European Observatory for Clusters and Industrial Change

European Observatory for Clusters and Industrial Change

#EOCIC

Policy Briefing –

East & North Finland

This policy briefing report was carried out for the European Commission by

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Selection as one of 10 regions in industrial transition

The customised advice on modern cluster policy in support of industrial modernisation provided to the 10 regions in industrial transition is funded by the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), as part of the European Observatory for Clusters and Industrial Change (EOCIC). The regions were selected as a result of an open call for expression of interest, published and assessed by the Commission services. The Commission launched a first call for expression of interest on 29 September 2017 and, as a result of demand from regions, a second call was launched on 14 December 2017.[1]

The following regions were selected[2]:

- Cantabria (Spain)
- Centre Val de Loire (France)
- **East & North Finland**
- Hauts-de-France (France)
- Lithuania
- North-Middle Sweden
- Piemonte (Italy)
- Saxony (Germany)
- Slovenia
- Wallonia (Belgium)

The aim of the work being provided by the EOCIC to 10 regions in industrial transition is to define a set of actions in the form of a comprehensive strategy to foster regional economic transformation, identify collaboration and funding opportunities and connect with other regions in regional and cluster partnerships.

This pilot will help test new approaches to industrial transition and provide the European Commission with evidence to strengthen post-2020 policies and programmes.

The output of the first phase of the EOCIC advisory services was an assessment report, which summarises the key challenges of industrial modernisation for the region and the potential policy directions. The second phase of the EOCIC advisory services will build on this report to develop concrete policy proposals for each industrial transition region. DG GROW and the EOCIC are working closely with the Directorate-General for Regional and Urban Policy (DG REGIO) and the OECD to provide advice services for the pilot regions.

More information on the activities carried out by the EOCIC is available at the end of this report.

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[1] Details on the selection procedure are available at:
https://ec.europa.eu/regional_policy/en/policy/themes/industrial-transition/
[2] 12 regions were initially selected for the overall process of the project on pilot regions in industrial transition, of which 10 then engaged with the project through to the final stages of the work carried out by the EOCIC.

1. Introduction

1.1. Aims and objectives of the exercise

The aim of this exercise in East & North Finland is to **support the regional authorities and stakeholders in defining a strategy that facilitates the industrial transformation of the region**. In the case of East & North Finland the EOCIC work was carried out in close cooperation with the AMI experts – also funded by the European Commission – and the work of the OECD on Regions in Industrial Transition.

It provides input into a regional strategy focused on a **"managed industrial transition"** (Zuleeg et al, 2018), based on the insight that different regions across Europe and even different sub-regions within East & North Finland are characterised by different assets, strengths and weaknesses and that they face different obstacles and threats that need to be overcome. We therefore adopt a tailored approach that builds on existing resources and we place considerable emphasis on generating and maintaining political commitment for the proposed activities.

This document builds on the assessment report to summarise the challenges and barriers to, and drivers of industrial modernisation in East & North Finland, before outlining a regional strategy for industrial transformation and a set of specific policy actions together with a roadmap and an action plan.

To that end, this document includes the main challenges for the region through a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and a PEST (Political, Economic, Socio-cultural and Technological) analysis. Both are described in Chapter 2. Based on these challenges, Chapter 3 provides a customised strategy designed to address the needs and challenges identified. Chapter 4 presents two specific recommendations for policy intervention. Their respective action plans are in Chapter 5.

The report is based on extensive desk research, a large number of interviews, a study visit in Lapland (28-31 August 2018) and a policy review meeting (4 December 2018). Throughout the process there has been close coordination of regional meetings, research and outputs between the EOCIC team and the AMI experts[3]. It is estimated that over 150 regional stakeholders were reached directly via the study visit, policy review meeting and interviews.

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[3] External experts contracted by DG REGIO to provide support to the pilot regions in industrial transition

1.2. Key economic and innovation indicators for the pilot region

In 2018, East & North Finland had a gross domestic product (GDP) of EUR 33 800 per capita, which is above the EU level of EUR 30 000, but below the national figure (EUR 40 600). Of the ten nine pilot regions, the Finnish pilot region ranks second after North Middle Sweden.

Figure 1 combines selected economic indicators for the 10 pilot regions. It clearly shows East & North Finland's good position in terms of economic strength, measured as GDP per capita. In terms of employment rate, the region is slightly above the median of the 10 pilot regions. With 40% of employees with a higher education degree, East & North Finland ranks fourth among the pilot regions and has an above-average level of highly educated employees compared to the EU average (34.4%), but a below-average figure compared to the national share (43.9%). While Finland has a slight specialisation in manufacturing compared to the EU, East & North Finland's quotient is just below the EU figure.

Figure 1: Selected economic data for the 10 pilot regions: GDP/ capita, Employment rate, Share of employees with higher education degree and Specialisation in manufacturing
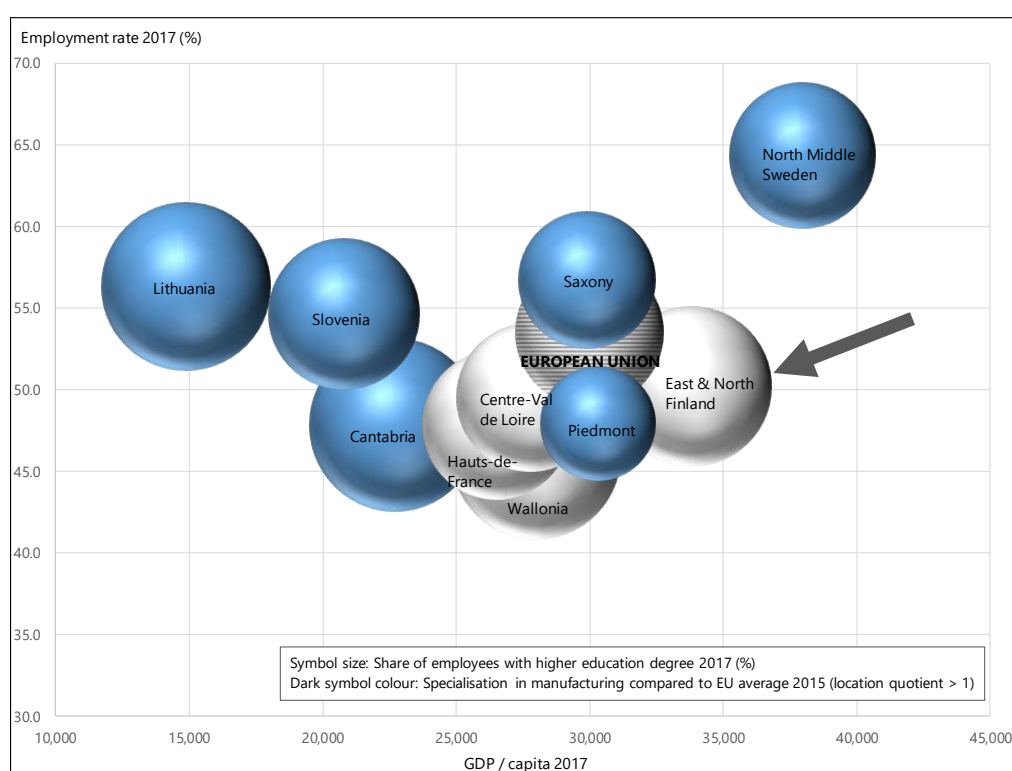
Source: EOCIC, based on Eurostat data and own calculations

East & North Finland's share of employment in high-technology sectors (high-technology manufacturing and knowledge-intensive high-technology services) is close to the European average, though below the national level. The business enterprise sector in East & North Finland spends a lower percentage of total business expenditure on research and development activities than enterprises in Finland and the European Union. However, the region's share of R&D personnel in the business sector exceeds the EU figure, while still being below the national level (figure 2).

