

Green Transition and Regional Sustainability

Luleå, 10-12 October 2023





NEFCO

Accelerating the green transition

Katariina Vartiainen, Senior Manager, Environment and Sustainability
11 October 2023

The Nordic Green Bank: In a nutshell



- Founded in 1990 by the Nordic countries, Nefco – the Nordic Green Bank is an International Financial Institution that provides exclusively green financing.
- We serve the interests of our owners, Denmark, Finland, Iceland, Norway and Sweden, with a mandate to take concrete actions to accelerate the green transition.
- Headquartered in Helsinki with ~60 employees



Our task: To accelerate the green transition

We finance international scale-up of Nordic clean technologies that have the potential to create global impact.

We take higher financial risks than commercial banks and offer funding earlier in the growth phase.

With a bottom-up approach.

Exclusively green financing



1618

projects financed



92

new projects
in 2022



319

active projects
in 2022



80+

countries

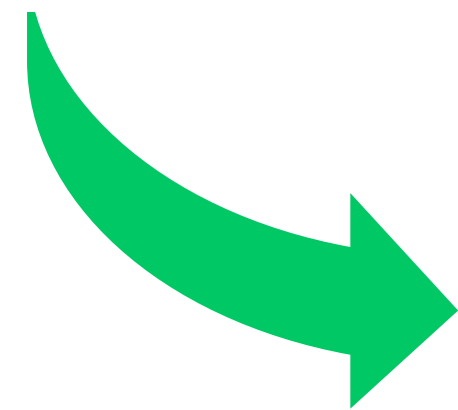


SMEs are 99% of all Nordic companies and about 60% of the economy

Paid-in capital as base for Nefco's green financing

EUR 113 million

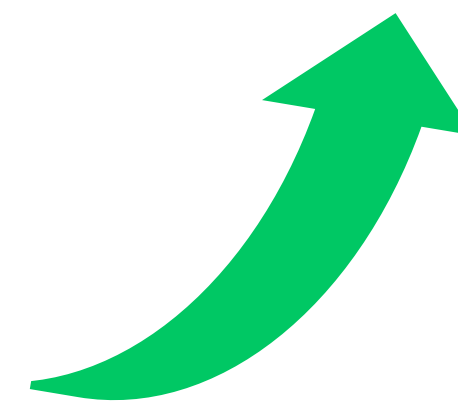
Paid in during 1990-2007



Interest on loans and
return on equity
investments

EUR 379 million

Invested / disbursed
since 1990



Capital has been reinvested

3.3x

while supporting Nordic
environmental and climate-related
goals.



Case examples

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Norsepower Oy Ltd – Finland

Climate change mitigation

- Innovation helps the shipping industry to decarbonise
- Bringing sails back to shipping – wind propulsion system
- Norsepower's Rotor Sail technology cuts fuel consumption (both on newbuild and retrofit)
- Environmental benefits
 - ✓ 5-25% less fuel
 - ✓ Reduced greenhouse gases
 - ✓ Reduced air emissions such as sulphur, nitrogen oxides and particulate matter (PM)

Photo: Sea-Cargo





Tracegrow Oy – Finland Circular economy solution

- Closing the loops – using waste material as resource
- Converting alkaline batteries and industrial side streams and into valuable products
- End-products
 - ✓ micronutrients (zinc and manganese) for agriculture also suitable for organic farming
 - ✓ aiming for solutions for battery industry as well
- Environmental benefits:
 - ✓ reduction of mining operations of virgin raw materials
 - ✓ reduction of CO2 emissions

Elonroad AB – Sweden

Climate change mitigation

- Electric road concept for electric vehicles – enables also electrification of heavy transport
- Elonroad's infrastructures enable automatic charging of vehicles while driving or parked.
- Environmental benefits:
 - ✓ GHG emission reductions
 - ✓ resource efficiency

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Electric bus on an electric road system. Photo: Elonroad

Automasjon og Data AS – Norway

Climate change mitigation

- Servicing the offshore wind
- Offshore wind power industry needs accurate weather data to maintain and operate windmills efficiently
- Environmental benefits:
 - ✓ Increase the operational time of wind turbines
 - ✓ Reliable weather data needed to increase offshore wind capacity
 - ✓ Plan safe timing for maintenance

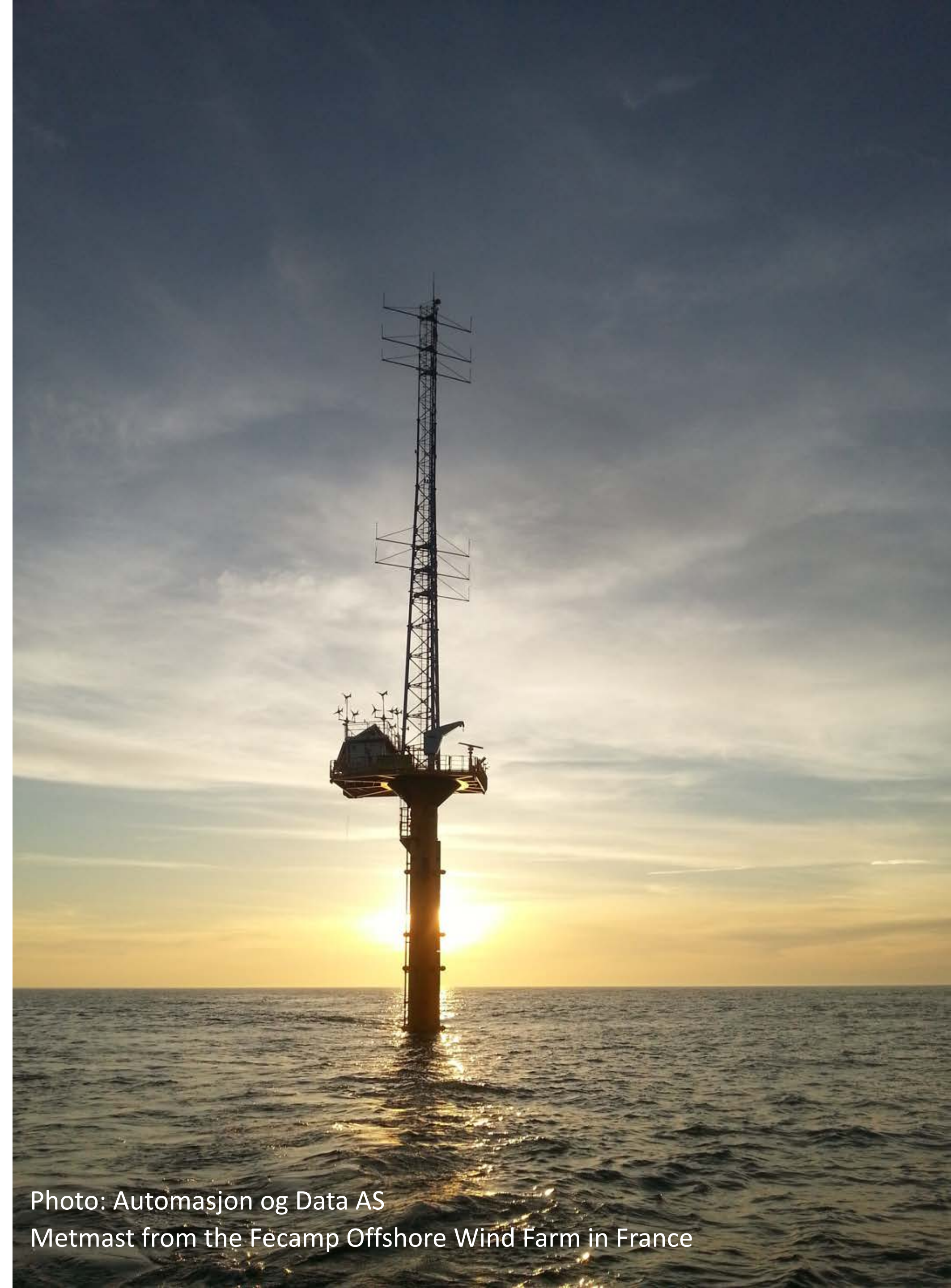


Photo: Automasjon og Data AS
Metmast from the Fecamp Offshore Wind Farm in France



