The sustainable use of natural resources and smart technological solutions promote GROWTH and WELL-BEING in the entire East and North Finland.
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The regions of East and North Finland (ENF) have long traditions in co-operation. The area as a whole is one of EU’s Northern Sparsely Populated Areas\(^1\), which have also been viewed as a special target area of territorial cohesion in the regional and structural policies of the EU. Growth is spurred in the ENF regions by the abundant natural resources, untapped potential and specialised top-notch expertise found in the area. Each region has its own fields of specialisation, along with smart specialisation strategies for these fields. The common challenges of the entire ENF are associated with the ageing of the population, economic restructuring, supply of skilled labour force, and availability of services in remote areas.

The regions have established common structures, the most essential of which for regional visibility and cohesion policy is the East and North Finland EU Office in Brussels. In early 2018, ENF was selected through an application process as one of European Commission’s Regions in industrial transition (ELMO) pilot areas that are shaping the policies of the upcoming EU programming period. The ELMO co-operation has launched a new phase in the development of ENF collaboration. The recognition of common strengths and complementary competence reinforces collaboration across regional borders. ELMO work will continue until the year 2023. The process is built on a strategic analysis drawn up with the Commission’s experts, and the analysis has also served as the basis for the East and North Finland in industrial transition – smart specialisation strategy.

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The East and North Finland in industrial transition – smart specialisation strategy 2019–2023 is based on the pilot project "Regions in Industrial Transition" launched by the European Commission in 2017. The purpose of the project was to develop new procedures that are based on smart specialisation to support the industries, growth and employment. The results of the pilot are used in the preparation of the upcoming EU financial period. All seven regions from the ENF area took part in the pilot by developing smart specialisation through the Industrial transition (ELMO) pilot project.

The East and North Finland in industrial transition – smart specialisation strategy is the result of the first stage of the ELMO pilot project. The strategy is aimed at strengthening the co-operation of the ENF area, both across regional borders and internationally. The strategy is based on common priorities that have been collected from the smart specialisation strategies of the ENF regions with experts of the European Commission. The identified common topics are biorefining and new products, sustainable extractive industry, chemical industry, sustainable tourism and appeal, and manufacturing industry.

Based on these identified topics, common smart specialisation priorities have been established for the ENF area: **Clean technologies and low-carbon solutions**, **Industrial circular economy** and **Digitalisation, innovative technologies and production processes**. The fourth priority identified in the process is the **development of joint cluster work** in the ENF area.

The industries of the ENF area are strongly focused on the utilisation of natural resources and conditions. For this reason, the maintenance of sustainable development is of vital importance for the future of the industries. Environmental expertise is also a growing industry in itself. The utilisation of industrial side-flows promotes the resource-efficient and sustainable use of natural resources. The ENF area is already a pioneer in the development of solutions for an industrial circular economy, which is one of the most significant growth sectors in the area.

A key element in generating business for enterprises is, regardless of the industrial sector, the utilisation of digital solutions. By encouraging companies to embrace digitalisation, it is possible to boost production and enhance the use of raw materials, and to meet the challenges of globalisation. Furthermore, companies and RDI-operators are encouraged to take part in cross-regional collaboration, so that the benefits of the innovation platforms and specialised competence found in the area can be maximised.

The implementation of the East and North Finland in industrial transition – smart specialisation strategy is based on joint efforts. The regions are responsible for coordinating the implementation of the strategy, and they direct funding to the common smart specialisation priorities and promote the creation of cross-regional development projects.
1. East and North Finland co-operation