Figure 2: Selected technological indicators for East & North Finland
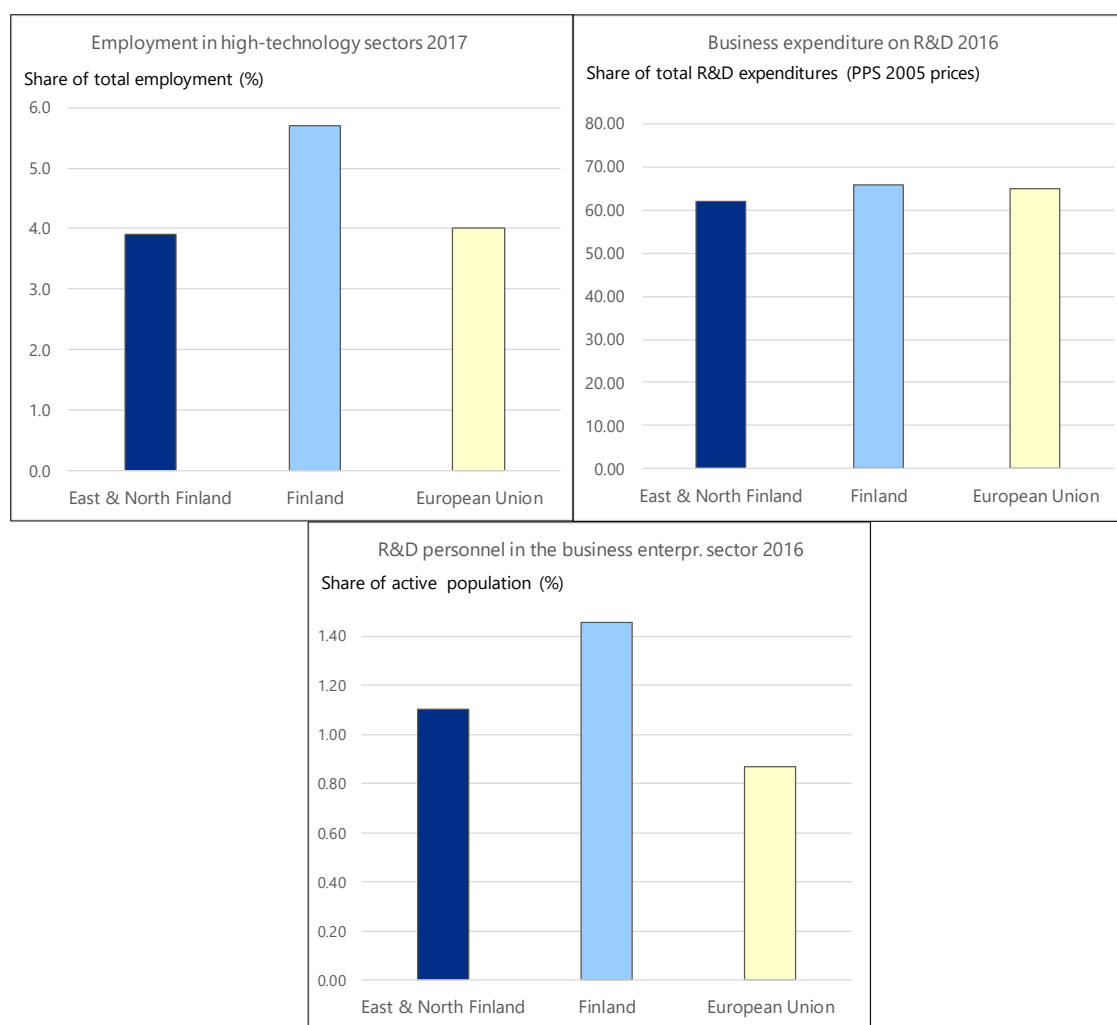
Source: EOCIC, based on Eurostat data and own calculations

In order to provide insights into industrial modernisation, the European Observatory for Clusters and Industrial Change (EOCIC) provides composite indicators on seven dimensions: Evolution towards a more innovative regional economy; New and emerging technologies; Digitalisation; Firm investments; Internationalisation; Creativity; and Entrepreneurship. Each dimension is represented by a set of specific indicators, which are condensed to a composite indicator. Figure 3 presents the results for those seven dimensions in East & North Finland. With the exception of the firm investments dimension, the pilot region scores below the national level, but exceeds the EU averages with respect to innovation, creativity, digitalisation and firm investments. Its highest scores are for digitalisation, creativity and firm investments. In fat, East & North Finland has the maximum value of all 10 pilot regions on the digitalisation and creativity dimensions. At the other end of the spectrum, the region's lowest score is on the internationalisation dimension; East & North Finland has the lowest value of any pilot region on this dimension.

Figure 3: Composite indicators for Industrial Change: East & North Finland
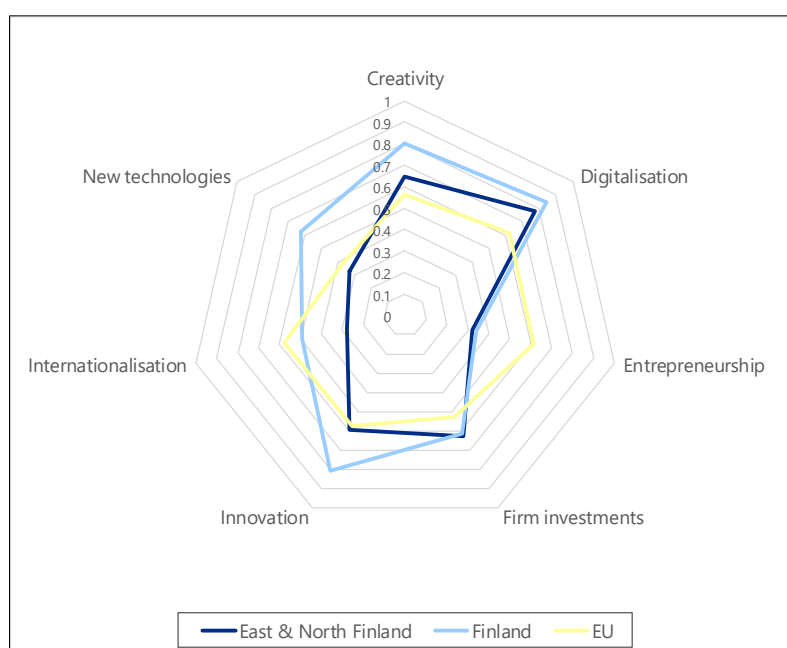
Source: EOCIC, based on various data sources and own calculations

Figure 4 shows the most recent total composite indices for industrial change and the total number of cluster stars in the pilot regions (NUTS 2 level). The composite indices show industrial change in a range between 0.4 and 0.8 between 10 and 70 in the 10 pilot regions, and the total number of cluster stars in a range between 10 and 70 in the 10 pilot regions. Five NUTS 2 regions have 45 or more cluster stars. Piemonte is the clear leader (69 stars). By contrast, various regions have 20 or fewer cluster stars – East & North Finland (15 stars). Figure 4 also shows that the industrial change ranking is led by Walloon Brabant: on a scale of 0 to 1, this NUTS 2 region has a score of 0.751.

