

Oulu Region's

Smart specialisation strategy 2021–2025



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COUNCIL OF OULU REGION



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Smart specialisation

Smart specialisation is a regional innovation policy, where the region identifies its strengths and areas for development. With the help of these strengths, regions stand out from others and thrive.

The goal of smart specialisation is to create regional innovation ecosystems, which can help the business community renew itself. Cooperation between research and educational institutions and companies in generating and implementing new innovations is one of the key pillars of the strategy. It is also important to complement local know-how by working together with others. Partners can be found in one's own country or province, but increasingly in international networks.

The Oulu Region has a high level of innovation activity, and spending on research and development is above the national average. Commercialization of research results and effective dissemination of innovations has proven to be challenging in the

region. The operational environment is being developed towards information sharing, networking and utilization of international connections. The region's research environments are developed, and growth is created for the region's competitiveness.

The Oulu Region's strategy for smart specialisation was prepared in cooperation with stakeholders. A wide range of regional actors participated in the open working group work. In addition, several working groups were involved, including the vitality group of municipalities and development companies, the education and research cooperation group and the operational management group of the Oulu Innovation Alliance. The final result was an update of the strategy, which envisions an even more networked Oulu Region that is better prepared for future challenges. Challenges are answered with long-term development of innovation activities and cooperation.

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Leverage from
the EU
2014–2020

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Regional cooperation and information transfer are key factors in the dissemination of innovations

Challenges to the spread of innovations and innovation activities in the Oulu Region include a lack of commercialization and funding expertise. Furthermore, people living in the region, especially a little further away from the growth center and the primary sphere of influence of higher education institutions, feel that the benefits of high research know-how are not materialized sufficiently in the region. 92% of the region's businesses are micro-companies employing less than 10 people. Special attention must be paid to the expansion of growth companies.

By increasing networking and information transfer, the region's position as a versatile hub for innovation is strengthened.

The strategy of smart specialisation aims to prepare for the industrial transition and changes in business life. Preparedness for the change requires sector-specific measures, new innovations and innovation adoption. These actions are sector-specific.

Measures of the smart specialisation strategy to strengthen the dissemination of innovations:

- cross-sectoral networking events
- cooperation between companies and research and educational institutions
- strengthening company clusters, incl. micro-companies
- ensuring that education provision is up-to-date
- ensuring the availability of skilled labor
- effective utilization of international networks
- integration to international value chains
- support the sustainable urban development approach

Oulu Region's smart specialisation priorities

The Oulu Region's smart specialisation strategy aims to promote, at the regional level, measures leading to and utilizing innovations that meet the challenges posed by digitalization, climate change and the energy transition. The strategy aims to actively disseminate innovations and innovation activities throughout the region and increase the regional economy and well-being. The strategy leads to cooperation by crossing industries and borders. The Oulu Region is an international, attractive and networked region, whose competitiveness is based on high know-how as well as renewable and sustainable industry.

1. Renewable and healthy

- Digital services and products
- Field of health and well-being
- Renewable and low-emission industry

2. Climate-smart

- Energy production and storage
- Sustainable construction, logistics and movement
- Innovative bio and circular economy
- Smart food production

3. International, attractive and networked

- An internationally competitive and interesting placement environment
- Networked innovation activity and strong ecosystems and RDI activity
- Innovative tourism