1.1. Facts and figures

POPULATION
1.3 MILLION
= 23.5%
of the Finnish population

TOTAL SURFACE AREA
226,449 km²
= 69.9%
of the total surface area of Finland

LAND AREA
203,487 km²
= 66.9%
of the total land area of Finland

WATER AREA
32,963 km²

INHABITANTS
6.4
/ km²

OF THE TOTAL SURFACE AREA
OF FINLAND

OF THE FINNISH EXPORT

OF THE GROSS DOMESTIC PRODUCT OF FINLAND

MINES
6 METALLIC MINERAL MINES
13 INDUSTRIAL MINERAL MINES

FOREST AREA
77% of the land area
1251 million cubic metres

ANNUAL GROWTH
60.5 million cubic metres/year

TOTAL DRAIN
44 million cubic metres/year

TOURISM
40% of the national share, annual turnover € 1.76 billion

LARGEST SECTORS IN THE AREA
% OF THE TOTAL TURNOVER

INDUSTRY
35%

WHOLESALE AND RETAIL TRADE
25%

CONSTRUCTION
10%

TRANSPORT AND STORAGE
5%

Other sectors
25%

DISTRIBUTION OF THE INDUSTRY
% OF TURNOVER

31% Metal refining and metal products

25% Further processing of wood

10% Computers, electronic and optical devices

9% Food products and beverages

EDUCATION AND RESEARCH

3 UNIVERSITIES

3 UNIVERSITY CONSORTIA

7 UNIVERSITIES OF APPLIED SCIENCES

OVER 20 VOCATIONAL INSTITUTES

OVER 10 SEPARATE UNITS OF NATIONAL RESEARCH INSTITUTIONS
LAPLAND
Lapland is the beacon of the Arctic region, where growth and well-being are based on the sustainable refining of natural resources and conditions. Lapland is a pioneer in Arctic circular economy and Arctic sustainable tourism.

NORTHERN OSTROBOTHNIA
Northern Ostrobothnia is an attractive hub of top-level technological and ICT expertise. The region’s strengths lie in the fields of bioeconomy, metal industry, wood building and RDI-expertise in health technology.

CENTRAL OSTROBOTHNIA
Central Ostrobothnia is known for the Biovalley area. The abundant natural resources of the area have become the core for a diverse expertise cluster for the chemical, bioeconomy and mineral industries, with strong connections to international trade.

KAINUU
Kainuu has abundant and versatile natural resources, an attractive environment for living and travelling, and the skills to utilise these assets as products and services. The industrial spearheads in Kainuu are bioeconomy, extractive industry, tourism, metal industry and ICT and electronics.

POHJOIS-SAVO
Pohjois-Savo is the producer of the world’s leading machine and energy technology products and services. In addition, the area’s strengths include a versatile wood industry, significant activities in the food product industry and top-notch expertise in welfare technologies.

NORTH KARELIA
In North Karelia, smart and sustainable growth is built on innovative technologies and materials, and novel solutions in the field of forest bioeconomy. In fact, forest bioeconomy has become the core for an internationally recognised expertise cluster in North Karelia.

SOUTH SAVO
The global strengths of South Savo, namely forests, food and water, create a foundation for smart specialisation and give companies a competitive edge and a chance for international growth.
1.2. Shaping the future together

The area of East and North Finland is one of the most sparsely populated areas in the European Union. Shared advocacy and development work create a foundation for joint efforts.

The great area of East and North Finland (NUTS 2) forms a national planning area. The regions of East and North Finland work together to prepare proposals for the regional implementation of the EU Cohesion Policy. Several factors, such as sparse population, abundant natural resources, long distances and remote location from the European main market areas, support the viewing of East and North Finland as a single entity. For decades now, the East and the North have been perceived as an area that differs from the rest of Finland. East and North Finland (ENF) has drawn up a regional plan for the current national Sustainable growth and jobs 2014–2020 – Finland’s structural funds programme. The plan highlights the special characteristics of ENF and focus areas in the implementation of the programme.

In late 2017, the European Commission’s Directorate-General for Regional and Urban Policy launched an application process for the pilot project "Regions in Industrial Transition", aimed at supporting the preparation of the upcoming EU Structural Funds programming period (2021–2027). ENF was chosen to be one of the ten regions and two member states that participate in the pilot project. ENF implements the pilot under the title of Industrial transition (ELMO).

With this pilot, the European Commission is looking for new ways to develop industries in Europe with the aim of promoting growth and employment. The core of the pilot consists of smart specialisation that leads the way to discovering regional strengths and characteristics and that is promoted through collaboration across organisational boundaries.

The ENF area applied the pilot project to enhance internal collaboration within the area and to create visibility for the area’s strengths, both nationally and at the EU level. The East and North Finland in industrial transition – smart specialisation strategy is the result of the ELMO pilot project.

MILESTONES OF THE INDUSTRIAL TRANSITION PILOT 2017 – 2019

1. December 2017 – February 2018
   Selection and launch of the pilots

2. March – May 2018
   Forming the Commission’s regional consultation group

3. May – November 2018
   Review and analysis of the areas

4. October 2018 – January 2019
   Industrial transition – Smart specialisation strategy

5. 2019
   Launch and testing of the strategy implementation

6. Utilisation of EU instruments

KEY OBJECTIVES

- Preparing for the labour market of the future
- Expanding innovation activities
- Transition toward low-carbon energy
- Promoting entrepreneurship and industries
- Inclusive growth

SOLUTIONS FOR THE COMMON CHALLENGES

- Reinforcing cluster collaboration
- Internationalisation
- Supporting innovation activities
- Improving the vitality of enterprises
- Increasing value chains

REVIEW OF THE COMMON CHALLENGES

- OECD workshops
- Expert assistance provided by the Commission

2. East and North Finland as an active operator

2.1. A constantly changing global operating environment

Development in the area is steered by anticipating the future and preparing for it. Assessing the impacts of globalisation and acknowledging the special regional characteristics create the foundation for preparing for the future. In 2018, five global challenges were studied in the ELMO pilot project.

