innovation boost

Sparks!

BY INNOVATION BOOST

BUSINESS KRISTINESTAD

ÖSTERBOTTENS FÖRBUND
POHJANMAAN LIITTO

Table of contents

Welcome to the Autumn edition of SPARKS 3

Can Industry Help Solve the Power Grid's Capacity Challenge? 4

The Vegetables of Tomorrow Are Already in Your Fridge 7

From Potatoes to the Fuels of Tomorrow 12

Innovation Starts with Collaboration 18

Welcome to the Autumn Edition of SPARKS

InIt often starts with an idea. A question nobody has thought to ask before. An unexpected encounter. Or a new way of using resources we already have.
Small sparks that, given the right conditions, can grow into something much bigger. Welcome to SPARKS – a magazine exploring innovation, research, entrepreneurship and the opportunities shaping our future.

Here in Kristinestad and South Ostrobothnia, we have a strong tradition of entrepreneurship, creativity and finding practical solutions. At the same time, the world around us is changing. The green transition, emerging technologies and shifting markets are creating new challenges – but also exciting opportunities for local businesses.

Through SPARKS, we want to bring research, ideas and innovation closer to the people who can turn them into reality. Our aim is to make knowledge accessible, highlight practical opportunities and spark curiosity about developments both within our region and beyond.

In this edition, we explore how industry could help ease pressure on the electricity grid, why the vegetables of tomorrow may already be growing in our greenhouses, and how potato waste could become a valuable resource for producing renewable fuels. Three very different stories, but with one important thing in common: they show how research, fresh thinking and collaboration can create new value from resources we already have.

This is also at the heart of the innovation work carried out by Business Kristinestad and Innovation BOOST – Syd. By bringing together businesses, universities, researchers and development organisations, we aim to create the conditions for promising ideas to become real opportunities.

Because innovation does not always mean groundbreaking inventions or sophisticated technology. Sometimes, it simply means looking at something familiar in a completely new way.

I hope this edition of SPARKS inspires you, raises new questions and perhaps even ignites the spark behind your next big idea. And if there is a topic you would like us to explore in a future edition, we would love to hear from you.

Enjoy the read!

Can Industry Help Solve the Power Grid's Capacity Challenge?

Electrification is putting increasing pressure on our electricity networks. But what if part of the solution is already inside our factories?