Environmental Analysis

We align operations with

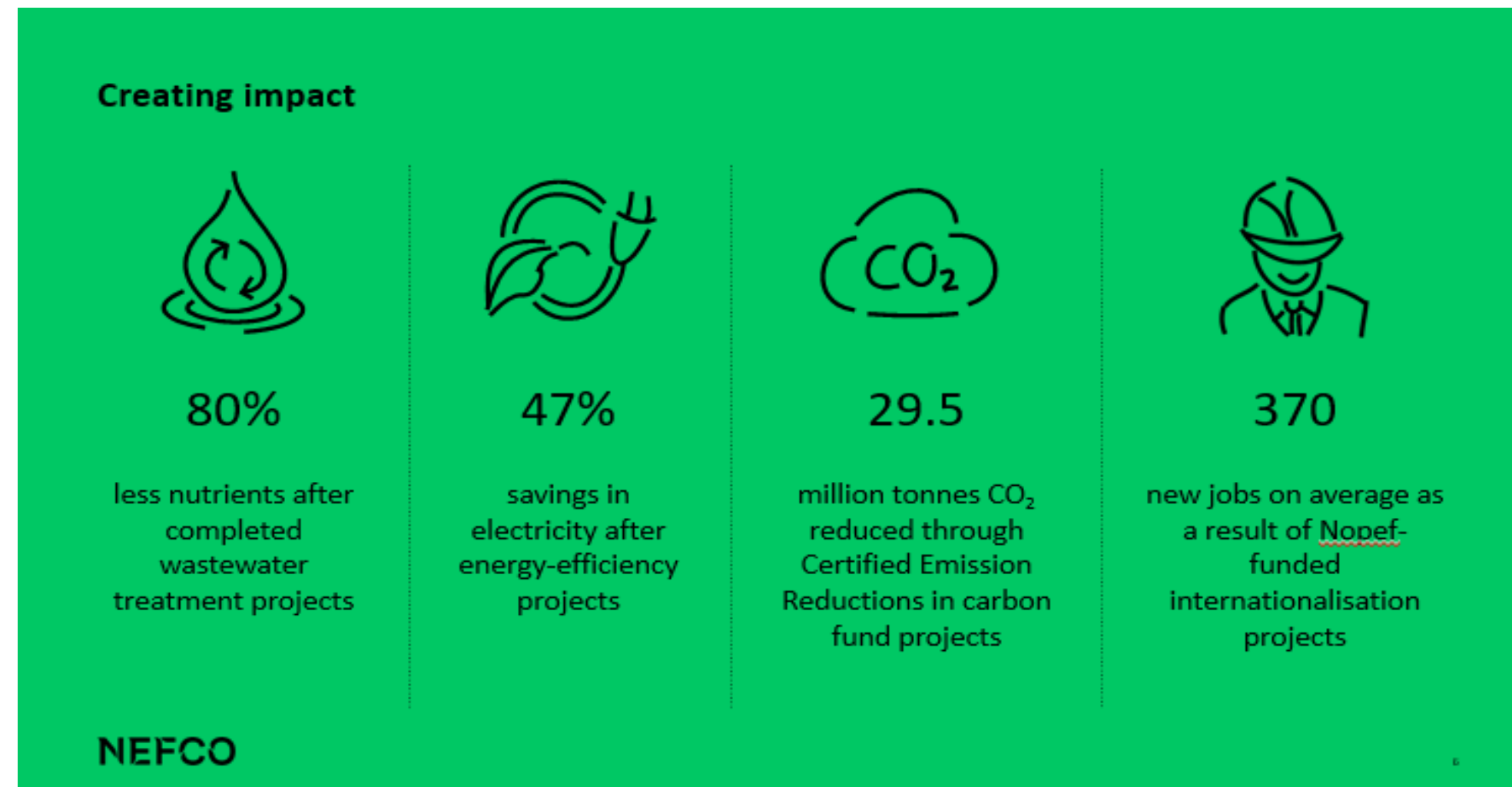
- Nordic Vision 2030
- EU Green Deal and EU Taxonomy
- Paris Agreement and Agenda 2030
- Kunming-Montreal Biodiversity Framework

NEFCO

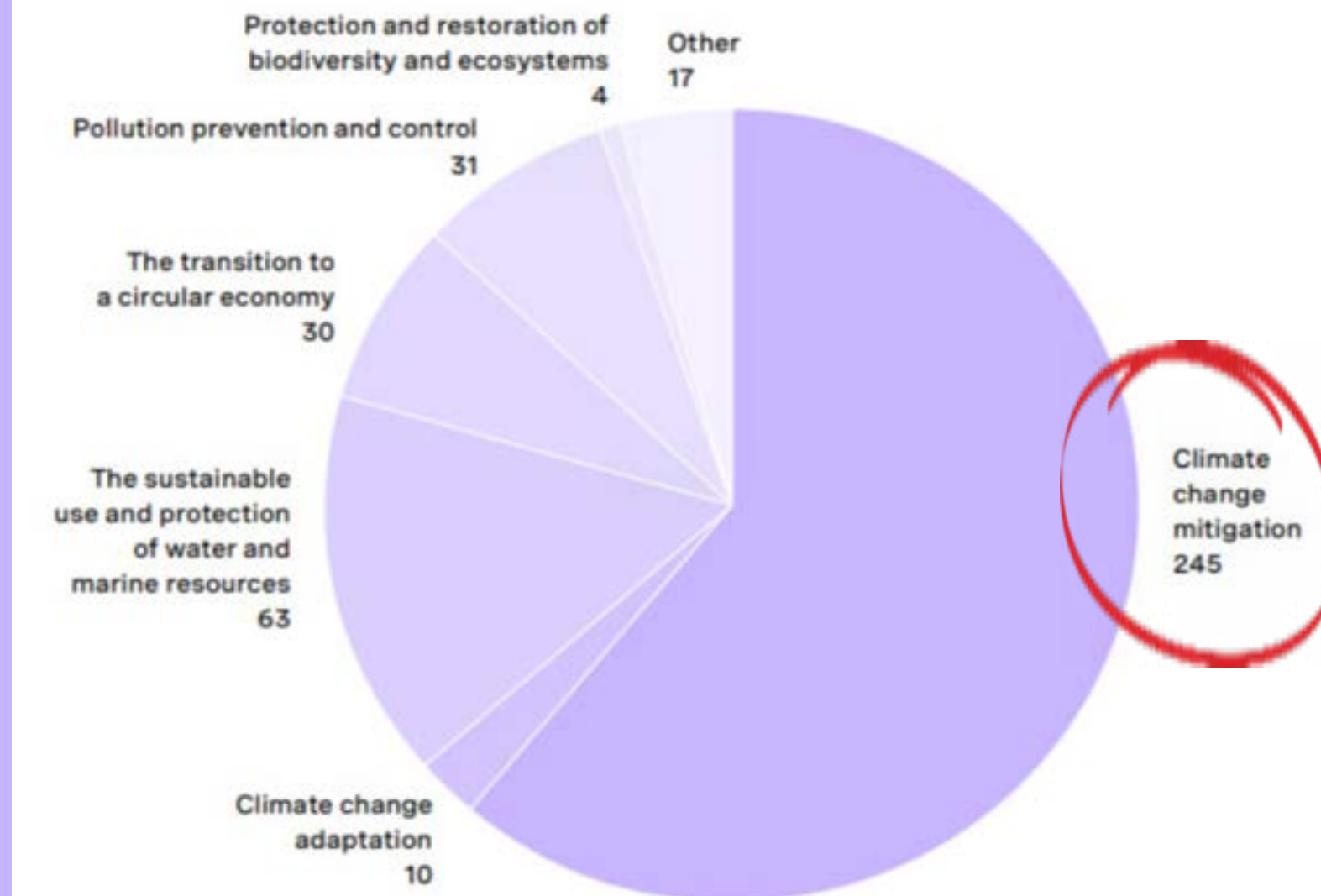
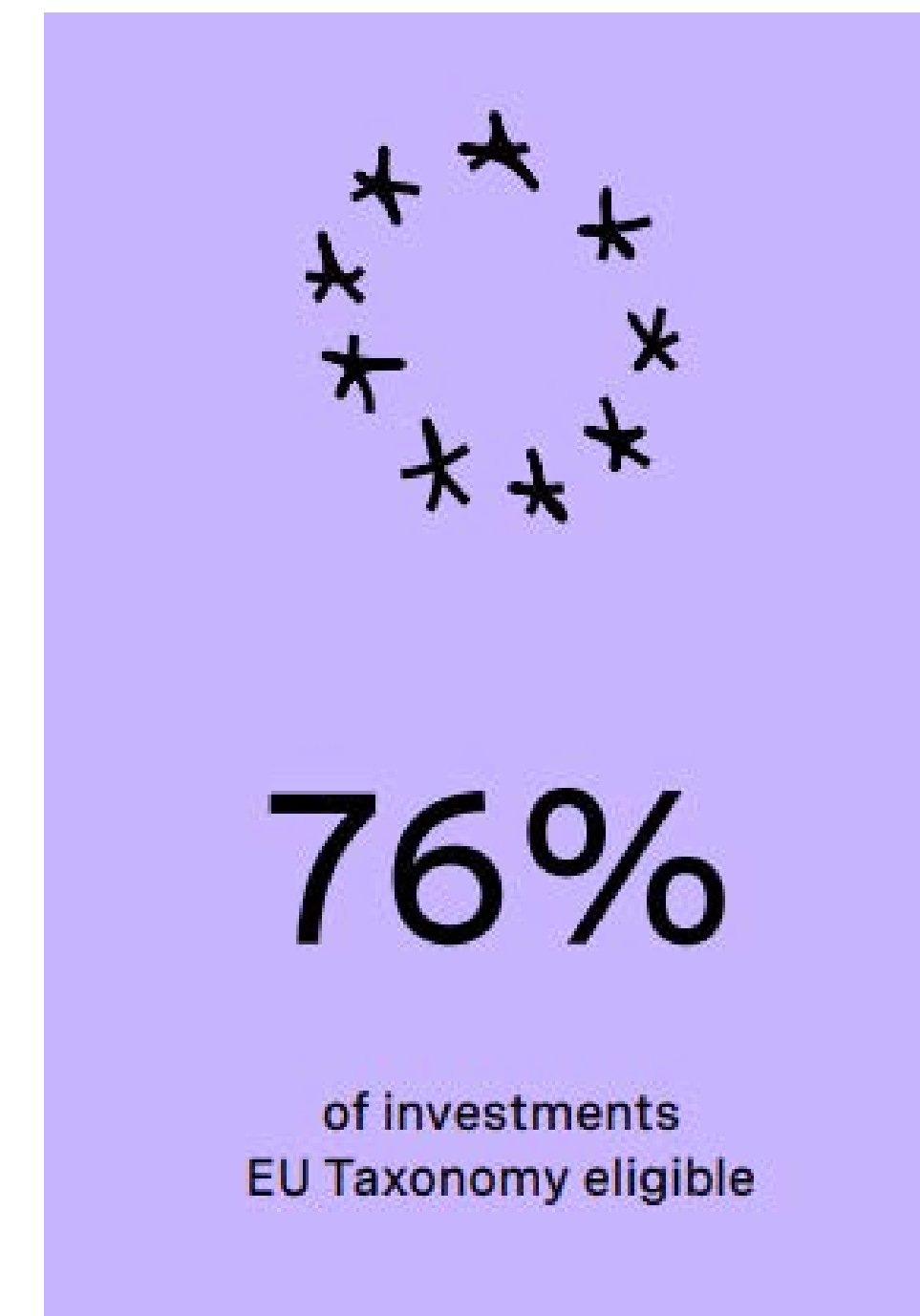