Mapping the pilot regions' industrial change and cluster stars reveals three different types of region: (1) high number of cluster stars, but moderate composite index of industrial change (below 0.5) (Piemonte, Nord-Pas-de-Calais, Picardie, Centre-Val de Loire, Lithuania), (2) regions with moderate figures for both indicators (below 35 cluster stars and composite indices of industrial change below 0.6) (Hainaut, Liège, Slovenia, Dresden, Namur, East & North Finland, Leipzig, Luxembourg, North Middle Sweden, Cantabria, Chemnitz), and (3) Walloon Brabant (composite index of 0.75 and 40 cluster stars). In the second group, Hainaut, Liège and Slovenia stand out from the other regions due to the higher numbers of cluster stars. In part, this is also the case for Chemnitz, but it has a lower index for industrial change.

Figure 4: Composite indicator industrial change (total index) and cluster stars (total) for pilot regions
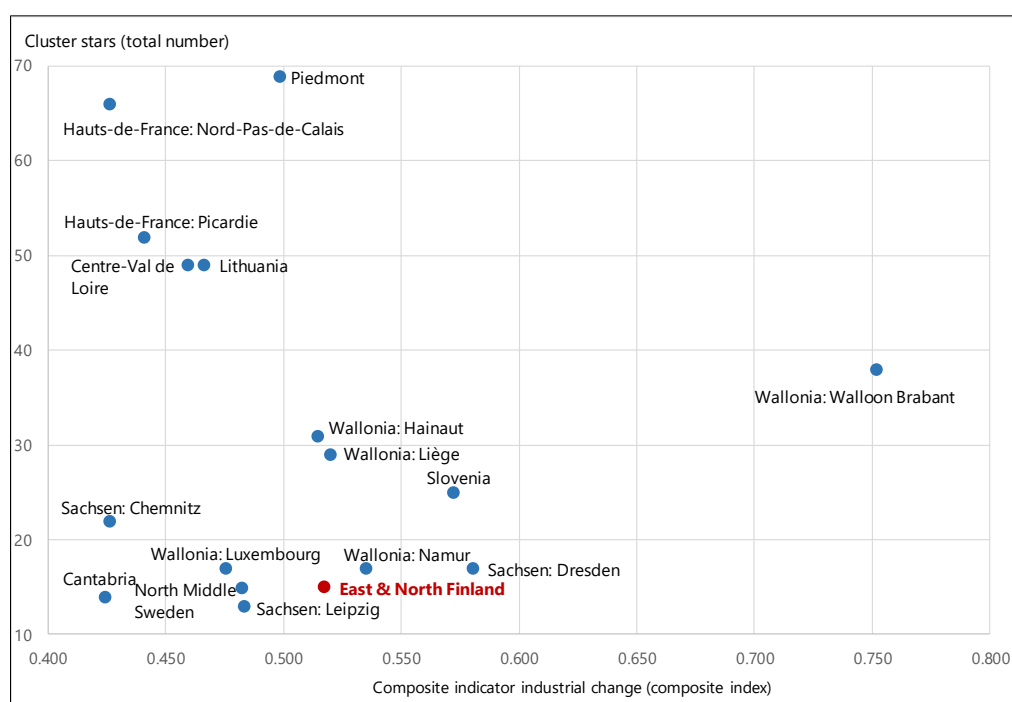
Source: EOCIC, based on various data sources and own calculations

2. Key challenges, barriers, and drivers of industrial modernisation in East & North Finland

This chapter summarises, in tabular form, the political, economic, socio-cultural and technological framework conditions in East & North Finland that were outlined in detail in the assessment report. The chapter then presents the key strengths, weaknesses, opportunities and threats that need to be considered in the development of the regional strategy in Chapter 3.

As pointed out in the assessment report, while there has been **little formal cluster policy in Finland,** the current national strategy for regional development calls for the development of "centres of competence" based on regional smart specialisation, which is very similar to clusters. There are six main cluster organisations in ENF, namely: Arctic Smartness clusters in Lapland and Joensuu Science Park in North Karelia.

Such existing clusters in traditional industries could create the **basis for formalising cluster organisations**, particularly in those sectors which represent common threads for East & North Finland. These could then also form the basis for better inter-regional collaborations.

Many of the region's PEST (Political, Economic, Socio-cultural and Technological) features (Figure 5) are the result of it being a large, mainly rural land area with sparse population and long distances. However, the region has a strong history of technological development.

Figure 5: The regional ecosystem and framework conditions in East & North Finland (PEST analysis)

PEST ANALYSIS

POLITICAL	ECONOMIC	SOCIAL	TECHNOLOGICAL
• Seven separate regions • Mostly informal clusters • Impending regional reform • Complex and fragmented funding landscape	• Rich natural resources and strong circular economy • Labour market mismatch • Mismatch between economic needs & knowledge bases • Deteriorating logistics network • Large share of stagnant micro enterprises • Lack of sectoral diversity & reliance on small number of large individual businesses • Shortage of resources for growth and development for SMEs	• Sparse/ageing population combined with demographic outflows • Strong collaboration between Triple Helix actors within subregions • Rigid, degree-oriented national approach to education	• Traditionally strong technology sector, particularly ICT, and strong digitisation expertise • Growing gaming industry • Strong RDI in subsectors such as health technology, photonics and chemistry • Limited research infrastructure accessibility • Need for strong communications infrastructure due to long distances and sparse population

Source: EOCIC

Table 1 details the **strengths, weaknesses, opportunities and threats of industrial transition in East & North Finland**. The region's strengths lie in the region's strong economic sectors (e.g. forestry, tourism), as well as its role as a leading innovator and its high R&D investment.