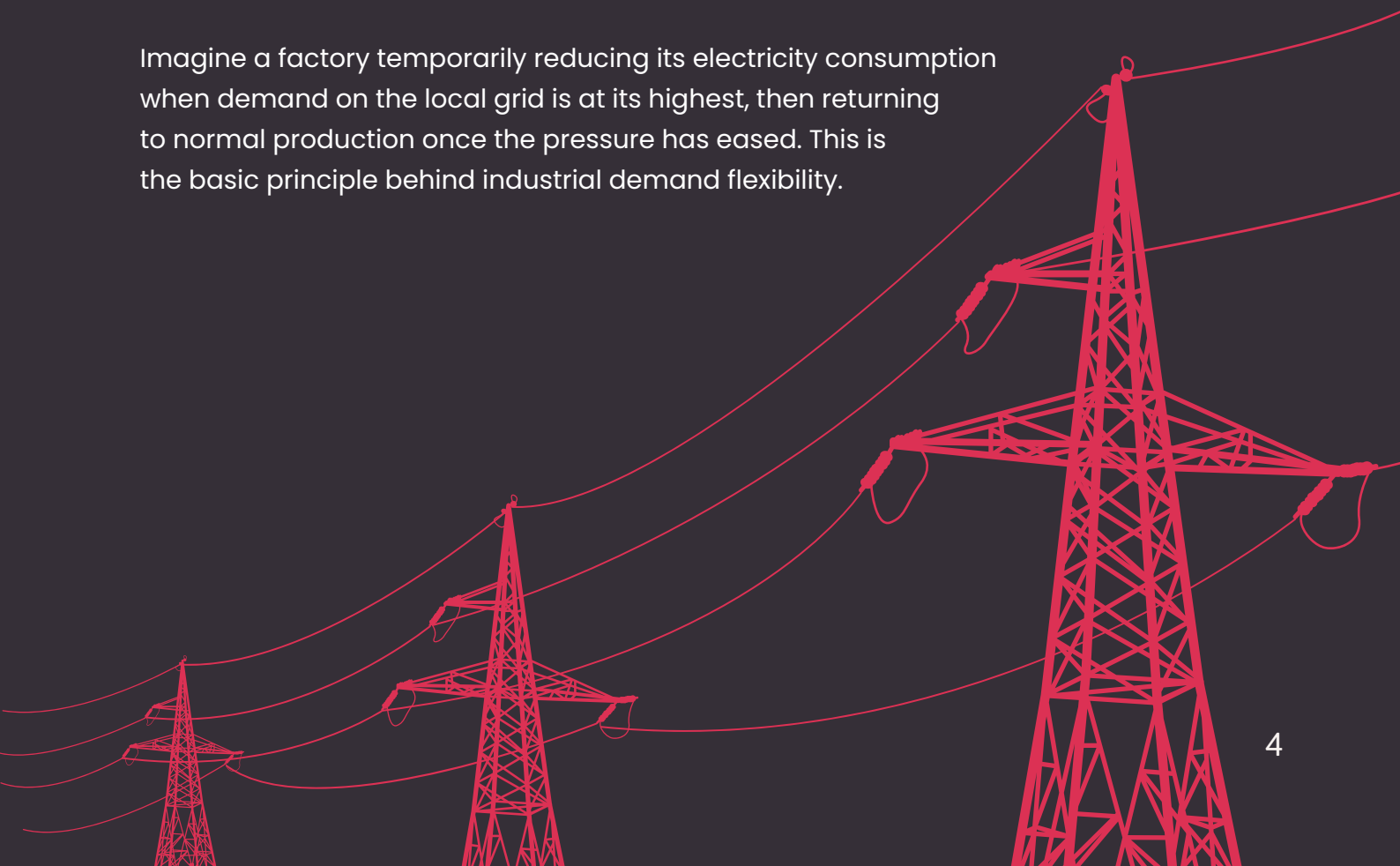
As industries electrify and new businesses seek connections to the electricity grid, demand on existing infrastructure continues to grow. Building new power lines is part of the answer, but it is expensive and time-consuming. Researchers at RISE have explored how industry's ability to adjust electricity consumption could help create a smarter, more flexible energy system.

A Grid Under Pressure

We are using more electricity than ever. Industries are moving away from fossil fuels, transport is becoming increasingly electrified, and new businesses require substantial amounts of energy. But electricity networks cannot always keep pace.

Strengthening the grid often involves major investments, lengthy permitting processes and years of planning. Yet in some situations, existing capacity could be used more efficiently.

Imagine a factory temporarily reducing its electricity consumption when demand on the local grid is at its highest, then returning to normal production once the pressure has eased. This is the basic principle behind industrial demand flexibility.



What Does Industrial Flexibility Mean?

Flexibility means that an electricity user can adjust consumption when needed.

For an industrial company, this could involve shifting an energy-intensive process to another time, reducing power demand for a few hours or scheduling production to avoid peak periods on the electricity grid.

If several large electricity users can make such adjustments, capacity may become available for other businesses. In certain circumstances, this could make it easier to connect new companies to the grid or reduce the immediate need for costly infrastructure upgrades.

But there is an important difference between what is technically possible and what works in practice.

Factories Cannot Simply Switch Off

Industrial production is often carefully coordinated. Machines and processes depend on one another. Deliveries must meet deadlines, production schedules need to be maintained, and product quality must remain consistent.

Temporarily reducing electricity consumption can therefore have consequences far beyond the energy bill. A production shutdown may result in lost output, quality problems or substantial costs when restarting operations.

This means that not every business can offer the same type of flexibility. One factory may be able to postpone a process until the following day. Another might reduce consumption for a short period. A third may have very limited opportunities to adjust production at all.

The research highlights the importance of assessing each company's circumstances individually.



The Right Flexibility, in the Right Place

One of the report's key conclusions is that not all flexibility is equally useful. It is not enough for a company somewhere in the electricity system to reduce its consumption. The reduction must occur in a location where it actually relieves pressure on the part of the network experiencing capacity constraints.