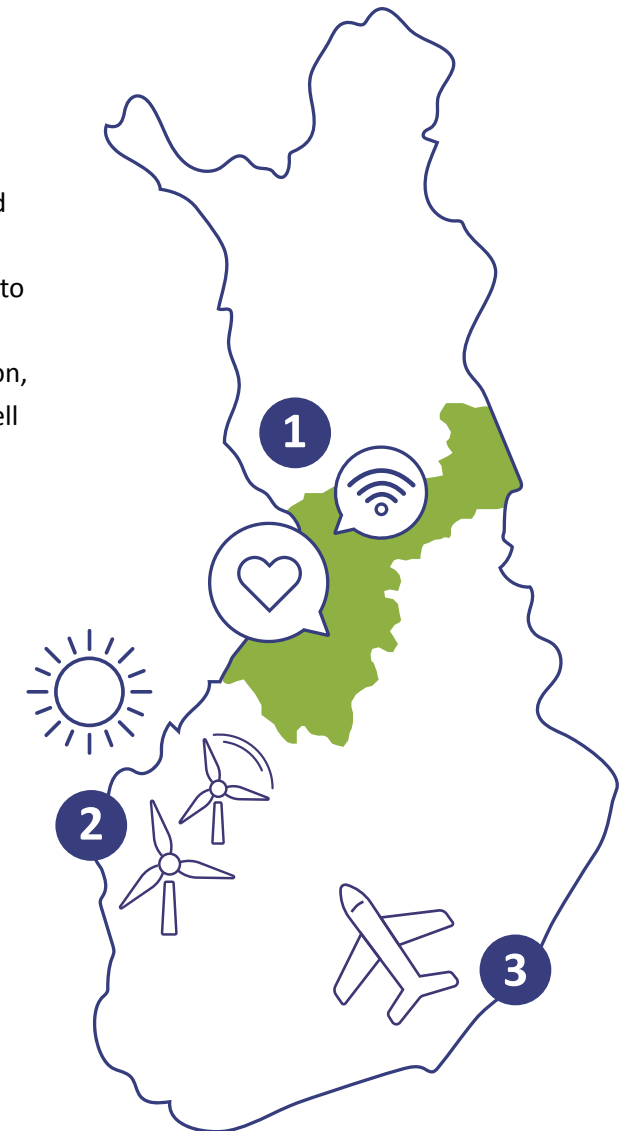


Image 1. Oulu Region's smart specialisation priorities.

Renewable and healthy Oulu Region

The Oulu Region is known for its strong ICT expertise and company base. New emerging industries are applications and devices related to health and well-being, as well as various applications of printed electronics, for example. The strongest industrial sectors are the metal and metal products industry and the further processing of wood, including

both biorefining and mechanical processing. New innovations and industrial solutions emerge at the interfaces of industries, where digitalization and responding to climate change have a crucial role. The activities of the Digital Innovation Hub support the digitalization of business life and the accumulation of digital skills.

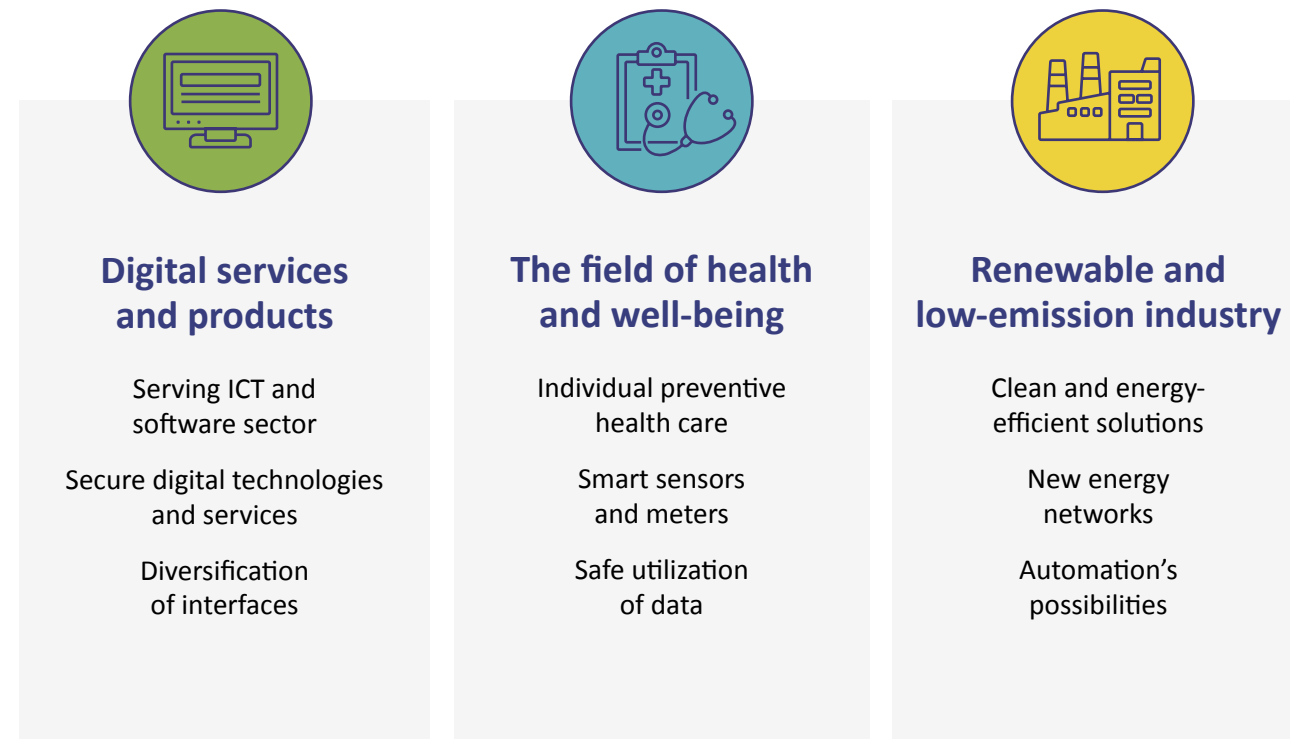


Image 2. Renewable and healthy Oulu Region.