Table 1: Strengths, weaknesses, opportunities and threats of industrial transition

Strengths	Opportunities
• Sectoral strengths in forest industry, forest bioeconomy, technology & ICT (e.g. electrical and electronic, metal, machine and energy technology, gaming), tourism and tourism services. • Regional strengths in specific areas (e.g. chemistry sector in Central Ostrobothnia, technology cluster in Oulu region). • The region is a leading innovator (e.g. regional innovation scoreboard) with high R&D investment and strong academic, applied academic and sectoral research institutes. • Clusters and innovation ecosystems in each sub-region, including four Digital Innovation Hubs. • Closely connected innovation systems in some areas between large companies, smaller ones and research institutes.	• Circular economy, bio-economy, cleantech, health technology and ICT can be key growth sectors based on region's natural assets. • Effective digitisation can help overcome long distances and sparse population. • Innovation network model (large enterprise leading with smaller ones around them) can be expanded to new areas. • Further knowledge spillovers, sharing of infrastructure, polling information and funding across seven sub-regions would raise efficiency, create critical mass and build on assets of entire East & North Finland. • Cross-regional (and international) strategic partnerships across the 4-Helix to overcome small local demand.
Weaknesses	**Threats**
• Lack of sectoral diversity and reliance on large businesses/industry. • Existing research and innovation infrastructure not fully accessible to local industry (especially SMEs); small businesses lack networks. • Sub-optimal funding landscape in face of major investment and innovation required for development of key opportunities. • Relatively high degree of heterogeneity between the seven regions. • Challenging attractiveness of the region to skilled labour due to its remoteness. • No systemic anticipation of education needs and too little investment in education. • No wider brand of East & North Finland as a good, safe and clean region to do business.	• Decreasing, ageing population and little immigration. • Large distances mean challenging accessibility for transport and logistics. • Business demand for scale-up/internationalisation unclear; commercialisation/entrepreneurial skills need improvement. • Climate change has a strong impact on the region given the importance of natural resources to its economy.

Source: EOCIC

The SWOT and PEST above analyses led to the formulation of four main challenges that need to be addressed:

1. Need to move to higher added value networks and value chains;
2. Insufficient outreach and access to networks for businesses due to a sub-optimal entrepreneurial discovery process (this applies to both business innovation and scale-up/growth);
3. Lack of access to research and innovation infrastructures;
4. Fragmented and sub-optimal funding and financing landscape.

The next chapter outlines a holistic regional strategy that can address these challenges.

3. Proposed regional strategy to address the challenges

At the policy review meeting, it was established that the common driver behind the four challenges set out above relates to the sub-optimal level of coordination across the seven sub-regions of East & North Finland and the resulting difficulties in achieving critical mass (in terms of funding, entrepreneurial initiative and infrastructure), lack of awareness and knowledge-sharing.

As a result, the aim of the regional strategy is to *cross-regionally connect, invest in, scale up and brand East & North Finland's industrial capabilities.* This is to enable the business environment and entrepreneurial base across the seven sub-regions of East & North Finland to systematically address the small size of local demand, and speed up the industrial transition and global competitiveness of regional industrial value chains.

Four elements need to be part of the East & North Finland strategy:

1. **The creation of and/or participation in highly competitive and attractive industrial value chains** – in particular by exploiting ICT capabilities in already well defined value chains;
2. **Easier access and better support for technology deployment and upscaling** – in particular by smartly connecting innovation infrastructure across regions;
3. **More adequate funding instruments** in particular through a cross-regional 'Demofund' mechanism for demonstration projects; and
4. **More growing and better networked SMEs, more effective outreach and support for businesses** – in particular through better access to business-oriented resources (e.g. business planning tools/advice, etc.) and cross-regional clusters.

The figure below maps these elements against the four challenges identified in the previous chapter.

Figure 6: Overview of the regional industrial modernisation strategy for East & North Finland

Problems
1. Need to move to higher added value
2. Better outreach & business networks
3. Access to research & innovation infrastructure
4. Funding & financing

Key problem driver
• Lack of systematic cross-regional cooperation

General objective
• *Cross-regional connection of investment, scale up & branding of ENF industrial capabilities*

Specific objectives
1. Improved intelligence
2. Improved support
3. Improved linkages

Inputs / Activities
1. Creation of spearhead clusters in 1-3 areas funded by private and public – EUR 250k / year
2. Pilot project on wood and timber value chain funded through a 300k EC grant

Results / Outputs
1. Better exploitation of ICT capabilities in well-defined value chains
2. Smarter connection of innovation infrastructure
3. Cross-regional funding instrument (e.g. "Demofund")
4. Better access to business-oriented resources

Source: EOCIC

The discussion at the policy review meeting led to the conclusion that the creation of modern clusters (supported by modern cluster policy) cuts across all four dimensions of the strategy and that **modern clusters will be the key delivery mechanism for the strategy as a whole**.

Indeed, **clusters were seen as the key ingredient to support the Entrepreneurial Discovery Process (EDP)** and there was a feeling among participants at the policy review meeting that most of the weaknesses and threats identified in Chapter 2 could be addressed by improving this process. The following aspects were seen as particularly important:

1. **Intelligence function**: Agreeing on and developing a vision of the nature of the challenges and opportunities which the region faces in stimulating entrepreneurship;

2. **Support function**: Building and strengthening the local entrepreneurship system to support growing enterprises and start-ups, as well as SMEs – in particular by supporting the development of local human resources, and providing access to existing research and innovation capacity (infrastructure and skills);

3. **Linkage function**: Supporting networks which enhance knowledge spillovers between research and industry in order to promote innovative entrepreneurship, both within East & North Finland and from outside East & North Finland.

The **main objective of the strategy** should be to add value to the existing structures by facilitating collaboration between different types of stakeholder and across different geographies (sub-regions) within the territory of East & North Finland.

The **main delivery mechanism** behind the strategy is a business-oriented and interactive coordination tool focusing on so-called 'spearhead' (i.e. *priority)* clusters (similar to those in Flanders). The spearheads will build trust and flexibility, take into account business needs, complementarities, critical mass and social capital to generate, gather, connect and distribute knowledge, capabilities and information across the seven sub-regions of East & North Finland.

Box 1: The concept of spearhead clusters in Flanders

On 4 March 2016, the Flemish government approved the resolution that defines the support for the innovation clusters in Flanders. Flemish cluster policy distinguishes two types of clusters, namely spearhead clusters and Innovative Business Networks.

The six spearhead clusters connect to important strategic domains in Flanders and are large-scale triple helix initiatives that receive financing for up to 10 years to develop and implement their competitiveness programme. The Innovative Business Networks are smaller, bottom-up initiatives, receiving support for a period of three years to organise a collaboration dynamic in a specific domain that could lead to increased competitiveness of companies.

Both spearhead clusters and Innovative Business Networks focus on Flemish companies that have growth ambitions, innovation awareness, and an international attitude, and that are open to collaboration with other companies and knowledge centres.