Timing matters too. In some situations, a grid operator can anticipate a demand peak several days in advance, allowing industrial companies to plan accordingly. In other cases, restrictions arise unexpectedly, for example during a network disruption. The operator may then need a rapid reduction in electricity demand. These situations place very different demands on technology, organisation and decision-making.

A Smarter Use of Existing Resources

Industrial flexibility will not eliminate the need to expand electricity networks. But it could become an important complement to traditional infrastructure investments. By understanding when, where and how industrial electricity consumption can be adjusted, grid operators and businesses may find new ways to make better use of existing capacity. And sometimes, making smarter use of what we already have is just as important as building something new.

Research source: Industrins flexibilitet och elnätens behov: Förutsättningar, möjligheter och utmaningar med flexibilitet för överföring (2026), by Lovisa Axelsson, Susanne Ackeby, Marcus Vendt and Elias Andersson, RISE Research Institutes of Sweden.



The Vegetables of Tomorrow Are Already in Your Fridge

Forget futuristic supercrops. The next revolution in vegetables could be surprisingly familiar.

Will we be eating entirely new vegetables in the future? Or will tomatoes, cucumbers and lettuce remain everyday favourites? A new report from Novia University of Applied Sciences suggests a surprisingly simple answer: the vegetables of tomorrow will probably be the ones we already know. What is likely to change is how we eat them.



Familiar Vegetables, New Possibilities

When imagining the vegetables of the future, you might picture exotic crops, unusual colours or entirely new flavours. But according to a report from Novia University of Applied Sciences, the future is more likely to feature familiar favourites in new forms.

Tomatoes will still be tomatoes. Cucumbers will remain popular. And lettuce will continue to have its place on our plates. The difference is that vegetables may become easier to use, better suited to modern eating habits and perhaps even tastier.

Cherry tomatoes, sweet mini plum tomatoes, snack peppers and pointed sweet peppers already demonstrate how familiar vegetables can find new uses. For growers, developing an established product is often easier than introducing an entirely new crop that consumers have yet to discover.

Convenience Is King

We often say that we want to eat more healthily and sustainably. But when everyday life gets busy, convenience frequently determines what ends up in our shopping baskets.

Pre-washed salad, ready-cut vegetables or a vegetable mix that can go straight into the frying pan make it easier to choose healthier options. And this is precisely where the report identifies a significant opportunity. Rather than trying to transform people's eating habits completely, producers can make vegetables easier to choose in situations where they already fit naturally into daily life. It may sound like a small change. But making vegetables more accessible could influence how often we eat them.

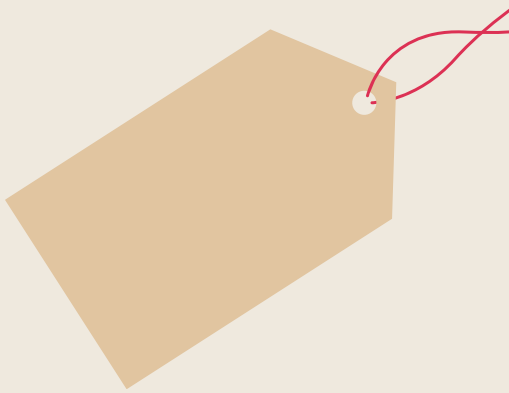
Berries are also highlighted as a promising product category, as they already work well as convenient, healthy snacks.

Price Still Matters

Health, sustainability and locally produced food are important to many consumers. But when we are standing in front of the supermarket shelf, the price tag often has the final say.

The report shows that price remains a major factor in purchasing decisions. This means that tomorrow's vegetables must offer more than good taste, sustainability and convenience. They must also be affordable.

For producers, the challenge is to combine quality and convenience with a price consumers are willing to pay.



The Supermarket Shelf Shapes Our Choices

It is easy to assume that our food choices are driven entirely by personal preferences. But what supermarkets decide to stock has a greater influence than we might realise.

Which products are given shelf space, how they are presented and where they are positioned all affect what consumers discover and buy.
A new vegetable may be delicious and innovative. But if it receives little visibility or sales are slow, it risks disappearing from the shelves.

This is why growers, packing companies, food producers and retailers need to work together from the early stages of product development. Successful innovation must work throughout the entire value chain – from the greenhouse to the consumer's plate.

New Opportunities for Ostrobothnia

For Ostrobothnia, where greenhouse cultivation plays an important role in the regional economy, these developments are particularly interesting.