Digital services and products	
Challenges	Solutions
Introduction of new digital services	<ul style="list-style-type: none"> Personal and company-specific user support in all interfaces In the development of digital services and products, the importance of information security must be taken into account as a cross-cutting theme Development work is done in accordance with human-centered thinking, taking into account social, humane and ethical perspectives
The expansion of growth companies and the availability of skilled labor	<ul style="list-style-type: none"> Competence-based and location-independent work Use of data analytics in services
Utilization of relevant data	<ul style="list-style-type: none"> Use of data analytics in services

Health and well-being field	
Challenges	Solutions
Availability of services and labor	<ul style="list-style-type: none"> Professional and competent training Digital health and well-being services Service innovations and service concepts Development and cooperation between research, RDI environments and companies Individual preventive health care Secure use of smart sensors and meters

Renewable and low-emission industry



Challenges	Solutions
Availability of skilled labor	<ul style="list-style-type: none"> • Need-based continuing education
Investments	<ul style="list-style-type: none"> • Investment aids and advice
Selection and availability of necessary equipment	<ul style="list-style-type: none"> • Help with defining needs and increasing "test-before-invest" opportunities • Implementation, development and manufacturing of automation and robotics • Versatile utilization of public RDI environments
Energy demand of production facilities	<ul style="list-style-type: none"> • New technologies and supporting the transition to renewable energy
Large carbon dioxide emissions in metal processing	<ul style="list-style-type: none"> • New production method based on hydrogen and carbon-neutral electricity. New steel products • Increasing the availability of carbon-neutral electricity
Sustainable use of wood in the forest industry	<ul style="list-style-type: none"> • With good forest management ensuring new growth, carbon storages can be increased with sustainable use • Taking into account the EU's biodiversity strategy • More efficient utilization of side streams and products made from renewable materials • Better utilization of technological solutions

Climate-smart Oulu Region

The strategy of smart specialisation is used to support the reform and competitiveness of the region's companies to meet the challenges and opportunities of the green transition. In addition, the aim is to have a reducing effect on the region's

greenhouse gas emissions through measures agreed in the Oulu Region's climate roadmap. More detailed measures have been outlined and recorded in the Northern Ostrobothnia Climate Roadmap.



Energy production and storage

Renewable and efficient production, cost-effective storage & hybrid systems



Sustainable construction, logistics and movement

Energy efficiency, architecture and materials & diversifying traffic



Innovative bio and circular economy

Raw material and nutrient cycles, productization of side streams & innovative solutions

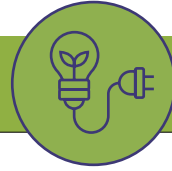


Smart food production

Carbon sequestering profitable production, automation for growth & self-sufficient food chains

Image 3. Climate-smart Oulu Region.

Energy production and storage



Challenges	Solutions
Sufficient production of renewable energy	<ul style="list-style-type: none"> • With the emission reduction requirements, an increase in the production of clean electricity • Developing wind power technologies and building new wind farms • Efficient utilization of solar energy • Regional utilization of geothermal energy potential • Versatile production of biofuels, e.g. ethanol and biogas
Storage of produced energy	<ul style="list-style-type: none"> • Mapping cost-effective forms of energy storage • Development of hydrogen production and network • Small and large use of battery technology • Utilization of hydropower storage potential • Hybrid systems
Securing energy for industry	<ul style="list-style-type: none"> • Construction and development of energy networks • Distributed energy solutions • Smooth linking of different energy systems, sector integration