FUTURE JOBS
The constantly evolving technology requires quick actions in all industrial sectors. Job contents are changing all the time, which requires adaptation skills from employees. Job descriptions change and become mixed up, and traditional occupations disappear. Specialisation is required, but at the same time workers must be able to apply their skills in a multi-professional manner and in different situations. Jobs require constant learning of new things. The ability to anticipate and, when the anticipation leads to employment, tap into the job when planning for the future will be highlighted in regions with an ageing or reducing population. We need bold and quick solutions to turn this trend around.

EXPANDING INNOVATION ACTIVITIES
Innovations and supporting innovation work have been at the core of EU funding throughout Finland’s membership period. The building of innovation platforms has received systematic financing in ENF. The goal has been to develop new business and support small and medium-sized enterprises with the aim of producing new or improved products, processes and services. The work has been guided by, among others, the regional smart specialisation strategies. In the next stage, investments must be made in development work in which the indicators of success are based on the benefits gained by enterprises. Innovation activities must be combined with value chain-oriented thinking that joins operators within the ENF area with each other and with EU-level networks.

MOVING TOWARD LOW-CARBON ENERGY
The ambition to achieve a low-carbon economy is driving ENF toward decentralised production of renewable energy, improved energy-efficiency and enhanced elasticity of demand. The biggest challenge in ENF are the long distances. For this reason, it is important to invest in renewable fuels in the transport sector. Public operators have a significant role in the development of a low-carbon society, for example, through public procurements or land-use guidance or by enabling pilot projects that promote the low-carbon ideology. The cutting of carbon dioxide emissions and increasing of carbon sinks enable sustainable development and are incorporated as central values in all development work.

PROMOTING ENTREPRENEURSHIP AND SMES
The economy is based on a growing business sector that maintains and offers new jobs. While ENF is the centre of major industrial activities, it also faces the challenge of an unbalanced SME sector. 96% of all ENF companies are microenterprises, 95.5% of which employ less than 5 persons. The challenges include boosting industrial growth and improving competitiveness. At the same time, many increasingly specialised and growing sectors suffer from labour shortages (for example, the tourism and metal industries and high-tech tasks that require specialised skills). Companies must be encouraged to reform and develop themselves, and they must be offered attractive growth environments that utilise the best available skills and expertise.

3 ENF presentation Orleans, Matti Muhos
2.2. East and North Finland relies on its strengths

Nature, the refining of natural resources, and strong technological expertise have created the foundation for economic development in East and North Finland. Complementary competences, such as ICT, other digital, chemical and technological expertise, support the traditional industries and are also growing business sectors themselves. Many major industrial companies have expanded their operations to the service sector, and in their wake, new kind of businesses have emerged, for example, in the industrial service and environmental business sectors.

The sustainable refining of natural resources and conditions is one of the backbones of ENF economy, both now and in the future. The significance of natural resources in the Nordic areas has been emphasised in the EU in the past few years. At the same time, the region’s unique nature attracts tourists from around the world. Whether we are looking at production activities or the development of services, increasing the value added is the common denominator and the general foundation for the creation of sustainable operating methods. This perception is highlighted in the smart specialisation strategies of the ENF regions. The regions have invested in the development of a versatile economic structure, and at the same time searched for distinct smart specialisation choices to boost the regional competitiveness.

Tourism is a rapidly growing industry that creates business and vitality also outside the growth centres, thus enabling equal development. Thanks to tourism, the ENF area is now more easily accessible. A stable and versatile SME sector is a prerequisite for sustainable economic development. The abundance of renewable natural resources in

INCLUSIVE GROWTH
The starting point for developing the ENF area is to enable industrial activities in both rural and urban areas. The rapid transformation of working methods in the traditional sectors and the ageing of the working-age population have had a significant impact on the employment rate in the area. East and North Finland suffers from a skilled labour shortage, but there are also areas with high levels of unemployment. The unemployment rate in ENF has remained above the Finnish average, and it is higher in all age classes. A particular cause for concern is the rapid increase of long-term unemployment among young people. The ENF area has developed good solution models that should be utilised comprehensively in the entire area. When creating jobs for the future, we must find the best ways to utilise all of the local labour resources and search for ways to increase the attractiveness of the area.