According to statistics presented in the report, Finland produced approximately 96 million kilograms of greenhouse vegetables in 2025. Of this total, cucumbers accounted for around 58 million kilograms and tomatoes approximately 36 million kilograms.

These are substantial volumes of vegetables consumers already know and enjoy. Yet even familiar products offer opportunities for innovation.

New varieties, more convenient packaging, improved product concepts and closer cooperation across the food industry could help growers reach new markets and respond to changing consumer expectations.

The vegetables of the future may not look radically different. But the way they are grown, marketed, packaged and enjoyed could change considerably. And that creates opportunities throughout the greenhouse industry.



From the Research

96 million kg – Greenhouse vegetables produced in Finland in 2025, according to the report.

20 interviewees – Representatives from 18 organisations contributed to the study.

Research source: *Framtidens grönsaker – Från växthus till tallrik, by Lena Korkea-aho, published by Novia University of Applied Sciences in 2026.*

The report is part of the Future Vegetables project, carried out in collaboration with Hanken School of Economics and stakeholders in Ostrobothnia's greenhouse industry. The project runs from 2025 to 2027 and is co-funded by the European Union.

READ THE FULL REPORT





From Potatoes to the Fuels of Tomorrow

What if the potatoes that never reach our dinner plates could help power the vehicles of the future?

In South Ostrobothnia, significant quantities of by-products are generated by potato farming and food processing. New research suggests that these resources could provide the foundation for local renewable fuel production – and potentially create an entirely new regional value chain.

Hidden Value in a Familiar Crop

Potatoes are an essential part of Ostrobothnia's food culture. They are grown, processed, sold and served in countless forms. But not every potato ends up on a dinner plate.

Some are rejected during sorting. Others become by-products when potatoes are peeled, cut or processed into food products. Traditionally, such materials have often been viewed as low-value residues.

But what if they could become valuable raw materials for renewable energy? A new report by Mikael Ehrs explores this possibility, with particular attention to the Närpes and Kristinestad area.

The findings point towards interesting opportunities for regional energy production, resource efficiency and new business development.

Turning Potatoes into Energy

Potatoes contain energy that can be recovered in several ways. By processing potato residues together with materials such as manure in a biogas plant, organic matter can be converted into biogas.

The gas can be used to produce heat and energy or upgraded into biomethane suitable for use as fuel. But the process produces more than gas.

Once the organic material has been broken down, a nutrient-rich residue known as digestate remains. These nutrients can be returned to agriculture through fertiliser products.

In other words, the same raw materials can generate several useful outputs. Potato residues become energy. Nutrients return to the fields. And resources already available in the region gain new economic value.
It is a practical example of how a circular economy can work.

What Could a Regional Biogas Plant Look Like?

The report examines several possible sizes for a regional biogas facility. In a baseline scenario, the plant could process approximately 34,000 tonnes of organic material annually.

Around 12,000 tonnes would consist of potatoes, while the remaining 22,000 tonnes would come from manure-based feedstocks.

Estimated energy production would reach approximately 10.6 gigawatt-hours per year. The investment cost is estimated at around €6 million.

A larger scenario would double the annual feedstock volume and energy output. These figures illustrate the potential scale of regional production, although the scenarios represent calculations rather than approved investments or existing facilities.

Could Potatoes Become Bioethanol?

Biogas is not the only possibility. The report also examines how potato starch could be converted into bioethanol through fermentation.

A smaller ethanol module processing 10,000 tonnes of potatoes annually could produce approximately 2.7 million litres of ethanol.

If constructed alongside an existing biogas plant, the additional investment is estimated at €3–4 million. This approach could make it possible to produce different renewable fuels from the same regional resource base.



The Next Step: Synthetic Fuels

Looking further ahead, synthetic fuels – often called e-fuels – could offer additional possibilities. These fuels can be produced using renewable electricity and raw materials such as carbon dioxide.

The carbon dioxide separated during biogas upgrading could potentially become a feedstock for further fuel production. This would create another opportunity to make use of materials that might otherwise be released or discarded.
However, the technology requires substantial investment and large quantities of renewable electricity. For this reason, the report proposes a phased approach. Biogas production could be established first, with more advanced solutions potentially added later.