Nefco focuses on impact

We follow up our investments annually



EU Taxonomy assessment



Background:

Climate & Biodiversity

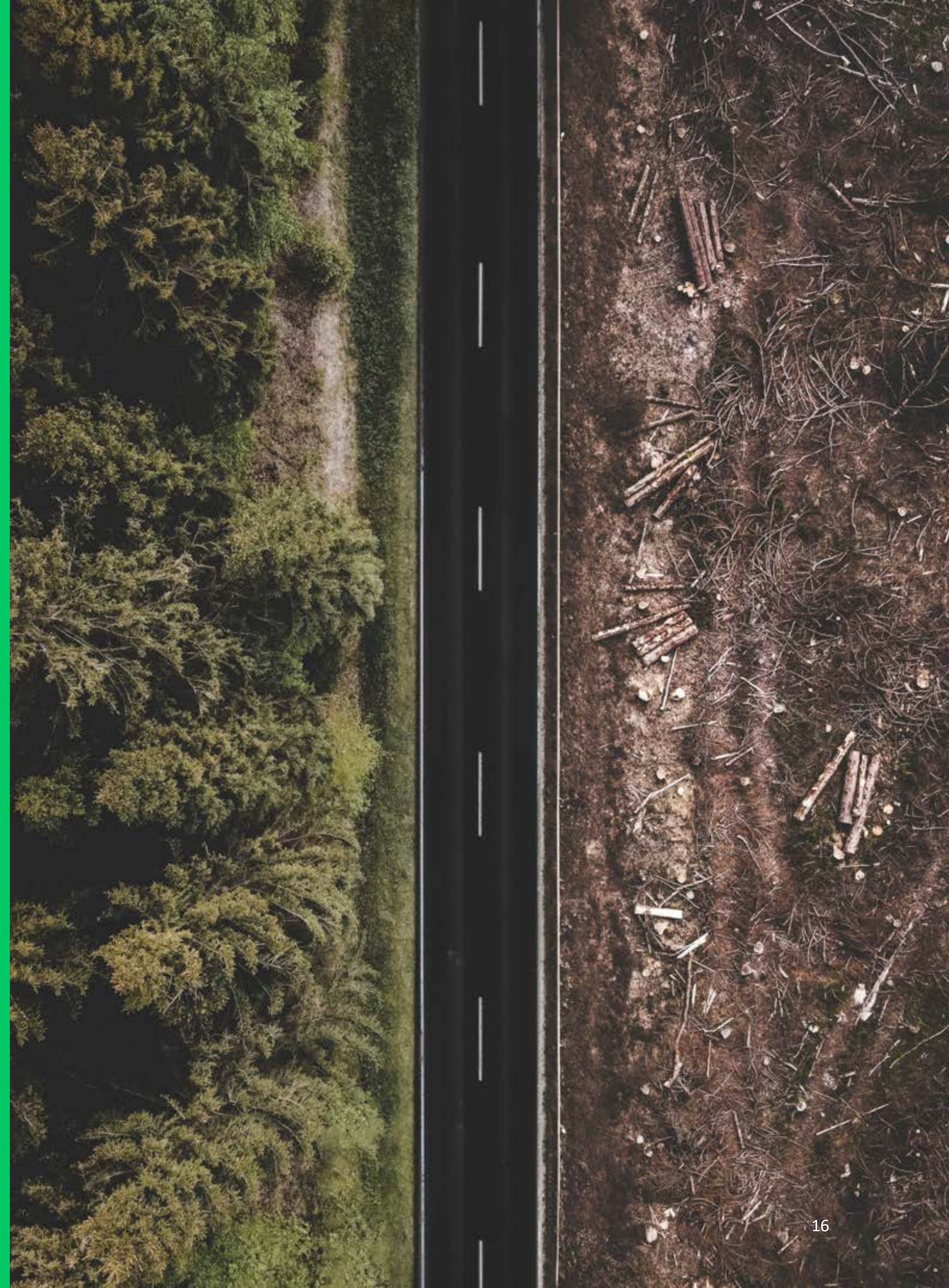
Biodiversity loss is **a problem equal in size** compared to the climate crisis, but knowledge lags a few years behind

The climate crisis cannot be tackled without preserving nature

Biological diversity is declining globally at a rate unprecedented in human history

We need to act now to be in the forefront of this development. Nature does not wait.

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Biodiversity: Why is it important for Nefco?