COMMON MEASURES FOR SUCCEEDING IN THE GLOBAL COMPETITION AND ANTICIPATING CHANGES IN THE OPERATING ENVIRONMENT:

• Developing competitive and attractive industrial value chains – utilising ICT and digital solutions
• Utilising technological and service expertise in enterprises – increased networking and improved availability of regional innovation platforms
• Integration of different financing sources – seeking bold pilots and solutions
• Creating an attractive operating environment for growing enterprises and supporting networking – cluster-type solutions and more efficient service for the business
• Marketing ENF as a single attractive growth area – increasing awareness and attracting skilled labour force
East and North Finland creates great potential for innovative product and service production that is based on the use of these resources, and that is in high demand in the global market, as well.

The availability and efficient utilisation of skilled labour force are important factors in enabling industrial growth. The introduction of novel technologies boosts the efficiency and competitiveness of businesses, but it also poses challenges for the availability of workers. By securing and enhancing the competence base in the area, local enterprises can be spurred to new growth.

**SMART SPECIALISATION PRIORITIES IN EAST AND NORTH FINLAND PER REGION**

**LAPLAND**
1. **Advanced Arctic business:**
   Arctic circular economy, Arctic sustainable tourism, increasing the refining of natural resources, new emerging industries
2. **Arctic expertise, renewal and innovations:**
   Arctic innovation platforms, education solutions and internationality
3. **Regional ecosystem as the base for internationalisation:**
   a renewing regional ecosystem, clustering and international networks
4. **Cross-cut:** innovative activities, digital technology, low-carbon solutions, energy-efficiency

**NORTHERN OSTROBOTHNIA**
1. **ICT and software production**
2. **Metal industry and refining wood materials**
3. **Clean technologies, also energy**
4. **Health and welfare sector**

**KAINUU**
1. **Measurement technology, games and simulators and metal industry innovations**
2. **Process and environmental monitoring in the bioeconomy and mining industries, and forest, food and blue bioeconomy innovations**
3. **Active tourism and health, exercise and sports innovations**
4. **Cross-cut:** KET-applications, robotics, automation, data centre services, artificial intelligence and virtual reality, circular economy solutions, low-carbon ideology and climate responsibility

**CENTRAL OSTROBOTHNIA**
1. **Chemical industry,** battery chemicals in particular
2. **Biomass refining and bioeconomy**
3. **Renewable energy**
4. **Circular economy**
5. **ICT**

**POHJOIS-SAVO**
1. **Machine and energy technology**
2. **Wood processing**
3. **Food products**
4. **Welfare technology**
5. **Tourism**
6. **Cross-cut:** Water and biorefining

**NORTH KARELIA**
1. **Forest bioeconomy,** e.g. decentralised biorefining, new bioproducts, management of forest information, renewable energy, wood building, multiple forest use
2. **Technologies and materials,** e.g. photonics, chemical material expertise, processing expertise in the extractive industry, metal and machine workshop products
3. **Cross-cut:** industrial renewing, agile innovation activities, public sector as a test and growth platform, networks and partnerships among top-level experts

**SOUTH SAVO**
1. **New forest biomass products and production processes**
2. **Clean water technologies and concepts**
3. **Cleanliness and safety of the food chain**
3. Industrial transition – smart specialisation strategy

3.1. Common objectives and vision for 2023

The common strategy shows the way and encourages the business sector toward stronger regional, interregional and European collaboration. The regions of East and North Finland are working together to build an attractive operating environment where companies can work and grow. Openness and collaboration encourage operators to find innovative solutions and make bold choices that cross the traditional boundaries.

The regions of the ENF area are investing in joint efforts to identify and recognise complementary specialised skills. The goal is to develop new practices that help enterprises to utilise the expertise and versatile network of innovation platforms found in the entire ENF area. ENF aims at strengthening and expanding the jointly identified value chains and trying out new ways to find feasible development solutions. The regions must create an operating environment that promotes the growth and development of enterprises. The regions must provide encouragement for the shaping of new and developing entrepreneurship⁴, support companies with networking in all possible ways, and help enterprises to meet the requirements and challenges of the fourth industrial revolution.

⁴ Entrepreneurial Discovery Process, EDP
Although the strategic focus is on developing internal collaboration within ENF, the process also revealed a need to reinforce networking in the EU and on a broader international level. It is essential to be seen together in the EU forums. The most important common tool here is the East and North Finland EU Office in Brussels, but significant local investments are also needed to enforce internationalisation in practice.

### 3.2. Strategic choices lay the foundation for collaboration

The choices of the East and North Finland in industrial transition – smart specialisation strategy support the regional growth that creates a basis for sustainable development and stability. In addition, cross-cutting competences were identified during the strategy work, in which the regions have versatile expertise, knowhow and innovation platforms. Furthermore, investments are needed to create value chains and increase collaboration.