Building a Regional Value Chain

The opportunities extend beyond energy production. A regional renewable fuel facility could bring together farmers, food processors, energy companies, technology providers and other businesses.

Materials currently treated as by-products could become inputs for new processes. Local cooperation could help create value from resources that already exist within the region.

The challenge is to turn technical potential into commercially viable solutions. That requires careful planning, investment and cooperation between businesses, researchers and development organisations.

But the underlying idea is compelling. What begins as a leftover potato could become part of a new regional energy system.

Two Possible Biogas Scenarios

SMALLER FACILITY

10.6
GWh per year

34,000
tonnes of feedstock annually

€6M
Estimated investment

LARGER FACILITY

21.2
GWh per year

68,000
tonnes of feedstock annually

€9.1M
Estimated investment

These are calculated scenarios from Novia's research report, not approved investments or actual production figures.

The Research Behind the Story

This article is based on Regional produktion av bio- och e-bränslen i Sydösterbotten: förutsättningar, konsekvenser och investeringsvägar, by Mikael Ehrs, published by Novia University of Applied Sciences in 2026.

The report forms part of the Power of Potatoes project, which investigates how side streams from the potato industry could be used for renewable energy production in Ostrobothnia. The project is funded through EU regional and structural policy programmes via the Regional Council of Ostrobothnia.

READ THE FULL REPORT

Where Research Meets Business Reality

Great ideas are only the beginning. Real innovation happens when knowledge meets practical challenges.

Kristinestad and South Ostrobothnia are home to businesses, raw materials, expertise and ideas with the potential to create new opportunities. But how do we turn an interesting research report into a solution that actually works for a business?

Bridging the Gap Between Research and Business

Research can reveal what is technically possible. Businesses understand the challenges that need solving in everyday operations. When these two perspectives come together, new ideas can emerge.

This is also a central principle behind the innovation work carried out by Business Kristinestad and Innovation BOOST – Syd.

By strengthening connections between companies, universities and other development organisations, the initiative aims to create better conditions for research, development and innovation across the region.

From Ideas to Opportunities

Many small and medium-sized businesses have promising ideas but lack the time, resources or access to specialist expertise needed to explore them.

It might be a by-product with an entirely new potential use. An energy-intensive process that could be made more efficient. Or a new product concept that needs testing before a company is ready to invest.

This is where collaboration with universities and research organisations can make a difference.

Through analysis, small-scale trials and joint development projects, businesses can gain a clearer understanding of which opportunities are worth pursuing. This reduces uncertainty and can create a more practical path from idea to business opportunity.



Innovation Starts with Collaboration

The stories in this edition of SPARKS demonstrate how valuable that collaboration can be. Industrial flexibility could help electricity networks operate more efficiently. New vegetable products could open opportunities for greenhouse growers. And potato processing residues could become valuable resources for renewable fuel production.

These developments involve different industries and technologies. But they share a common principle: innovation often begins by recognising new possibilities in resources, knowledge and expertise that already exist. Turning those possibilities into reality requires cooperation. And that is precisely where regional innovation networks can play an important role.

SPARKS – Where Ideas Grow



SPARKS by Innovation Boost is a magazine dedicated to research, innovation and collaboration that matters to businesses and regional development.

Through stories about current research, emerging technologies, business opportunities and regional initiatives, SPARKS aims to inspire curiosity and encourage new partnerships.

Our ambition is to show how knowledge can become a driving force for innovation and sustainable growth. And how bringing together businesses, researchers and development organisations can create opportunities that none of them could achieve alone.

Have an Idea Worth Exploring?

Do you have an idea, a challenge or a development need within your business? Business Kristinestad provides business advice, networking opportunities and connections to relevant partners.

Find out more at www.businesskrs.fi.

Discover Previous Editions of SPARKS

The fourth edition of SPARKS by Innovation Boost was presented in August 2026. It explored topics including natural fibres, circular value chains, the future of agriculture, hydrogen production and collaboration between businesses and researchers.

EXPLORE SPARKS VOLUME 4

innovation boost

BY

BUSINESS KRISTINESTAD

Contact

Business Kristinestad
Salutorget 2, 64100 Kristinestad, Finland
Email: business@krs.fi
www.businesskrs.fi