Biodiversity protection – embedded into our DNA



Nefco Strategy 2021-2025

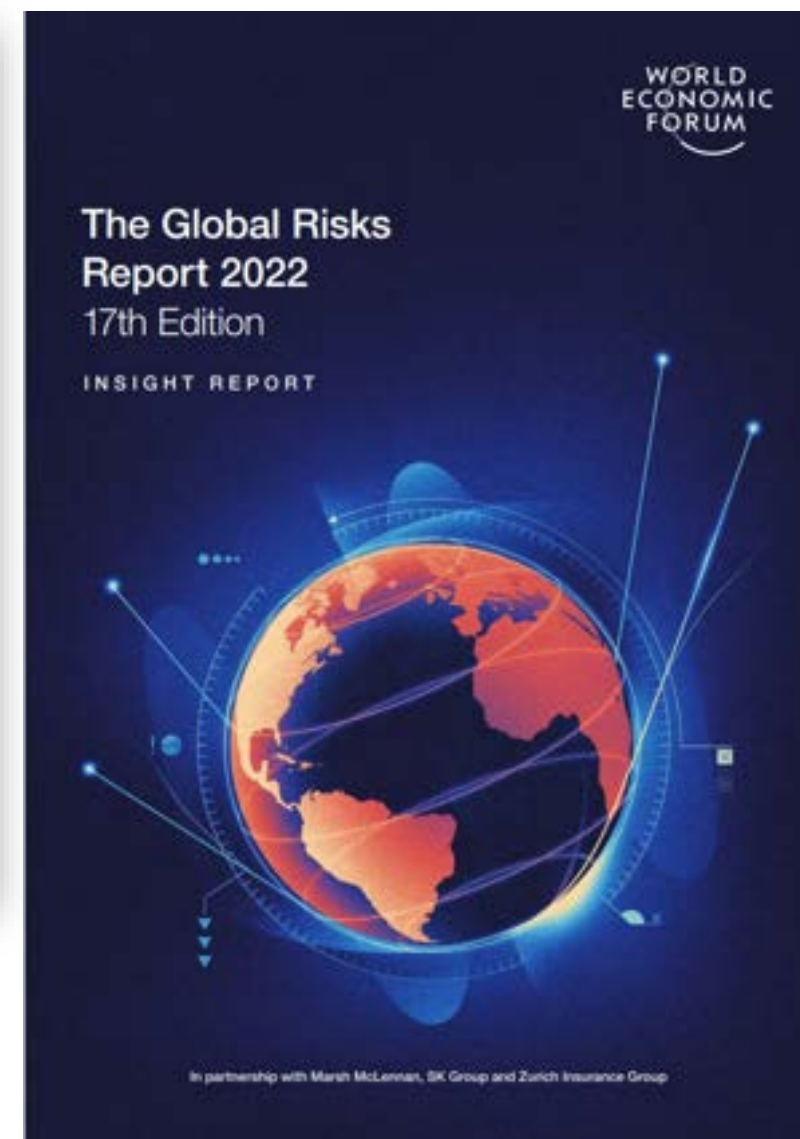
Environmental & Sustainability Policy

Pioneer in green financing

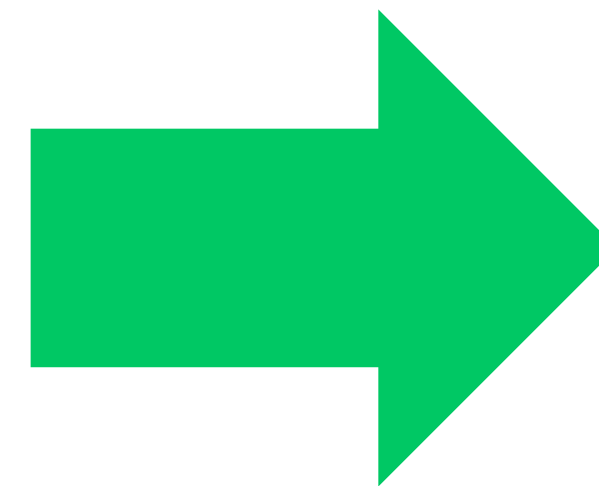
Financial sector has a role to play

Nefco Biodiversity Pilot Programme

Ambition, acceleration and action

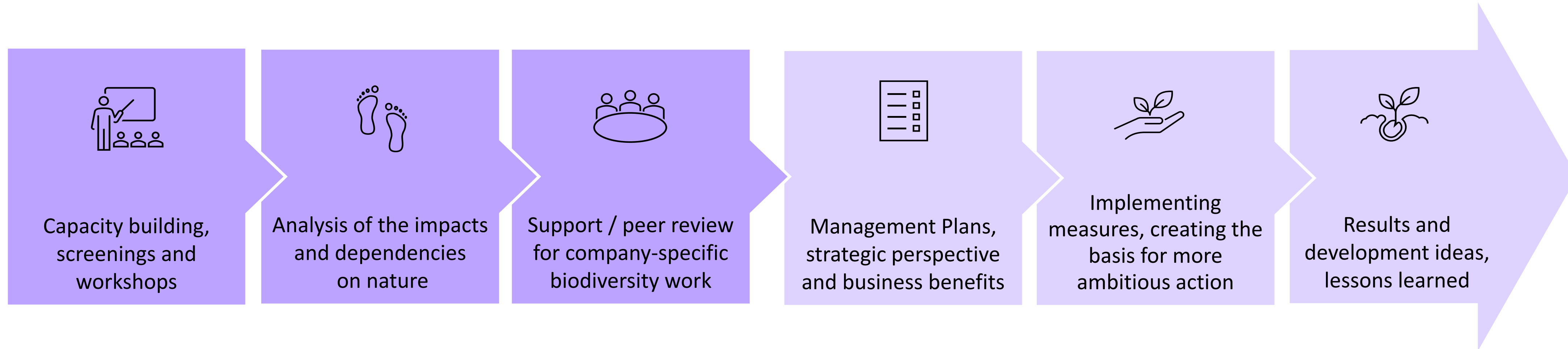


- Follow latest policy & scientific development
- Contribute to knowledge transfer and learning
- To become a “doer” & hands on approach
→ **accelerate action**
- Lower the threshold for SMEs to take action!



**Pioneer
Pilot and test
Plan for a scale up**

Aiming for active participation & action



“The momentum is now! Biodiversity has great momentum with huge global interest.”

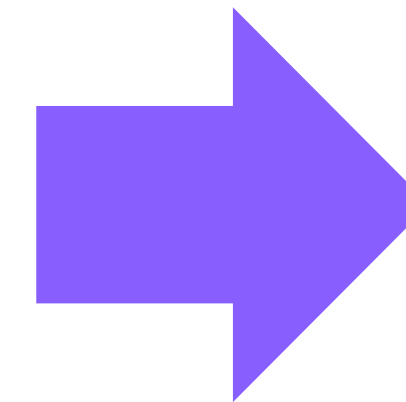
“Monitoring as the most challenging issue.”

“Get inspiration and benchmark from the other participants.”

“Sharing some interesting thoughts and ideas with others.”

Concrete pilots, but aiming for scale up

KLAPPIR	Scoping biodiversity reporting requirements
BALTCAP	Assessing “no net loss” and “net-gain” approach for a wind farm
PUREWASTE	Development of on-site biodiversity measures with local cooperation
NORSEPOWER	Understanding impacts and dependencies along the value chain
SULAPAC	Review of the raw-materials and their impacts on biodiversity
Confidential client	Development of a concept for nature-friendly solar parks



- ✓ Now moving on with actual management and implementation plans
- ✓ Scaling up learnings
- ✓ Opportunities identified:
 - ✓ design phase
 - ✓ value chain analysis
 - ✓ recycling solutions
 - ✓ local stakeholders
 - ✓ sales support
 - ✓ Etc.

More information and inspiration

www.nefco.int/biodiversity

About the Biodiversity Pilot Programme

Unique pilot programme for Nordic SMEs

The Biodiversity Pilot Programme will start in autumn 2022 and existing Nefco clients in the Nordics are eligible to apply. The pilot programme aims to co-create concrete biodiversity actions with companies and share knowledge on nature-positive impact strategies.

[Read more](#)



Article: Biodiversity decline requires concrete actions from the financial sector

"Financial institutions have a crucial role to play in preventing biodiversity loss and conserving and restoring nature through their activities," writes Katarilina Vartiainen, Senior Manager, Environment and Sustainability.