Regardless of the initiatives' scale, ambition levels and time horizons, the following features are deemed essential for both types of clusters:

- Active commitment and management by the companies;
- Active and sustainable collaboration as a central thread in the operations of the cluster;
- Supported vision and custom action plan for and drawn up by cluster members;

- Performing cluster organisation that acts as a facilitator and representative of cluster members;
- Cluster focus on removing common thresholds and unused common business opportunities;
- Clusters establish a link between knowledge creation, and marketing and implementing new knowledge;
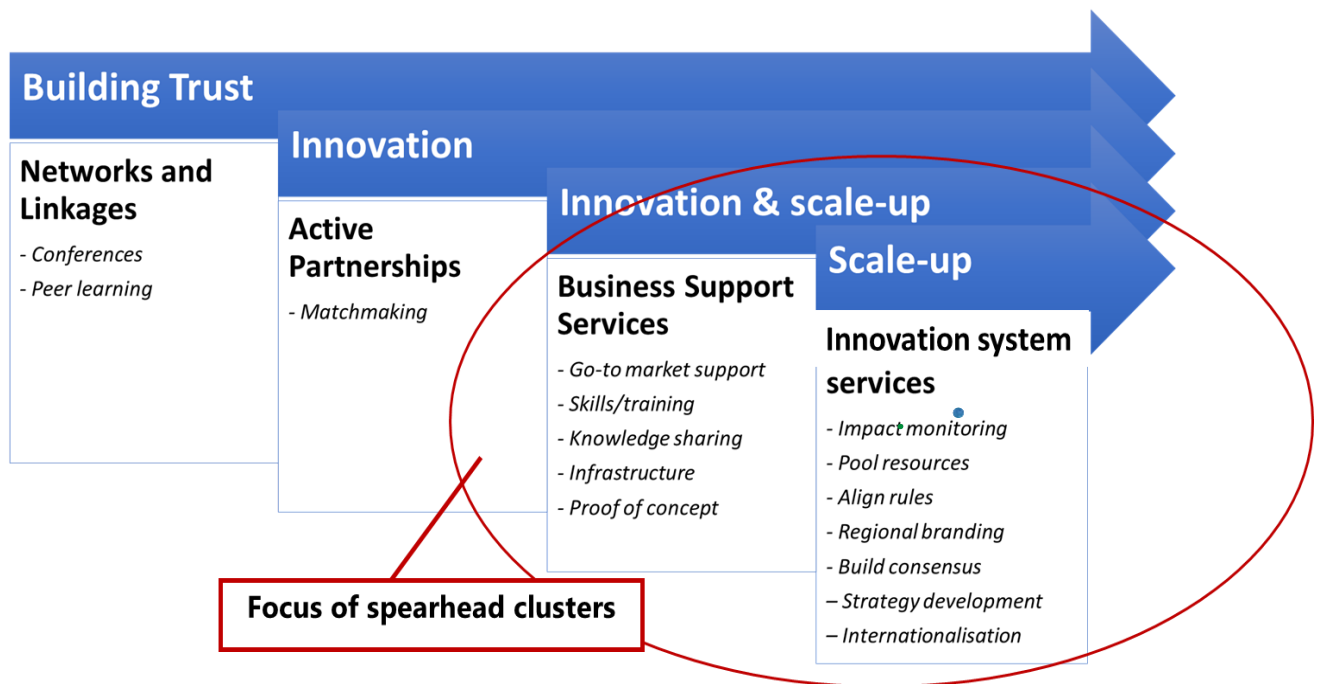- International attitude.

Source: https://www.vlaio.be/nl/andere-doelgroepen/clusterorganisaties/innovation-clusters-flanders/innovation-clusters-flanders

Spearhead clusters would **provide services and functions that are not currently provided by existing clusters** in Finland (or other regional or national level organisations). The spearheads would allow East & North Finland to develop modern clusters by building on existing structures. Cluster organisations can provide a range of services that link up with the challenges identified in Chapter 2. These include (in order of sophistication):

1. **Facilitating networks/linkages** (e.g. conferences and peer-learning, etc.);
2. **Fostering active partnerships** (e.g. matchmaking, etc.);
3. **Providing business support services** (e.g. commercialisation support and go-to-market strategies, skills and training, knowledge sharing, business infrastructure, proof-of-concept, etc.);
4. **Delivering innovation system services** (e.g. monitoring and assessing macro-level impacts, pooling funding and other resources, aligning rules and framework conditions, regional branding, building consensus across stakeholder groups including economic/research/policy, strategy development, internationalisation).

The main function of the first two levels of service is to build trust and foster innovation by bringing together relevant actors to generate new ideas. The main function of innovation system services is to facilitate the scale-up and growth of these ideas and innovations. Business support services are split between fostering innovation and supporting growth. It was agreed that the **spearhead clusters should focus (though not necessarily exclusively) on levels 3 and 4 of this cluster hierarchy** since levels 1 and 2 are often already assured by existing structures. A key point that will determine the range and sophistication of spearhead cluster services relates to the amount, sustainability and types of sources of funding that are made available (see also Chapter 4).

Figure 7: Portfolio of cluster services

Building Trust

Networks and Linkages
- Conferences
- Peer learning

Innovation

Active Partnerships
- Matchmaking

Innovation & scale-up

Business Support Services
- Go-to market support
- Skills/training
- Knowledge sharing
- Infrastructure
- Proof of concept

Scale-up

Innovation system services
- Impact monitoring
- Pool resources
- Align rules
- Regional branding
- Build consensus
– Strategy development
– Internationalisation

**Focus of spearhead clusters**

Source: EOCIC

4. Specific recommendations for policy intervention

4.1. Set up a 'Spearhead' Cluster scheme

4.1.1. Description

One of the key elements to emerge from the policy review meeting was the objective of setting up spearhead clusters in a limited number of areas that are key for the region. The figure below shows the different phases of the creation of such a scheme.

Figure 8: Creation of a spearhead cluster scheme as central tenet of the regional strategy
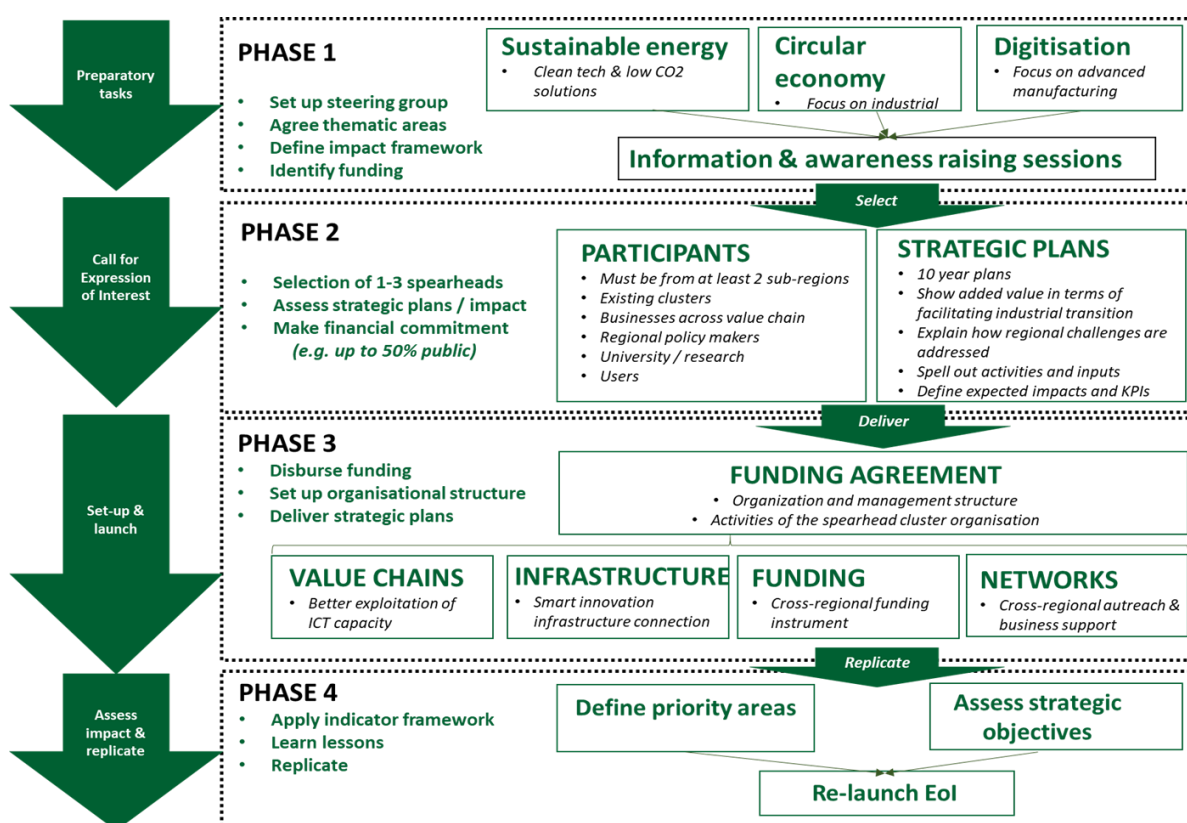
Source: EOCIC