The smart specialisation choices of the ENF area emphasise the development of innovation platforms and structures as support for the industries. In addition to investing in the development of the central growth sectors in the area, work has been done to create a foundation for the growth and development of entirely new businesses and industry. The cross-cutting competences, such as ICT and digital technologies, clean technologies and industrial circular economy, create a possibility for fresh multidisciplinary development and strengthen the economic structure of the entire ENF area.

The development of technology creates new needs, and also allows for the emergence of entirely new product and service concepts. The new-generation enterprises are characterised by a high degree of specialisation, which serves the value chains by generating versatile products and services. In practice, more and more companies are operating at industrial interfaces, where the integration of services and technologies is continuously generating new products. Industrial growth is based on evolving value chains that require a functional business environment. The development of cluster work and ecosystems creates a growth platform for enterprises.

### COMMON CHOICES IN SMART SPECIALISATION

![Mutually identified competences](image)

- Clean technologies and low-carbon solutions
- Industrial circular economy
- ICT and digitalisation, innovative technologies and production processes

The strategy supports the mutually identified growth sectors

**GROWTH SECTORS**

- Biodeconomy and new products
- Chemical industry
- Sustainable mining
- Manufacturing industry
- Sustainable tourism and appeal

**MODERN CLUSTER WORK**

guides collaboration
3.3 Priorities support the implementation of the strategy

The common priorities of East and North Finland consist of competences that support and cut across the growth sectors. In addition, the promotion of cluster work was named a priority to support the establishment of common work procedures and the utilisation of top-level expertise. By increasing value added with the principles of sustainable development, we can lay a foundation for maintaining and increasing regional well-being.

3.3.1. Competences as the basis for collaboration

In the process of setting the common strategic priorities, the regions wanted to highlight cross-cutting and complementary competences. The cross-cutting competences form a base for the common development priorities in the implementation of the strategy. The ENF regions possess specialised expertise, technology and business activities associated with these themes. Furthermore, they create the best possible foundation for ENF collaboration that uses the existing top-level expertise to develop industries across the borders and industrial sectors. Operating at different interfaces and the cross-cutting approach create an ideal growth platform for emerging industries that draw on the traditional business sectors as well as on cross points of sectors.

**PRIORITY I: CLEAN TECHNOLOGIES (CLEANTECH) AND LOW-CARBON SOLUTIONS** are cross-cutting themes in the business. The industries valued by the ENF regions are built on the management and maintenance of development and the sustainable use of natural resources and conditions. The regions have become centres for specialised expertise and environmental business that offer customised competence and technological solutions for environmental challenges, energy issues and sustainable use of natural resources.

**PRIORITY II: INDUSTRIAL CIRCULAR ECONOMY** forms a strong, mutually complementary competence in the entire ENF area. The utilisation of industrial side streams has created a new, rapidly growing business sector. The systematic development of efficient solutions and practices has turned several regions into nationally and even internationally respected experts. To become even stronger and more competent specialists, these regions need measures that support sustainable development. It is crucial to ensure that natural resources are used in a sustainable and resource-efficient manner in the ENF area. Developing methods for water treatment promotes the implementation of a circular economy. Circular economy has become profiled around developing the business opportunities of major industrial companies and their service operators.

**PRIORITY III: DIGITALISATION, INNOVATIVE TECHNOLOGIES AND PRODUCTION PROCESSES** are key factors in enhancing the competitiveness of enterprises. Utilising the high-tech competence found in the area creates new opportunities for both service providers and end users. All industries must undertake a renewal process. Digitalisation and new technologies will have a significant role in this reform. Businesses that utilise digital solutions grow and become internationalised at a quicker pace than others. At the national level, only 8% of SMEs utilise digital solutions, and in ENF the figure is as low as 2–3%. Innovative technologies and production processes can be used to boost the existing production and use of raw materials, thus increasing profitability.

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5 Advanced manufacturing
Common Competences
Supporting sustainable development and increasing the degree of processing

Growth Sectors
East and North Finland’s thematic strengths in smart specialisation

Innovation Platforms boost industrial growth
Education and expertise maintain growth
Financing as the foundation of growth

Smart specialisation strategy
THE DEVELOPING BUSINESS ENVIRONMENT AS THE BASIC REQUIREMENT FOR INDUSTRIAL GROWTH

Significant investments have been made in the regions of East and North Finland to develop and build innovation platforms. At best, this increases the competitiveness of the entire area.

The business development in ENF is affected, for example, by the global market economy, the national and EU policies with their regulations, and the surrounding business services and networks. As the need for specialisation increases, enterprises must also find the most suitable innovation services and development support from their own business environment.