[Read the article](#)



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The Nordic Green Bank

Nordic Environment Finance Corporation

29 August 2022



New Biodiversity Pilot Programme aims to test and develop nature-based solutions with companies

Nefco is planning to launch its first Biodiversity Pilot Programme in the autumn of 2022. The purpose of the two-year programme is to test and develop suitable biodiversity solutions in collaboration with companies to achieve additional positive impacts for nature.

"Financial institutions are in a key position to prevent biodiversity decline and conserve and restore nature through their activities. As a pioneer in green financing, we want to set an example to other financial institutions that are still considering their nature-positive impact strategies," says **Trond Moe**, Managing Director of Nefco.

[Read the news release](#)



7.9.2023

Global Biodiversity Framework: outcomes, goals and next steps

Marina von Weissenberg, Senior Ministerial Adviser at the Finnish Ministry of the Environment and Finland's Chief Negotiator for Biodiversity gave a presentation to Nefco on the results of COP15 and the objectives and implementation of the Global Biodiversity Framework.



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The Nordic Green Bank

Accelerating the green transition

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#NordicGreenBank
#ready2risk4green

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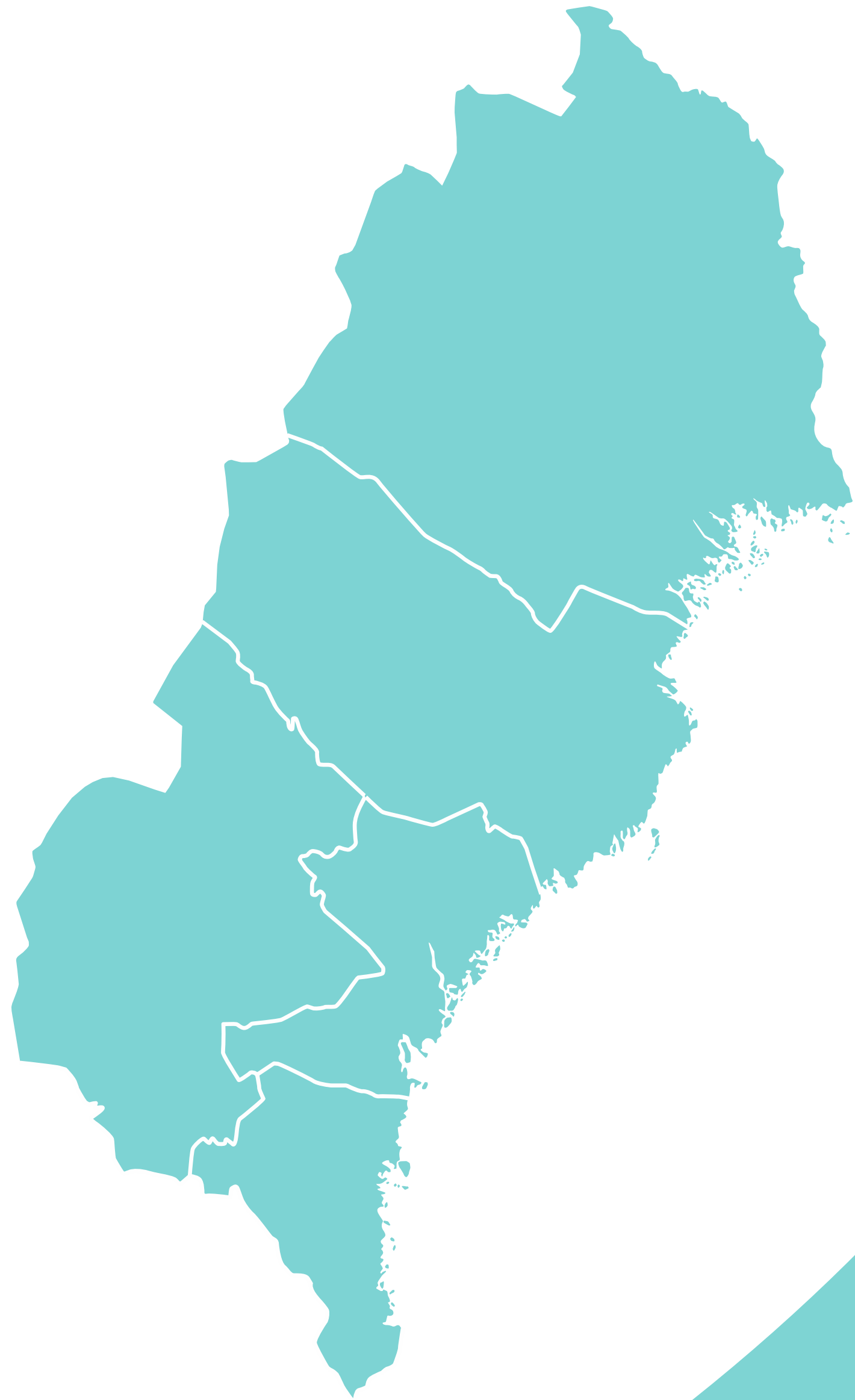
NORRLANDS FONDEN

Per Nilsson – Business Analyst



Roots from the mining industry

1961 -LKAB started to allocate capital to the fund, Norrlandsfonden, to support funding of expanding companies in Norrland.



Financing of companies in the five northern- most counties.

NORRLANDSFONDEN



OUR POSITION

Financing to companies in
Norrland

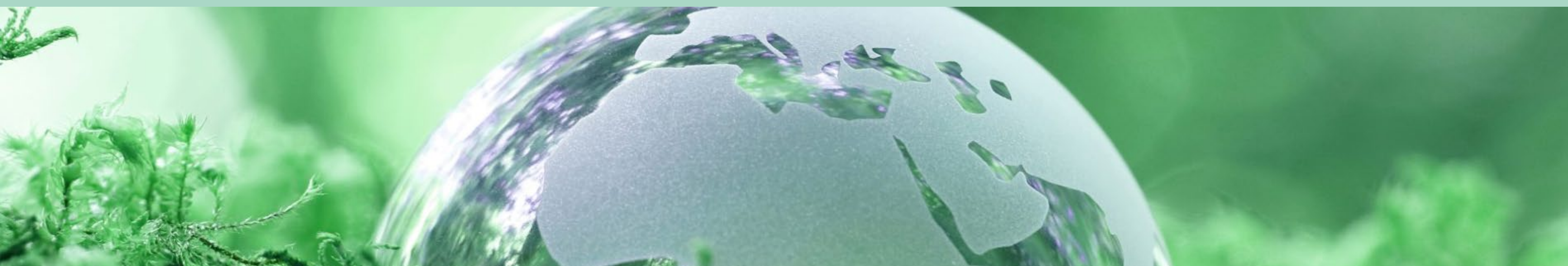
Accepting greater risk **by**
offering risk-loans,
independent actor,
complement the market

Develop the business-life of
Norrland,
compensates for
geographical disadvantages



