Fostering innovation and strengthening innovation ecosystems
	- Supporting cluster excellence and professionalization of cluster management
	- Supporting the creation & consolidation of cluster organisations
	- Enhancing territorial cohesion (through RIS3)
	- Cluster analysis and support for policymaking
	- Strengthening the network of cluster organisations / cross-clustering
	• **Outward-oriented measures:**
	- Supporting internationalization activities
	- Connecting to global supply chains
Policy focus	This dimension demonstrates whether a sectoral strategy is underpinning the policy.
	• **Sectoral strategy**
	• **Cross-sectoral strategy**
	• **No specific focus**
Responsible authority	Policies are overseen through specific actors on national or regional-level governance levels and an also involve organisations. This dimension therefore showcases the means through which the respective authority contributes to the policy process, in regard to:
	• **Drafting**
	• **Implementation**
	• **Drafting as well as Implementation**
	• **The provision of funding**

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	• **The oversight of implementation**

Beneficiaries	Beneficiaries of the policy are diverse and can be found in the following groups:
	
	• **Companies:**
	  - SMEs
	  - Start-ups
	  - Business associations
	  - Large Firms
	
	• **Institutions**
	  - Academic Institutions
	  - Research Organisations
	  - Technology Centres
	
	• **Organisations**
	  - Cluster Organisations
	  - NGOs
	  - Policymakers
	
	• **Other:**
	  - Civil Society

Policy instruments	This dimension provides information on the implementation instruments comprised in the programme(s) accompanying cluster policies. A comprehensive list of these instruments is provided below, but labels might be redefined, or new ones added, during the desk research stage.
	
	• **Financial instrument:**
	  - Funding collaboration initiatives
	  - Support to R&D projects, SMEs becoming cluster members, etc.
	  - Application to labelling schemes and similar initiatives
	  - Subsidies to hire personnel
	  - Subsidies for cluster infrastructure (e.g. offices, equipment)
	  - Financing networking events
	  - Supporting market entry (e.g. testing, proof-of concept, prototyping, demonstration projects)
	  - Financing start-ups
	  - Innovation: voucher, support to hire PhDs, cooperation with R&I actors
	  - Others
	
	• **Technical assistance**

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	- Infrastructure: coworking spaces, offices, incubation and accelerator spaces, research centres, technology parks etc. - Support for hard skill development: knowledge transfer, intellectual property, entrepreneurship, export advice, market intelligence - Support for soft skills development: coaching, management training, upskilling/reskilling - Support for networking and partnership building (at national and/or international level) - Marketing activities: advertising, communication, events, fairs - Others
History	This section displays the time frame of the respective policy. This further showcases whether the policy is made for: - Unlimited period - Limited period (ending year to be specified)
Policy evaluation and results	This dimension displays evidence regarding policy monitoring and evaluation mechanisms, as well as specific outcomes if available. If only ongoing policies are being assessed, researchers assessed whether any ex-ante or in-itinere evaluation was conducted and/or planned: • **Ex-ante** • **In-itinere** • **Ex-post** • **No policy evaluation**
Policy alignment with the European Commission's priorities for 2019-2024	Based on the policy objectives, it is determined whether the policy aligns with the EC's priorities for 2019-2024, such as: • **Green Economy** • **Digitalisation** • **Resilience**

Source: ECCP (2022).

State of play of cluster policy

This chapter provides a summary on the **state of play of cluster policy in all 56 selected countries**. To assess the different levels of development of cluster policies in the different countries, information from the 56 factsheets is presented in a form of quantitative and qualitative assessment. The chapter summarises the policy approach, the cluster policy continuity, the evidence of performance of cluster or cluster-dedicated policies and the utilised cluster support instruments of the analysed 56 countries. Complementary, an additional section, which is not included in the maturity assessment, shows the cross-regional and cooperation of national clusters in the EU27 and COSME countries. Similar to the previous chapter, the fourth chapter is mainly qualitative and based on desk research and validation from the National Ministries.

The following table gives an overview of the methodology for each criterion and the related scoring system:

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Table 17: Methodology and scoring of the maturity index

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. manufacturing/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 and/or technical 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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