Innovation-Driven Growth in Pohjois-Savo
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**THE POHJOIS-SAVO REGION** is located in central Finland, where east meets west. With approximately 250,000 inhabitants, it is Finland's sixth largest region. The landscape is dominated by pristine nature—forests and lakes—and urban cityscapes. Pohjois-Savo has a combination of content people, an easygoing attitude, and excellence in science and technology, arts, industry, and security. High-quality skills and varied natural resources offer fantastic opportunities for new growth and renewal as well as the development of new products and services.

Pohjois-Savo is host to a high concentration of technologically advanced international industrial concerns, which account for 40 percent of the region’s exports and 20 percent of the total workforce. Machine and metal industries include specialized transport solutions (Profile Vehicles), forestry machinery (Ponsse), hydraulic piling machines (Junttan), and mining equipment (Normet). The region also boasts several world-leaders in energy technology (Andritz, Foster Wheeler), mechanical wood processing (Keitele Group, Lunawood, Stora Enso, Finland Laminated Timber), and chemical and mining industry (Yara). Pohjois-Savo is home to over 200 exporting companies whose innovative products and services represent the cutting edge in their fields and are recognized worldwide. These companies include Bella fibreglass motorboats, Genelec and Amphion loudspeaker systems, Mega Electronics physiological monitoring technology, Myontec wearable technology, and many more.

**POHJOIS-SAVO**
1. **Machine and energy technology**
2. **Wood and bio processing**
3. **Foodstuffs**
4. **Health cluster**
5. **Water and air**

**Regional priorities in smart specialisation**

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Finland

Kuopio, the capital city of the region, is a vibrant international university town situated on the shores of Lake Kallavesi.
HYDROLINE is a Finnish industry leader in hydraulics and one of the most highly advanced operators in the world. Hydroline delivers products to large machine and device manufacturers such as Sandvik, Rocla, John Deere, Cargotec, Agco Valtra and Bronto Skylift. Around 95% of net sales are accumulated from indirect and direct exports.

Hydroline’s project has received EUR 1.5 million of funding from the EU framework programme for research and innovation Horizon 2020. The grant will be used for developing intelligent future products, the product development process in a network, the Internet of things, and the three Es – ergonomics, energy conservation, and efficiency.

The two-year project started in autumn 2015 and it will be executed in cooperation with Hydroline’s partners, such as universities, Savonia University of Applied Science, VTT (Technical Research Centre of Finland), and partner companies.

Hydroline is collaborating with a spin-off enterprise Savroc that has its roots at the research and testing laboratory for industrial coating. As a result, the EU-funded project led the way to a new innovation. The new trivalent chromium-based TripleHard technology is cost-efficient and achieves three times harder and more durable surfaces compared to traditional chromium plating. In addition, TripleHard coatings are also safe for people and the environment.

Last year, Savroc was selected among the Top 25 companies in the Nordic Cleantech Open business competition.
The wind-grained, slow-growing spruce species that is found in the Nordic coniferous forest belt and eastern Finland, in particular, is one of nature’s best innovations. The Keitele-based company SEPA uses spruce as the material for its wooden roof trusses.

Sepa was founded in 1982. The family business has since then grown to be the most important and advanced manufacturer of roof trusses in Finland, and one of the largest in Europe.

CEO Kimmo Norojärvi says that the strength classes of the sawn timber Sepa uses to manufacture its roof trusses are C35, C40 and C45. One rarely finds these grades in timber shops – the most common strength class of construction timber is C24.

Sepa’s annual production volume is approximately 150,000 roof trusses. Since its establishment in 1982, the company has delivered nearly four million roof trusses. In 2015, Sepa introduced its new innovation: noise barriers made of spruce. Spruce is an ecological alternative to pressure-treated timber. The company is also developing new products: absorbing noise barriers, as well as solar cell and print coated models.

The production efficiency and capacity of Sepa’s Keitele factory will grow by 30 per cent thanks to an ongoing investment scheme of EUR 6.5 million. This is the largest investment in Sepa to date, and it was co-funded by the European Regional Development Fund with a budget of EUR 1.5 million.
KALA-LAPPI is a thriving food business that makes cold-smoked fish products. The company started operating in 2014, and it is determined to enter the international market.