Create growth by capital

NORRLANDSFONDEN



WHY

Sustainable growth in all
of Norrland

Norrlandsfonden
supports companies in all
phases

Supplementing the existing
financing-industry's offer to
companies in Norrland

More sustainable growth-companies in Norrland

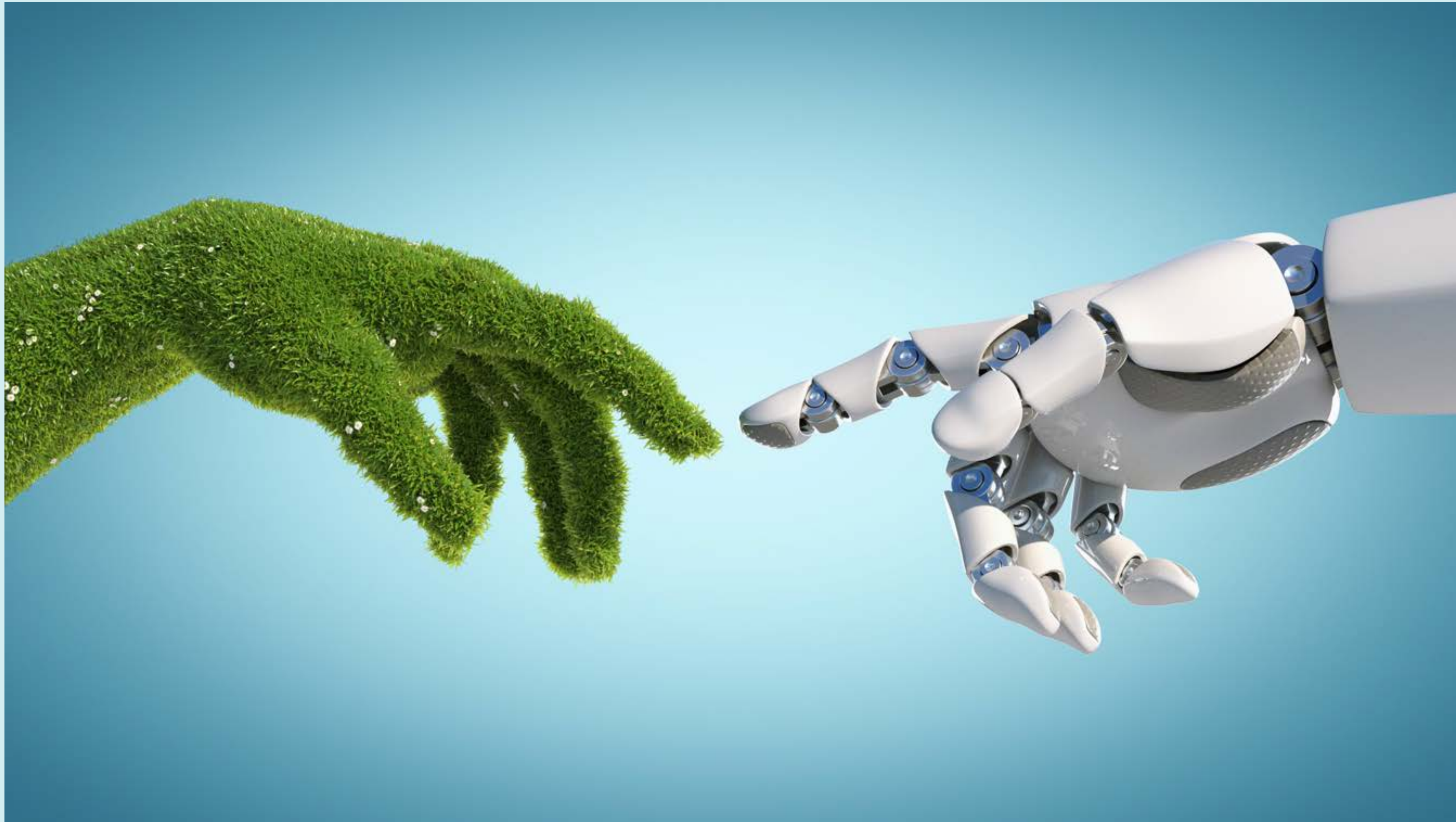
Våra låneformer

Flexible and market-adapted loans

Convertible loans

Guarantees and Surities

Reference cases



Linnovation



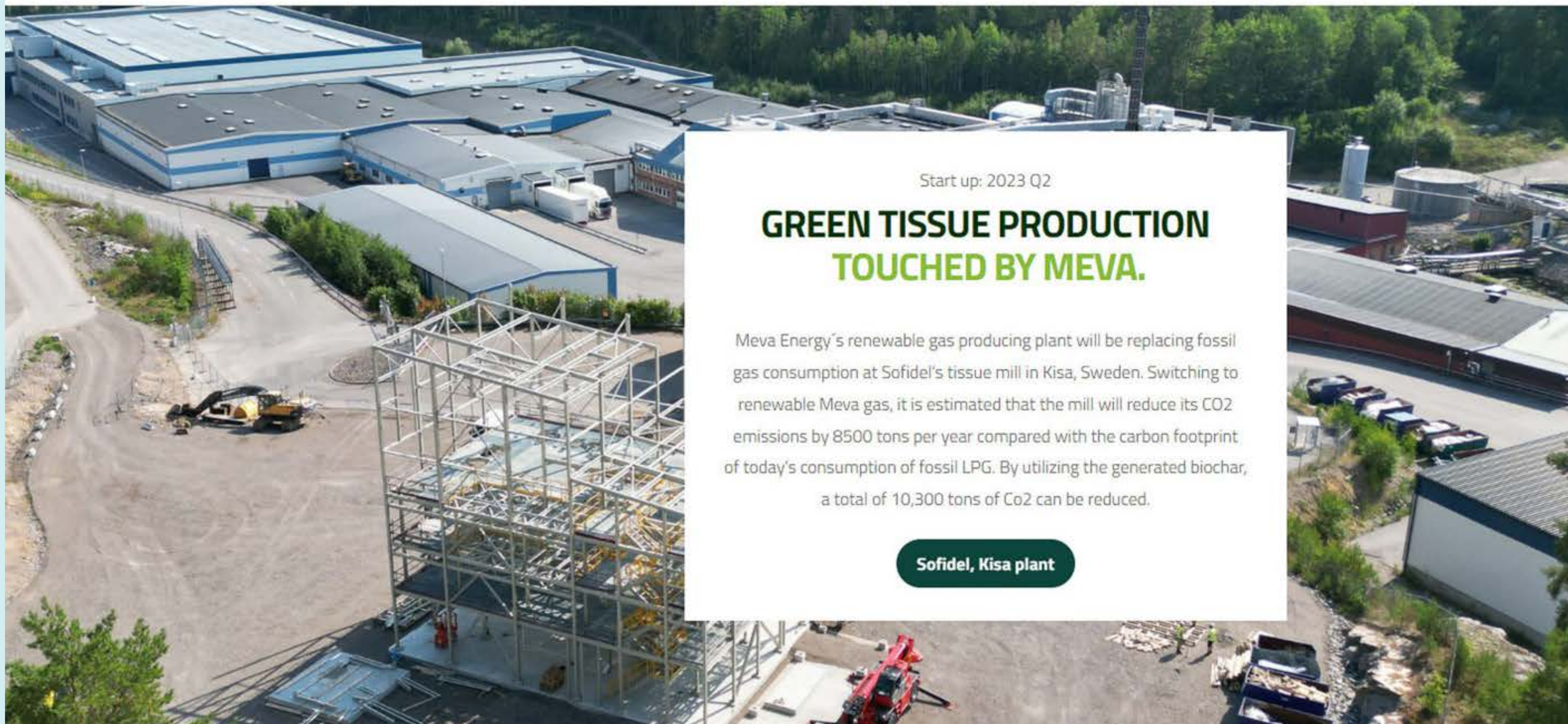
ENSURE OPERATION IN COLDER CLIMATE

The expansion of wind power is in full swing in the world. Places with a cooler climate offer better wind conditions and the cold air is heavier and therefore gives more effect. However, there are problems with wind power in cold climates due to ice formation on the wind turbines' rotor blades. The ice forces wind turbines to long down-times, and it is dangerous when large blocks of ice drop from the spinning blades.

Linnovation



Meva Energy



Start up: 2023 Q2

GREEN TISSUE PRODUCTION TOUCHED BY MEVA.

Meva Energy's renewable gas producing plant will be replacing fossil gas consumption at Sofidel's tissue mill in Kisa, Sweden. Switching to renewable Meva gas, it is estimated that the mill will reduce its CO₂ emissions by 8500 tons per year compared with the carbon footprint of today's consumption of fossil LPG. By utilizing the generated biochar, a total of 10,300 tons of Co₂ can be reduced.