In the first phase, a number of preparatory tasks need to be delivered. First, a **steering group** should be set up involving members from all seven sub-regions of East & North Finland, as well as representatives of businesses, existing clusters and the research community.

The aim of the steering group in this first phase is, first of all, to:

- **agree the priority areas for spearheads** (the initial discussion at the policy review meeting pointed to three areas: sustainable energy, the circular economy and digitisation);
- **define an impact framework** that sets out what the spearheads should try to achieve in each area and how this can be measured; and
- **identify potential funding sources** (regional, national, EU and private) that could be made available for the scheme in each priority area.

To assist the steering group in defining the priority areas the following activities should be carried out:

- Map existing research infrastructures and the funding landscape across the seven sub-regions;
- Carry out a needs assessment among businesses in the region and set up processes to identify and facilitate sharing of good practices across the seven sub-regions.

Once the priority areas have been agreed, the steering group will run **information and awareness-raising** sessions in each of the sub-regions to inform potential applicants for the spearhead scheme of the objectives of the programme and the next steps.

The second phase consists of running a call for expressions of interest in the second half of 2019 to select the spearhead clusters to be funded. In this first run of the programme, only 1-3 such initiatives should be funded (depending on available funds). For each application, the steering group will analyse eligibility (in terms of the stakeholders who have submitted the expression of interest) and the strategic plans of the proposed spearhead.

We propose that each application should be **supported by a variety of stakeholders, including businesses from across the value chain**, users and research, cluster and regional policymakers. The group of stakeholders should be drawn from at least two of the sub-regions. Each of these stakeholders will need to part-fund the activities of the spearhead to ensure full commitment. In the medium to long term, it is suggested – as in Flanders, where such spearheads are already in operation – that the public contribution to each initiative should not exceed 50% and that the stakeholders together raise a minimum of EUR 250 000 per year (exclusive of the public contribution) to finance the work of the spearhead.

Each application needs to be supported by a 10-year strategic plan. This should demonstrate how the proposed spearhead will facilitate the industrial transition of East & North Finland by addressing one or more of the four challenges set out in this policy brief, i.e. exploitation of ICT capabilities to move to higher added value in existing value chains; access to innovation infrastructure for business; more adequate funding instruments that span the seven sub-regions; and cross-regional outreach to SMEs and better business support services. The strategic plans should, for each of the challenges they aim to address, spell out specific activities and inputs, define expected impacts and associated key performance indicators (KPI's).

Phase 3 of the programme consists of the setting up and launch of the selected spearhead(s). This includes disbursing the agreed funding, which should be earmarked for both the organisation and management structures of the spearhead (i.e. office, administration and staff) and the activities proposed in the expression of interest. As set out in Chapter 3, the focus of the activities will be on innovation systems services and business support services that address the four regional challenges set out in Chapter 2.

Phase 4 consists of regular monitoring, and periodic monitoring and evaluation to understand how the spearhead is progressing and whether it is having the expected impact so that appropriate changes can be made to the activities or the structure of the spearhead to ensure it delivers on its strategic plan. Following a successful evaluation of the scheme (e.g. mid-term, around 2024) another call for expression of interest can be launched and the programme can be rolled out to additional priority areas or tailored to updated regional challenges.

4.1.2. Benefits and Costs

The result of the spearhead should be that, in a small number of priority areas, there is a **systematic effort to work across all seven sub-regions of East & North Finland** to tackle joint challenges in relation to the region's industrial transition. The spearhead topics were chosen by participants in the policy review meeting based on their understanding of the most important thematic areas of strength and improvement in East & North Finland. These correspond to the themes and the megatrends identified in all other regions, i.e. digitisation, the circular economy and sustainable energy. The three themes have in common that they cut across traditional industry sectors to encompass, together, a large proportion of the industrial activity in all seven sub-regions of East & North Finland.

The main benefit of the proposed spearhead cluster scheme is that it provides a structured **layer to connect and build on existing bottom-up cluster and regional development activity by pooling the region's resources**. In addition, an important political benefit of the proposed scheme is that, in the priority areas for the region, East & North Finland stakeholders will be able to act jointly at national, international and European level, and thereby make their voices heard in a more coherent and significant manner.

Finally, the spearheads will allow cross-regional activity to take place in a structured manner, including elements that are seen as important but can only be achieved at the level of the region as a whole, such as **regional branding** in the priority areas.

In terms of **costs**, as pointed out above, it is expected that each spearhead will cost up to EUR 500 000 per year of which – in the medium term – about 50% would be financed via public resources (i.e. EUR 250 000 per year in public funding)[4]. While the majority of the resources would take the form of grants, it is expected that over the 10-year period of the strategic plan, part of the funding would eventually come from own resources.

The funds would be used to create an organisational structure for each spearhead (with office premises and staff) to:

- **coordinate activities** among the members of the spearhead;
- **create a critical mass** to finance joint activities of a cross-regional nature; and
- **develop joint networks** that stretch beyond the confines of East & North Finland.

While it is expected that a significant share of the resources in the first year would be spent on set-up activities, funding for the spearheads would eventually also incorporate innovation support interventions, similar to the innovation voucher scheme proposed in Section 4.2.

4.1.3. Risks, obstacles and challenges

In terms of risks and challenges in the implementation of the spearhead cluster schemes, the following are worth highlighting:

1. **There is insufficient systematic cooperation between the seven sub-regions** of East & North Finland and a need to develop a structured way of working together practically. The regions have different economic and administrative structures and they have limited resources. However, the positive experience of the seven sub-regions with the ELMO process (see below), which involved a joint cross-regional task force to engage in the AMI/OECD activities and

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[4] This figure is based on the spearhead cluster initiative in Flanders. Of course, the details of the initiative in East & North Finland are different but the Flemish example provides an estimation of orders of magnitude that will need to be refined depending on the activities of the spearheads in East & North Finland.

develop a joint smart specialisation strategy, and of the East & North Finland representation to the European Union are successful building blocks around which the spearhead programme could be developed.