To lead the development of smart specialisation, the ENF regions have funded the development of several dozens of innovation platforms as part of the work of different education, research and development organisations. In the strategic choices, emphasis has been placed on practices that promote the opportunities of enterprises to use innovation services across regional borders.

WOOD – FAMILIAR AND SAFE, YET FULL OF NEW POSSIBILITIES

Since the early 1970s, increment of growing stock of Finnish forests has been 65 per cent. This is mainly due to systematic forest management. Climate change has contributed with approximately one third of the increment.

77 per cent of the ENF land area is classified as forest. In fact, the locals have utilised the forests in many different ways for centuries. The globally successful Finnish forest industry has also been able to respond to market changes with, at most, a moderate delay and discover new innovations in the changing business environment.

To include also SMEs more intensely in the value chains of wood-based products, the introduction of wood-related innovations to the market was included in the ELMO pilot project. In the pilot that will be launched in 2019, SMEs are offered direct financial support. The pilot includes testing a model that is new even at the EU-level and aimed at responding more quickly to the needs of enterprises. The Commission grants the ENF area’s ELMO pilot €300,000 to be distributed among enterprises as vouchers.

CIRCULAR ECONOMY AT THE CORE OF DEVELOPING WATER INDUSTRY TECHNOLOGIES

The ENF area has generated water industry expertise, which has become the core for innovation environments that support multidisciplinary RDI collaboration and business activities. The major application areas are the water processes of industries that refine natural resources – such as the pulp and mining industries – and of communities.

The industrial needs for closing the water cycle lay the foundation for development work. This opens up doors for the establishment of new partnership networks and business models.

The regional competence hubs and clusters are specialised in, for example, risk management in processes, the development of industrially applicable cleansing techniques, solutions related to a sustainable water economy and clean environment, the use of ICT and measurement technologies, and the management and monitoring of industrial water processes. The common denominators are sustainable environment, resource-efficiency and boosting the circular economy.

ENF OPERATORS INVOLVED IN A NATIONAL BATTERY CLUSTER AND IN EU-LEVEL PARTNERSHIPS

The goal of the operators in East and North Finland is to improve the entire battery production value chain all the way from raw material procurement to the manufacturing of battery cells. In addition to raw materials, the area hosts expertise in refining, energy sector and chemical engineering. Put together, these create an excellent foundation for the development of the battery industry in Finland.

The battery industry in East and North Finland is seeing the emergence of an entire value chain that starts with the mining companies and ends with the recycling and reuse of the metals. The chemical industry and enterprises specialised in generating applications are located in the middle of the chain. Close co-operation with research institutions has increased the speed of developing new commercial procedures. There is also recycling expertise in the area, and new innovative attempts to reuse battery chemicals have already been made.

The emergence of the battery cluster is a good example of launching joint efforts, under the leadership of the regional councils, to build a value chain that joins different operators together and to link this chain to European collaboration.

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3.3.2. Modern cluster work guides collaboration\textsuperscript{6}

The development of joint cluster activities to create a more permanent operating environment was chosen as the fourth development priority. The ENF area hosts strong ecosystem-based development activities that lay a good foundation for cluster operations and their systematic development. The range of innovation platforms can be expanded by adopting the entire ENF area as the operating area. At the same time, a framework is created for meeting the individual needs of enterprises, no matter if they are associated with managing the side-flows of industrial services, tourism, food products or mining. Collaboration between the innovation platforms is boosted by guiding enterprises toward better utilisation of the RDI services offered by the platforms.

The goal is that the emerging cluster model will be capable of meeting the development needs of the business sector. The cluster organisations and partners, such as educational organisations, RDI operators, development companies and authorities, will improve their services so that they will meet the needs of enterprises. This new type of cluster thinking lays the foundation for stable collaboration and competitive growth, and links the operators of the ENF area to wider European co-operation networks.

The core of clustering consists of an operating model that emphasises the emerging new kind of entrepreneurship and the growth of enterprises\textsuperscript{7}. Cluster work draws on the best available knowledge, skills and technology, and enforces joint efforts to develop the missing pieces. In addition, practices are created for more efficient utilisation of the public funding synergies. Development models are retrieved from value chains that create extensive added value for the entire ENF area.

\textsuperscript{6} Presented for the European Commission under title “ENF scheme for Cluster facilitated Value Chains Supporting the Regional Innovation Development”.

\textsuperscript{7} Presented for the European Commission under title “E4MC – Entrepreneurs first – 4 models approach and competence management”.

\textsuperscript{Smart specialisation strategy}
4. From strategy into action

The implementation of the Industrial transition pilot headed by the European Commission will last until the year 2023, and by then the next programming and financial period will already be running. In early 2019, an implementation plan for the strategy will be drawn up with Commission experts, and strategy testing will be initiated with pilot funding from the Commission. In the ENF area, the strategy will be tested with the New wood innovations pilot project in 2019.