Sofidel, Kisa plant

Meva Energy



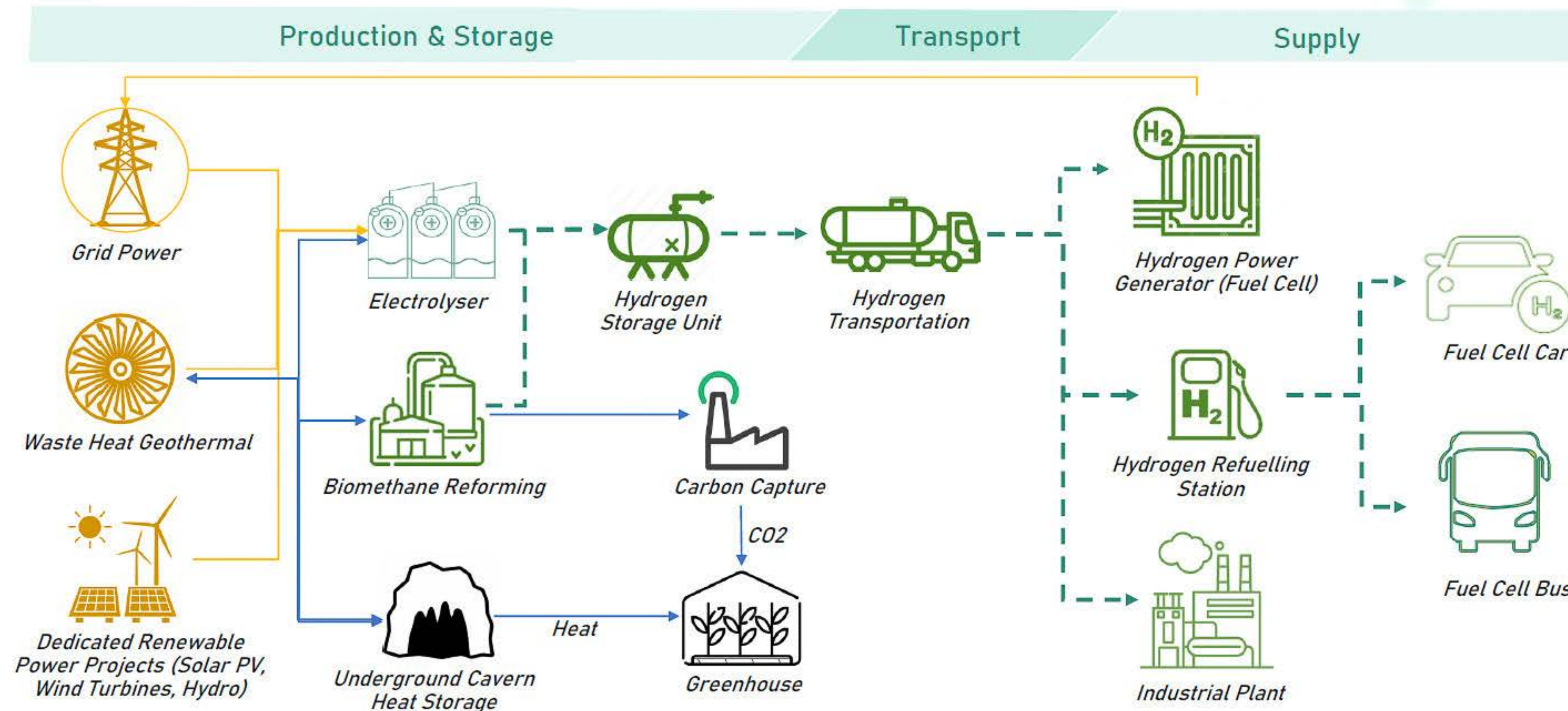
MEVA ENERGY SIGNS EUR 9 MILLION INVESTMENT AGREEMENT WITH AXA IM ALTS TO ACCELERATE DECARBONISATION IN EUROPE

In Pressreleases by Elsa Kayser / augusti 7, 2023

AXA IM Alts, a global leader in alternative investments is investing EUR 9 million in Meva Energy. The investment substantially increases Meva Energy's capacity and capability to help manufacturing industries convert their low value biomass waste residues to fossil-free energy by using a unique, cost-efficient gasification technology.

Botnia Hydrogen

Schematic of Hydrogen Infrastructure Project



envigas

ENVIGAS BIOCARBON

The steel industry is going **green**

Replacing the extensive use of coal with HQ BioCarbon can enable fossil free steel production. We are proud to be the first large-scale producer of high quality BioCarbon in the Nordics, helping the shift towards a more environmentally-friendly steel industry.





BioCoke

With precision control of residence time and a pyrolysis temperature close to 600°C, the HQ BioCarbon we produce is nearly free of all PAHs and carries a carbon content of > 90%. With low ash-content and a low level of humidity, this basic HQ BioCarbon is well adapted for use in various metallurgic applications.

[Read more](#) →



BioCoke

Envigas BioCoke is made from HQ BioCarbon, post-processed by densification and mixed with various types of binders. With a higher unit and bulk density, mechanical strength and a somewhat lower reactivity - it is suited for a broader range of applications.



BioOil

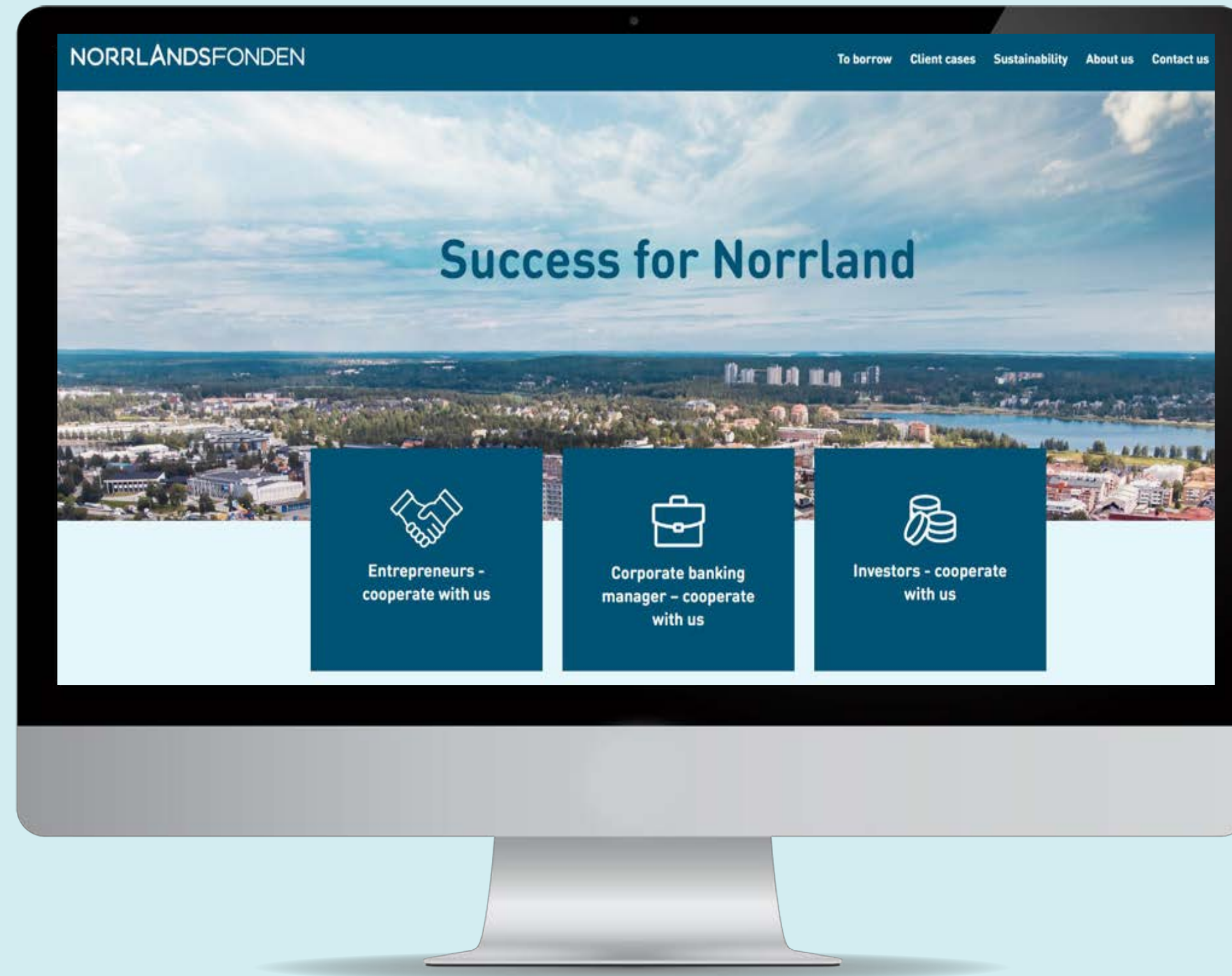
BioOil, also called pyrolysis oil, is a liquid mixture of acids and hydrocarbons which can be used as chemicals for a wide range of high value applications.