Box 2: The ELMO process in East & North Finland

The seven regions of East & North Finland have extensive experience in collaborating with each other: for instance, each year an 'East- and North-Finland Summit' is organised with a rotating chair (in 2018 the chair was Lapland and the Summit was held in Rovaniemi in August).

This initiative is based on the realisation that, despite differences in regional characteristics and priorities, there are common challenges faced by the seven sub-regions of East & North Finland and there is a need – and strong willingness – to find common ground for cross-regional cooperation. This need comes from the fact that each region on its own cannot successfully tackle the challenges identified in the PEST and SWOT analysis and there is a need to pool resources and political might.

The ELMO process (ELMO = Finnish abbreviation for "Pilot exercise for industrial transition") is an attempt to make such cooperation more systematic. This governance process was trialled as part of the present strategic meeting with regional representatives from each region, led by Lapland (chair of East- and North-Finland in 2018). Very short and clear decision lines were put in place between that Task Force and the regional authorities (i.e. governors), which made it possible rapidly to discuss, test and validate findings and he direction of the work.

2. The second important challenge relates to the need for adequate **funding** to carry out the planned activities. A clear funding plan is required that sets out how the spearhead cluster work can be made sustainable in the long term. Funding is likely to come from a mix of sources starting with public sources (e.g. ERDF/other EU sources, or national/regional sources, such as Business Finland or national ministries). Over time, as the spearhead clusters establish themselves and start providing business and innovation system services, part of the funding requirement can be met through private sector sources (business organisations, companies).

3. While not every sub-region will be involved in all spearheads, there needs to be a fair **distribution of funding and involvement** in the activities across the whole range of activities covered by the strategy to maintain political and financial support from all seven sub-regions. It is important that the participation of the sub-regions in each spearhead be based on economic factors – not political ones. To ensure effective and efficient delivery, the spearheads will need to be built around a "variable geometry" that brings together stakeholders from across East & North Finland where this makes sense. However, the launch of up to three spearheads in the initial call (appropriate funding permitting), would allow all sub-regions to maintain involvement in at least one of the selected schemes. In addition, all sub-regions should be represented on the spearhead steering group.

4. Each spearhead will need to have a **management and organisational structure** to allow for effective delivery of the expected services/activities and to maintain clear reporting and accountability lines. It is important that appointments to the management team of each spearhead bring together both the right skills and relevant political and economic connections to the East & North Finland sub-regions. This will ensure that the spearheads remain coherent with priorities at both the East & North Finland and the sub-regional levels.

4.2. Set up a pilot project: Digitisation and Circular Economy enhancing the Bioeconomy in East & North Finland applied to the Tree, Wood & Timber Value chain

4.2.1 Description

Alongside the spearhead cluster scheme, we also propose creation of a **smaller, shorter term pilot project** in one of the key sectors for the entire region that has the potential to bring together actors from across the seven sub-regions. The pilot project takes inspiration from the European Commission's INNOSUP-1 programme for "cluster facilitated projects for new industrial value chains".[5]

As mentioned in Chapter 3 the regional industrial modernisation strategy sees such targeted interventions as playing a complementary role to the spearheads, which are longer term and broader in nature but limited to a small number of key strategic priority areas in East & North Finland. This set-up, with spearheads together with more targeted interventions, is similar to Flanders where the spearheads work alongside so-called Innovative Business Networks (IBNs). However, eventually it may also make sense to integrate these targeted interventions in the wider spearhead cluster scheme.

In this first pilot (which aims to take advantage of the EUR 300 000 grant made available by the European Commission (DG REGIO) as a follow-up to the AMI process) we propose to focus on establishing a **cross-regional voucher system in the area of Digitisation and the Circular Economy in order to enhance the bioeconomy in East & North Finland**, with a specific focus on the Tree, Wood and Timber value chain. The pilot action focuses on:
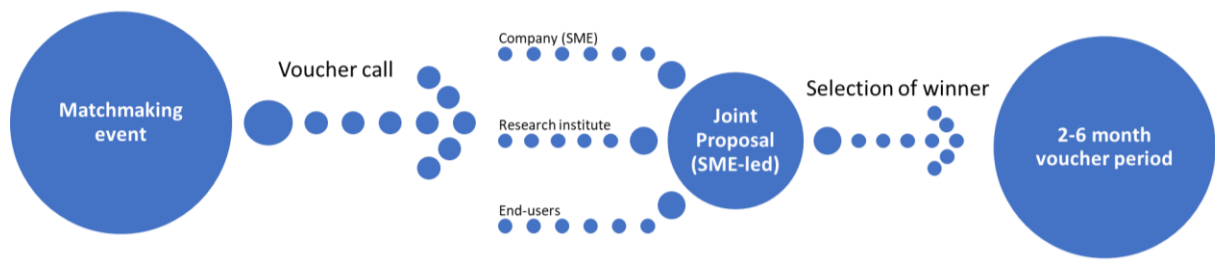
- **Improved automation and digitisation** of (segments of) the value chain (Advanced manufacturing);
- **New smart, digital solutions** (new sensors, real-time monitoring of forestry biomass, digital platform for sharing and bundling of side streams, AI applied to harvesting and logging etc.);
- **Promotion of natural products** to (potential) end-users (wood construction, drugs, medicines and cosmetics, energy, textile, food, inorganic chemistry etc.);
- Improved/scaled-up **industrial symbiosis** though better valorisation of side streams, such as wood chips, tree bark, saw dust, bioethanol, lignin, turpentine, CO^2, bio-composites and bio-plastics, etc.;
- Promotion/upscale of (existing and new) solutions for **water treatment and recycling.**

The aim of the pilot is to support small SMEs and micro-companies (especially scale-ups) from the seven East & North Finland sub-regions. This, however, will not prevent larger SMEs or large companies being involved as 'testbeds' or lead users testing the new applications/processes/products/services. Figure 9 sets out the key elements of the proposed voucher pilot project.

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[5] See here for more details on INNOSUP-1:
http://ec.europa.eu/research/participants/data/ref/h2020/other/guides_for_applicants/h2020-guide-note-innosup-1-18-20_en.pdf

Source: EOCIC, based on AMI report

4.2.2 Benefits and Costs

As a pilot project, the first objective of the proposed voucher scheme is to act as a proof of concept, lead example and learning point for future similar interventions in other sectors. The first results of the scheme should be available by end-2019. Following an analysis of its impact and success, the programme could be rolled out to other sectors in 2020.

At the same time, the voucher scheme is expected to make a tangible difference to the supported companies and make a contribution to addressing each of the challenges identified in Chapter 2. It will do this by focusing on improved **automation and digitisation** in an existing important value chain for the region through new smart, digital solutions (e.g. new sensors, real-time monitoring, digital platform for sharing and bundling of side streams, AI applied to harvesting and logging, etc.).