The core of the East and North Finland in industrial transition – smart specialisation strategy consists of guiding work toward the mutually agreed-upon development areas. In the implementation of a successful strategy, the distribution of tasks among the different operators is important. In the implementation of this strategy, the regional councils orchestrate the operations by guiding and encouraging regional operators to seek out interregional collaboration and expertise.

At the same time, the operators are encouraged to utilise separate EU funding. Smart specialisation extensively drives EU financing, which makes it important for the ENF area to perceive different financing sources as mutually supportive synergistic entities. In practice, the strategy is implemented with financing from ESI funds.9

1. The regional councils of the ENF guide the implementation of the strategy together
2. Regional financing authorities direct a portion of the funding toward achieving the strategic objectives
3. Stakeholders implement cross-regional development projects that combine expertise areas to develop value chains – innovation platforms to benefit enterprises
4. Building and strengthening modern cluster activities in ENF – strengthening entrepreneurship
5. Internationalisation and networking together

MILESTONES FOR WORKING TOGETHER 2019 – 2023

| Joint projects launched by companies utilising innovation platforms |
| Cross-regional projects launched by stakeholders | August 2019–2021 |
| Joint coordination activities in ENF | April 2019–March 2021 |
| Strong joint marketing of the ENF area |
| European Commission test pilot 2019–2023 – implementation of the strategic measures |
| S3 expert support from the Commission | 2019 |
| Cluster expertise from the Commission | – June 2019 |
| Membership in the Vanguard network | August 2019– |
| Utilisation of separate EU programmes in the implementation of smart specialisation | 2019–2020 |
| New EU programming period | 2021-2027 |

- New thematic partnerships in S3 networks
- H2020 projects boosting the creation of innovations
- Erasmus+ programmes expanding the competence base
- Territorial programmes supporting cross-border collaboration models and mutual learning
- Cosme developing cluster structures and operating conditions of SMEs

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Smart specialisation operators in East and North Finland

**HIGHER EDUCATION INSTITUTIONS**
- Adult and Continuing Education Services, AIKOPA | [https://www.aikopaa.fi/fi/In-English](https://www.aikopaa.fi/fi/In-English)
- Centria University of Applied Sciences | [www.centria.fi/en](http://www.centria.fi/en)
- University of Eastern Finland | [www.uef.fi/en](http://www.uef.fi/en)
- South-Eastern Finland University of Applied Sciences | [www.xamk.fi/en](http://www.xamk.fi/en)
- Kajaani University Consortium (Universities of Oulu, Eastern Finland, Jyväskylä and Lapland) | [www.oulu.fi/kajaaniuniversityconsortium](http://www.oulu.fi/kajaaniuniversityconsortium)
- Kokkola University Consortium Chydenius (Universities of Jyväskylä, Oulu and Vaasa) | [www.chydenius.fi/en](http://www.chydenius.fi/en)
- University of Lapland | [www.ulapland.fi/en](http://www.ulapland.fi/en)
- Lappeenranta-Lahti University of technology (LUT) | [www.lut.fi/en](http://www.lut.fi/en)
- Mikkeli University Consortium (University of Helsinki, Ruralia Institute, National Library of Finland | [www.muc.fi](http://www.muc.fi)
- Oulu University of Applied Sciences | [www.oamk.fi/en](http://www.oamk.fi/en)
- University of Oulu | [www.oulu.fi/university](http://www.oulu.fi/university)
- Savonia University of Applied Sciences | [portal.savonia.fi/amk/en](http://portal.savonia.fi/amk/en)

**VOCATIONAL INSTITUTIONS**
- SAMedu Vocational College | [www.samiedu.fi/en](http://www.samiedu.fi/en)
- South Savo Vocational College | [www.esedu.fi/en](http://www.esedu.fi/en)
- Kainuu Vocational College | [www.kao.fi](http://www.kao.fi)
- Federation of Education in Central Ostrobothnia | [www.kpedu.fi/eng](http://www.kpedu.fi/eng)
- Vocational Education Centre JEDU | [www.jedu.fi](http://www.jedu.fi)
- Lapland Education Centre REDU | [www.redu.fi](http://www.redu.fi)
- Oulu Vocational College | [www.osao.fi/en](http://www.osao.fi/en)
- Emergency Services College | [www.pelastusopisto.fi/en](http://www.pelastusopisto.fi/en)
- North Karelia Vocational Education Centre Riveria | [www.riveria.fi/in-english](http://www.riveria.fi/in-english)
- Raasepori Vocational College | [www.raahenedu.fi/rao](http://www.raahenedu.fi/rao)
- Savo Vocational College | [www.sakky.fi/kuntayhtyma/english](http://www.sakky.fi/kuntayhtyma/english)
- Ylä-Savo Vocational College | [www.ysao.fi/in-english](http://www.ysao.fi/in-english)