Construction, logistics and transport



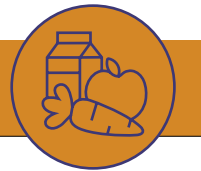
Challenges	Solutions
Carbon footprint of construction	<ul style="list-style-type: none"> • Wood construction • Technological development of steel and cement production • Ecological material choices • Promoting the recyclability of all materials • Development of repair construction
Increasing the energy efficiency of buildings	<ul style="list-style-type: none"> • New construction methods and materials • Sensors and measuring instruments supporting the monitoring of energy efficiency • Software improving energy efficiency in construction engineering applications • Adopting technical applications in order to ensure more efficient heat recovery, for example
Transport emissions	<ul style="list-style-type: none"> • Renewable fuels • Alternative motive powers • Smooth and versatile movement

Bio and circular economy



Challenges	Solutions
Generating business in bio and circular economy and creating new companies	<ul style="list-style-type: none"> • Increasing piloting opportunities in existing research environments • Producing need-based solution models, e.g. platform economy • Increasing the processing of side streams • Business acceleration, developing business concepts for circular economy areas • Products with a high degree of processing • Utilization of digital solutions
Conservation of natural diversity	<ul style="list-style-type: none"> • Usage of natural resources in a sustainable manner that maintains diversity
Water and climate smart business	<ul style="list-style-type: none"> • Comprehensive management of liquid, solid and gaseous emissions • Wastewater cleaning, reuse, recovery and recycling of raw materials

Smart food production



Challenges	Solutions
Carbon footprint of the food chain	<ul style="list-style-type: none"> • Carbon-sequestering production methods throughout the value chain • Development of local food chains and further processing of raw materials in the region
Adapting to the changing climate	<ul style="list-style-type: none"> • Usage of renewable energies • Increasing energy efficiency • Development of nutrient cycles • The possibilities brought by indoor farming • New cultivated species
Emissions from agriculture	<ul style="list-style-type: none"> • Measures aimed at controlling nutrient emissions in water bodies
Labor availability	<ul style="list-style-type: none"> • Training opportunities for a skilled workforce • Increase of automation
Securing food production	<ul style="list-style-type: none"> • Increasing profitability, investment support and advice • Ensuring the availability of seeds and raw materials based on demand • Growing markets must be sought outside the region, taking into account different consumer habits

International, attractive and networked Oulu Region

A high level of expertise, sustainability and active innovation ecosystems strengthen the regional economy and reform the business community. Internationalization and networking are ways to increase the Oulu Region's competitiveness and to promote the development of the priority areas selected in the smart specialisation strategy. The RDI environments in the Oulu Region are maintained and developed to answer the needs of the business community, and actors are encouraged to participate in international projects and networks. Sufficient labor supply is crucial in the future.

The attractiveness of the region has a major impact on bringing companies, investments, skilled labor and students to the area. From the perspective of the tourism industry, the attractiveness of the region is a key success factor, to which the proximity of the Arctic region adds value. Creative industries support the development of the region's attractiveness.

Work-based and education-based immigration increases when the region is vibrant and attractive. Let's pay better attention to integration and invest in the new residents' living conditions and comfort. This requires a re-examination of one's own attitudes. Business opportunities are improved in both urban and rural environments. Activities to develop the operating environment of companies are sup-

ported. The region's high-quality education offering secures the supply of future experts and professionals for the companies.

Ecosystem development and RDI activities are promoted to speed up growth and cross-industry cooperation. Modern research environments and infrastructures are essential for successful international research, and they will continue to be promoted.

The EU-level partnership networks of smart specialisation create good conditions for regional actors to network and apply for direct EU funding. Networks are actively utilized and participation is encouraged. The energy transition accelerates the realization of the green transition and it requires social and technical innovations.

Service innovations in the tourism industry are being developed. The attractiveness of the region's tourist areas and destinations will be further developed with the help of new digital services and products and by increasing cooperation. Business and customer orientation offer the basis for the digital development work. The principles of sustainable and responsible tourism are emphasized in the visibility and conspicuousness of tourist destinations. The European Capital of Culture year acts as a significant lever in the development of tourism and the creative industry.



1 Internationally competitive and attractive investment environment

- Promoting immigration based on work and education
- Improving the retention and well-being of the workforce
- Business-friendliness

2 Networked innovation activity and strong ecosystems and R&D activities

- Increasing expertise in areas of focus for smart specialisation
- Development of research environments and infrastructures in collaboration with regional actors
- Support for the green transition, including development of hydrogen and battery cluster