The scheme will promote the use of **natural products** – one of the key resources across East & North Finland - in e.g. wood construction, drugs, medicines and cosmetics, energy, textile, food, inorganic chemistry – and lead to **better valorisation of side streams** such as wood chips, tree bark, sawdust, bioethanol, lignin, turpentine, CO_2, biocomposites, bioplastics etc.

In terms of costs, funds for the pilot voucher scheme will be spent entirely on the innovation vouchers themselves (i.e. 10 innovation vouchers at up to EUR 30 000 each) based on clear eligibility requirements. Should the pilot be successful, similar innovation vouchers will need to be financed through existing regional resources in future.

4.2.3 Risks, obstacles and challenges

Key risks and obstacles to the pilot scheme relate to its practical operation and timeline as well as the level and sustainability of funding.

1. The **timeline** for the creation of the pilot voucher scheme is tight. A first call is expected in February and first awards need to be made in March. While this will allow the voucher scheme to complete within the year, it will leave little time for companies to identify the right partners for their expressions of interest and to develop innovative concepts that would not have taken place without the availability of the vouchers. However, a matchmaking event is planned for the end of January to bring together potential applicants. In addition, some of the relevant regional stakeholders across the seven sub-regions were consulted as part of the ELMO, AMI and EOCIC processes and they are already aware of the proposed pilot scheme.
2. The proposed **funding** level for the vouchers is low. Only EUR 300 000 are available for the vouchers and it is expected that 10 expressions of interest will be funded for an average of EUR 30 000 each. While this level of funding could make a difference to the smallest companies,

it is important that the expressions of interest clearly identify how they will use this limited amount of funding to leverage further investments to be made by the awarded businesses. In addition, for the pilot (if successful) to be rolled out to other sectors in future, additional funding streams will need to be identified at the regional level.

5. Roadmap and action plan with activities, timeframe and actors

To deliver the specific recommendations set out in Chapter 4, the table below summarises the actions required, their timing and the relevant action owner.

Table 2: Action plan

Action	Timing of the action	Owner of the action
Create a spearhead cluster scheme		
Set up steering group	January 2019	ELMO task force
Agree thematic areas	February 2019	Steering group
Define impact framework	March 2019	Steering group (together with external expert advice)
Identify funding	February-June 2019	Steering group
Selection of 1-3 spearheads	June-August 2019	Steering group
Assess strategic plans / impact	June-August 2019	Steering group
Make financial commitment	August 2019	Regional policymakers, private sector funders
Disburse funding	September 2019 (First year funding should be disbursed in instalments over a 12-month period)	Regional policymakers, private sector funders
Set up organisational structure / spearhead cluster	September-October 2019	Selected spearhead organisation
Deliver strategic plans	September 2019-September 2020 (first year, and then to 2029)	Spearhead cluster
Apply indicator framework	September 2019-September 2020 (first year, and then to 2029)	Steering group
Learn lessons	September 2020	Steering group
Replicate	September 2020	Steering group
Set up pilot voucher project		
Matchmaking event	January 2019	ELMO task force
Voucher call (1)	February 2019	ELMO task force

Action	Timing of the action	Owner of the action
Selection of winners (call 1)	March 2019	ELMO task force
Delivery of the activity financed by the voucher (call 1)	March 2019-September 2019	Beneficiary
Voucher call (2)	April 2019	ELMO task force
Selection of winners (call 2)	May 2019	ELMO task force
Delivery of the activity financed by the voucher (call 2)	May 2019-November 2019	Beneficiary
Apply indicator framework	March 2019-December 2019	ELMO task force
Learn lessons	September 2019-December 2019	ELMO task force
Replicate / scale-up	January 2020	ELMO task force

European Observatory for Clusters and Industrial Change

The European Observatory for Clusters and Industrial Change (#EOCIC) is an initiative of the European Commission's Internal Market, Industry, Entrepreneurship and SMEs Directorate-General. The Observatory provides a single access point for statistical information, analysis and mapping of clusters and cluster policy in Europe, aimed at European, national, regional and local policy-makers, as well as cluster managers and representatives of SME intermediaries.

The aim of the Observatory is to help Europe's regions and countries design better and more evidence-based cluster policies and initiatives that help countries participating in the COSME programme to:

- develop world-class clusters with competitive industrial value chains that cut across sectors;
- support Industrial modernisation;
- foster Entrepreneurship in emerging industries with growth potential;
- improve SMEs' access to clusters and internationalisation activities; and
- enable more strategic inter-regional collaboration and investments in the implementation of smart specialisation strategies.

In order to address these goals, the Observatory provides an Europe-wide comparative cluster mapping with sectoral and cross-sectoral statistical analysis of the geographical concentration of economic activities and performance, made available on the website of the European Cluster Collaboration Platform (ECCP) [6]. The Observatory provides the following services:

- **Bi-annual "European Panorama of Clusters and Industrial Change"** that analyses cluster strengths and development trends across 51 cluster sectors and 10 emerging industries, and investigates the linkages between clusters and industrial change, entrepreneurship, growth, innovation, internationalisation and economic development;

- "**Cluster and Industrial Transformation Trends Report**" which investigates the transformation of clusters, new specialisation patterns and emerging industries;

- **Cluster policy mapping** in European countries and regions as well as in selected non-European countries;

- "**Regional Innovation system Scoreboard for Clusters and Industrial Change**" that identifies and captures favourable framework conditions for industrial change, innovation, entrepreneurship and cluster development;

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[6] European Cluster Collaboration Platform, *Official Website*. Available at: https://www.clustercollaboration.eu/.

- **Updated European Service Innovation Scoreboard**[7], that provides scorecards on service innovation for European regions;

- **"European Stress Test for Cluster Policy",** including a self-assessment tool targeted at cross-sectoral collaboration, innovation and entrepreneurships with a view to boosting industrial change;

- **Customised advisory support services** to twelve selected model demonstrator regions, including expert analysis, regional survey and benchmarking report, peer-review meeting, and policy briefings in support of industrial modernisation;

- **Advisory support service to European Strategic Cluster Partnerships**, in order to support networking between the partnerships and to support exchanges of successful practices for cross-regional collaborations and joint innovation investments;

- **Smart Guides** for cluster policy monitoring and evaluation, and for entrepreneurship support through clusters that provide guidance for policy-makers; and

- **Brings together Europe's cluster policy-makers and stakeholders** at four European Cluster Policy Forum events, European Cluster Days, and at the European Cluster Conference in 2019 in order to facilitate high-level cluster policy dialogues, exchanges with experts and mutual cluster policy learning. Two European Cluster Policy Forums took place in February and April 2018, and the European Cluster Conference is scheduled for 14 to 16 May 2019 in Bucharest (Romania).

- Online presentations and publications, discussion papers, newsletters, videos and further promotional material accompany and support information exchanges and policy learning on cluster development, cluster policies and industrial change.

More information about the European Observatory for Clusters and Industrial Change is available at: https://www.clustercollaboration.eu/eu-initiatives/european-cluster-observatory.

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[7] Previous versions for 2014 and 2015 were developed by the European Service Innovation Centre (ESIC), see http://ec.europa.eu/growth/tools-databases/esic/index_en.htm.

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