“This year, we will launch our exports to three European countries. We will start in Spain, serving our products in Valencia tapas style”, CEO Vesa Lappi says.

Lappi says the company receives enquiries from around the world - even from Norway, which is by far the largest importer of fish products to Finland. Finns eat approximately 30 million kilograms of farmed Norwegian salmon every year, but Finland’s export volume to Norway are modest. Finland exports most fish to Estonia, Russia, Denmark and Sweden. Exports to these four countries make up about 90 per cent of the total export volume. Kala-Lappi products are currently available in over 400 grocery shops and one hundred restaurants across Finland.

“Our plan is to include Finnish freshwater fish into our product selection in the near future”, Lappi says. The secret behind the company’s high demand is its innovative production method. The fish is smoked at three degrees Celsius for three days, using natural alder chips. Kala-Lappi monitors and controls the smoking process with its own, custom-made software. The slow smoking process includes no fewer than 72 stages!

Kala-Lappi is part of the project called Wellbeing through food. Project was co-funded by the European Regional Development Fund.
NEWICON is an innovative health technology company that produces automation solutions for medicine supply. The automation solutions – such as storage retrieval robots for pharmacies and automated dispensing cabinets for hospital wards – are based on robotics and the Internet of Things, and they will facilitate the work of nursing staff at each stage of the medicine supply process.

NewIcon received a EUR 8 million loan from the European Investment Bank (EIB) for the development of innovative automation solutions for medication. The EIB funds will also support the development of intravenous compounding robots and novel medication management software.

The funds are provided by the InnovFin – EU Finance for Innovators initiative that is targeted at midcaps, with financial backing by Horizon 2020, the EU Framework Programme for Research and Innovation.

NewIcon is the third company in Finland to receive InnovFin funding for innovative companies. Earlier beneficiaries from Finland are gaming company Rovio and software firm Kiosked.

At the moment, NewIcon has more than 50 employees, and this number is expected to quadruple within the next three years.

NewIcon established its first international subsidiary in the United Kingdom in 2016, and it is planning to establish a branch in each Nordic country. NewIcon has already made its first Middle Eastern deal in Iran.

Roboticics improve patient safety
SENSOFTIA is a provider of software and embedded systems with special expertise in virtual healthcare services. Sensoftia CEO Antti Väänänen estimates that advanced digitisation will become the new norm in healthcare services in a few years.

The customer can contact the physician via video from home or the office. The physician can submit e-prescriptions in the My Kanta service or prescribe preventive over-the-counter drugs using a health and sports application. The application is connected to a smart wristband and other wearables, collecting and analysing the customer’s health data.

According to Väänänen, advanced health technology and digitisation can reduce healthcare spending and improve the availability of care. “Virtual telehealth services can bring notable savings in healthcare costs. It has been estimated that up to 75 per cent of all visits could in fact be telehealth visits”, Väänänen says.

Sensoftia is the only company included in the international INEXCA research project for 2015–2018. The project is supported by the EU’s RISE (Research and Innovation Staff Exchange) programme with a funding of nearly EUR 1.2 million. The INEXCA project has eight partners from five European countries and the US.
Finnish water expertise is an excellent example of clean technology, for which there is a growing global demand.

Promising research-based water business is also found in Pohjois-Savo. Savonia University of Applied Sciences is currently housing the development of a new water treatment innovation. The new method is particularly well suited for treating industrial waste water. Savonia acts as the research partner, helping the inventor Risto Kemppainen to develop and market his innovation.

The innovation is based on a phenomenon called electroflotation. Waste water is conveyed to a flow channel that contains metal lamellae. Electroflotation makes the impurities and deposits rise to the surface, from where they can be easily removed. This purification method is not yet used for industrial waste water treatment on a larger scale. The method requires fewer chemical reagents, which makes it more environmentally friendly and cost-efficient than conventional methods that rely on the use of chemicals.

The commercial potential of the new cleantech innovation has already gained international attention, because there is no technology of this kind in the market that would also be scalable.

This innovation is one of the positive outcomes of the region’s robust investments in RDI. Prototype tests and trial runs are currently under way at the environmental technology lab of Savonia. The Savonia welding lab makes the lamellae using an industry-leading laser welding cell that was purchased with support from the European Regional Development Fund.