3 Innovative tourism

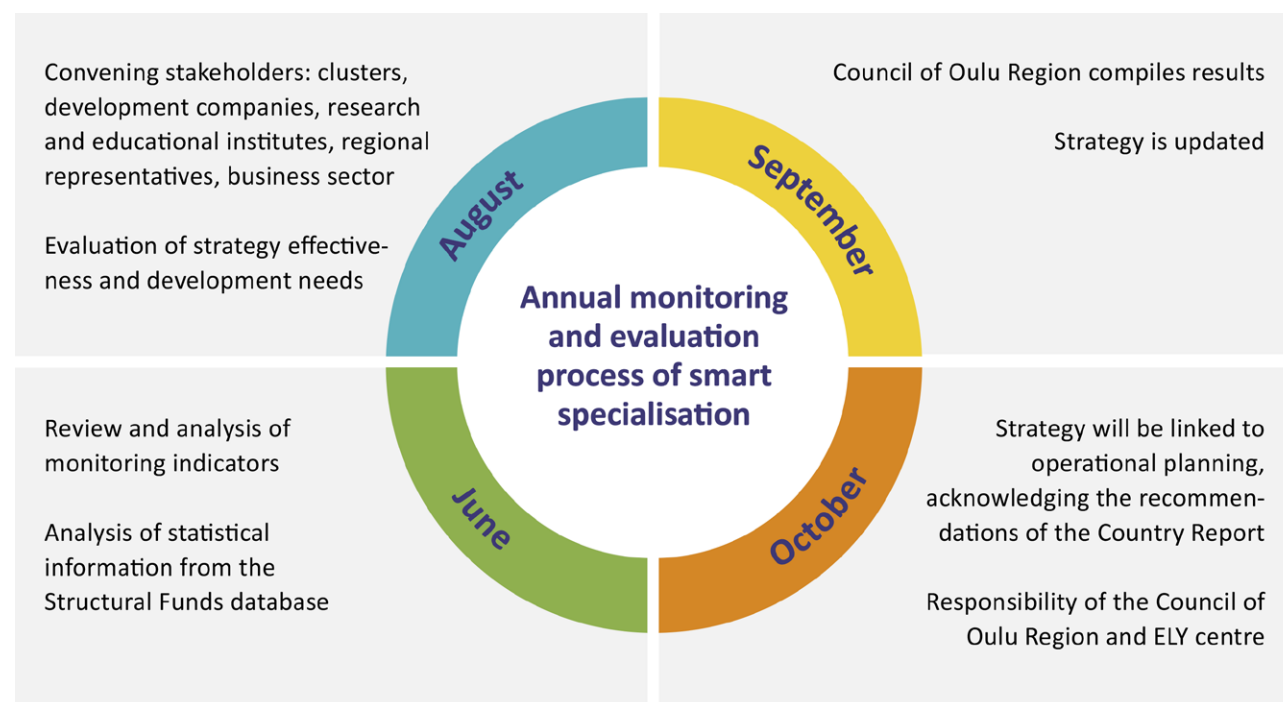
- Business-oriented development of new digital services and products
- Service innovations
- Sustainable and international tourism

Image 4. North Ostrobothnia is an international, attractive and networked region that invests in expertise, competitiveness and innovative tourism.

Monitoring and evaluation of the strategy

The implementation of the smart specialisation strategy is monitored and evaluated annually, while also mapping any need for changes. An inclusive process is created for monitoring and evaluation in collaboration with stakeholders. The planned annual review process is described below. The identified stakeholders involved in the monitoring process are representatives from

research and educational institutions, the ELY centre, the regional council, municipal development companies and businesses. The strategy is linked to operational planning, and the work acknowledges the valid recommendations of the Commission's Country Report. In 2025, the evaluation will be integrated into the evaluation process of the regional program.



Monitoring indicators		
Indicator	Baseline	Target level 2025
Companies (2019)	23 153	Increases annually
Revenue of companies (bn) (2019)	24,2 bn/ €	Increases annually
Export revenue (index 2015=100) (2020)	120,5	Increases annually
North Ostrobothnia's R&D expenditure (2019)	732,6 m/€	0,9 bn/€
Number of R&D personnel in North Ostrobothnia (2019)	8329 ppl.	+ 600 ppl.
Patent applications filed with PRH in North Ostrobothnia	94 pcs.	Steady growth
Monitoring of R&D funding by AES priority areas: <ul style="list-style-type: none"> Innovation and Skills in Finland 2021–2027 funding EU R&D funding to be recovered through the Horizon Europe program EU R&D funding BusinessFinland funding 		Steady growth

The starting and target levels for monitoring indicators have been determined as part of the regional program work. Monitoring of smart specialisation will be carried out as part of the regional program monitoring.



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