**INDUSTRIAL DEVELOPMENT ORGANISATIONS**
- Allied ICT Finland | [alliedict.fi](http://alliedict.fi)
- CEMIS (Centre for Measurement and Information Systems) | [www.cemis.fi/in-english](http://www.cemis.fi/in-english)
- CSC – IT Center for Science | [www.csc.fi](http://www.csc.fi)
- Humanpolis Oy | [www.rokuageopark.fi/humanpolis](http://www.rokuageopark.fi/humanpolis)
- Imi Micropolis Oy | [www.greenpolis.fi/en](http://www.greenpolis.fi/en)
- Kainuun Etu Ltd. | [kainuunetu.fi/en](http://kainuunetu.fi/en)
- Kaustinen sub-region | [www.kase.fi](http://www.kase.fi)
- Regional Development Company Savogrow | [www.savogrow.fi](http://www.savogrow.fi)
- Kokkolanseudun Kehitys Ltd KOSEK | [www.kosek.fi](http://www.kosek.fi)
- Development Lieksa Ltd | [www.ileksankehitys.fi](http://www.ileksankehitys.fi)
- Naturpolis Ltd | [www.naturpolis.fi/en](http://www.naturpolis.fi/en)
- Navitas Business Services | [www.navitas.fi/en](http://www.navitas.fi/en)
- NIKHAK Ltd | [www.nihak.fi/en](http://www.nihak.fi/en)
- Business Service Centre of Oulainen | [www.oulainen.fi/yrityspalvelukeskus](http://www.oulainen.fi/yrityspalvelukeskus)
- Pielinen Karelia Development Center Ltd | [www.pikes.fi/en/web/eng](http://www.pikes.fi/en/web/eng)
- Raasepori District Business Services | [www.raahenseudunyrityspalvelut.fi/en](http://www.raahenseudunyrityspalvelut.fi/en)
- Rovaniemi Development Ltd. | [www.rovaniemekenketyl.fi/en](http://www.rovaniemekenketyl.fi/en)
- Water Ecosystems | [www.water-solutions.org](http://www.water-solutions.org)

**CROSS-REGIONAL RESEARCH INSTITUTIONS AND INDUSTRIAL DEVELOPMENT ORGANISATIONS**
- European Forest Institute EFI | [www.efi.int](http://www.efi.int)
- Geological Survey of Finland | [en.gtk.fi](http://en.gtk.fi)
- Finnish Meteorological Institute | [en.ilmatietyneenlaitos-fi](http://en.ilmatietyneenlaitos-fi)
- Natural Resources Institute Finland | [www.luke.fi/en](http://www.luke.fi/en)
- ProAgria | [www.proagria.fi/en](http://www.proagria.fi/en)
- Finnish Forest Centre | [www.metsakeskus.fi/en](http://www.metsakeskus.fi/en)
- Finnish Environment Institute | [www.syke.fi](http://www.syke.fi)
- VTT | [www.vttresearch.com](http://www.vttresearch.com)
INDUSTRIAL TRANSITION
– REGIONAL CONTACT PERSONS

Päivi Ekdahl
paivi.ekdahl@lapinliitto.fi
Kristiina Jokelainen
kristiina.jokelainen@lapinliitto.fi
arcticsmartness.eu | www.lapinliitto.fi/en

Tiina Rajala
tiina.rajala@pohjois-pohjanmaa.fi
Gitte Meriläinen
gitte.merilainen@pohjois-pohjanmaa.fi
www.pohjois-pohjanmaa.fi/en

Jouni Ponnikas
jouni.ponnikas@kainuu.fi
Katja Sukuvaara
katja.sukuvaara@kainuu.fi
www.kainuunliitto.fi/en

Teemu Räihä
teemu.raiha@keski-pohjanmaa.fi
Anne Sormunen
anne.sormunen@keski-pohjanmaa.fi
www.keski-pohjanmaa.fi

Satu Vehreävesa
satu.vehreavesa@pohjois-savo.fi
Soile Juuti
soile.juuti@pohjois-savo.fi
www.pohjois-savo.fi/en

Eira Varis
eira.varis@pohjois-karjala.fi
Kirsu Taskinen
kirsu.taskinen@pohjois-karjala.fi
www.pohjois-karjala.fi/english

Riitta Koskinen
riitta.koskinen@esavo.fi
Tomi Heimonen
tomi.heimonen@esavo.fi
www.esavo.fi/en