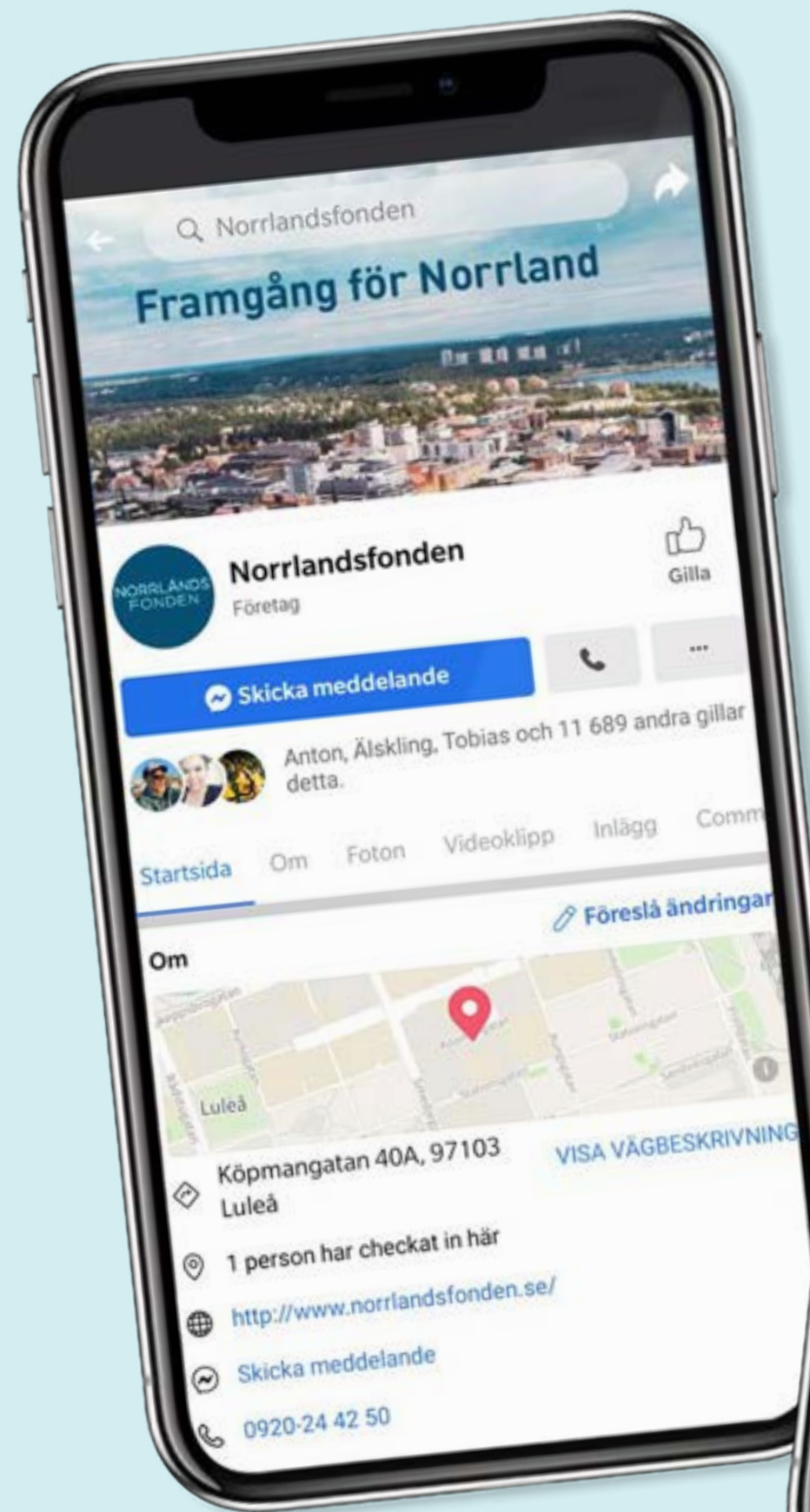
Syngas

The non-condensable phase of the Syngas produced in the pyrolysis process has a considerable heating value and is ideal to power a boiler producing heating or electricity. Syngas can also be post-processed to become methane or hydrogen.

Web



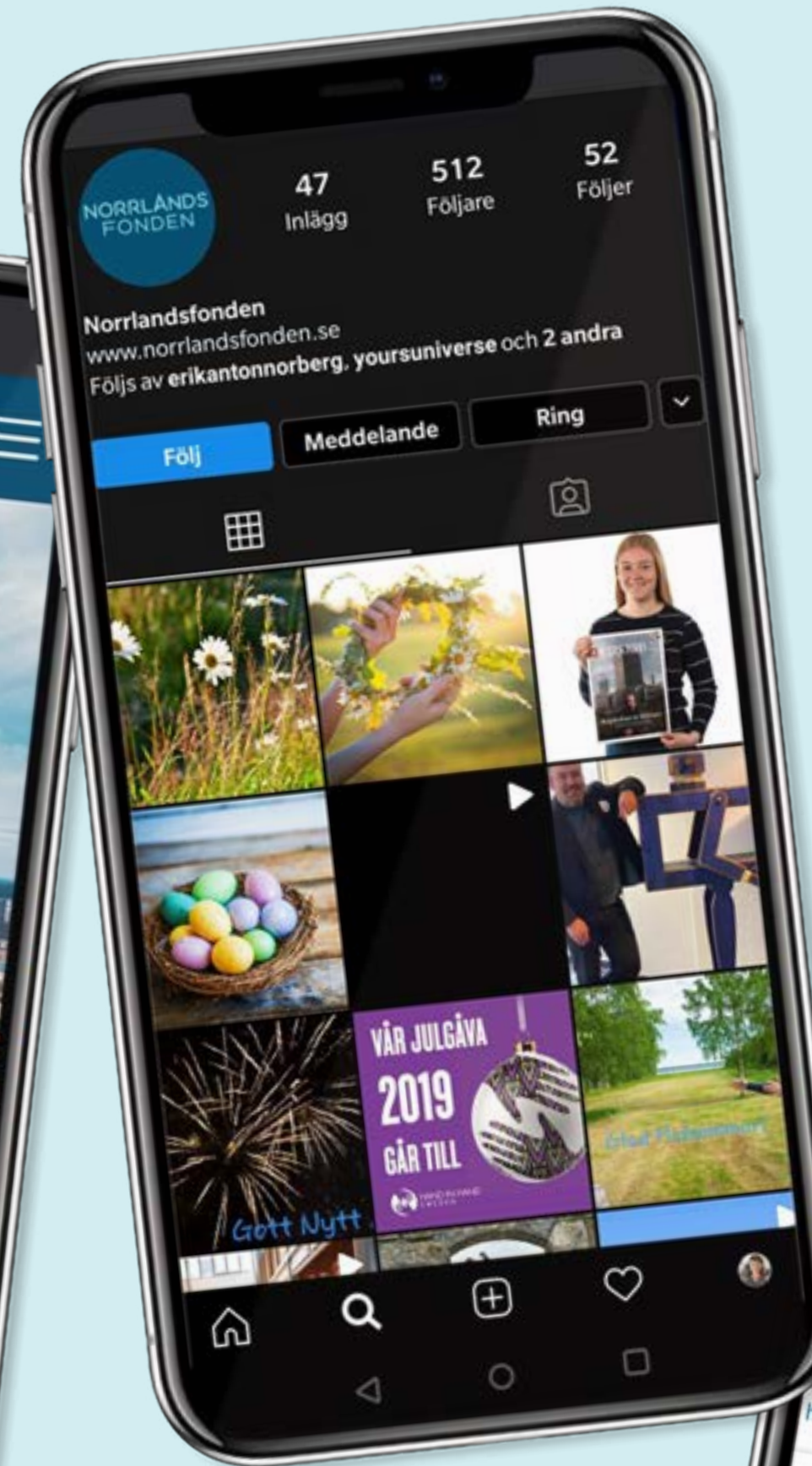
Social medias



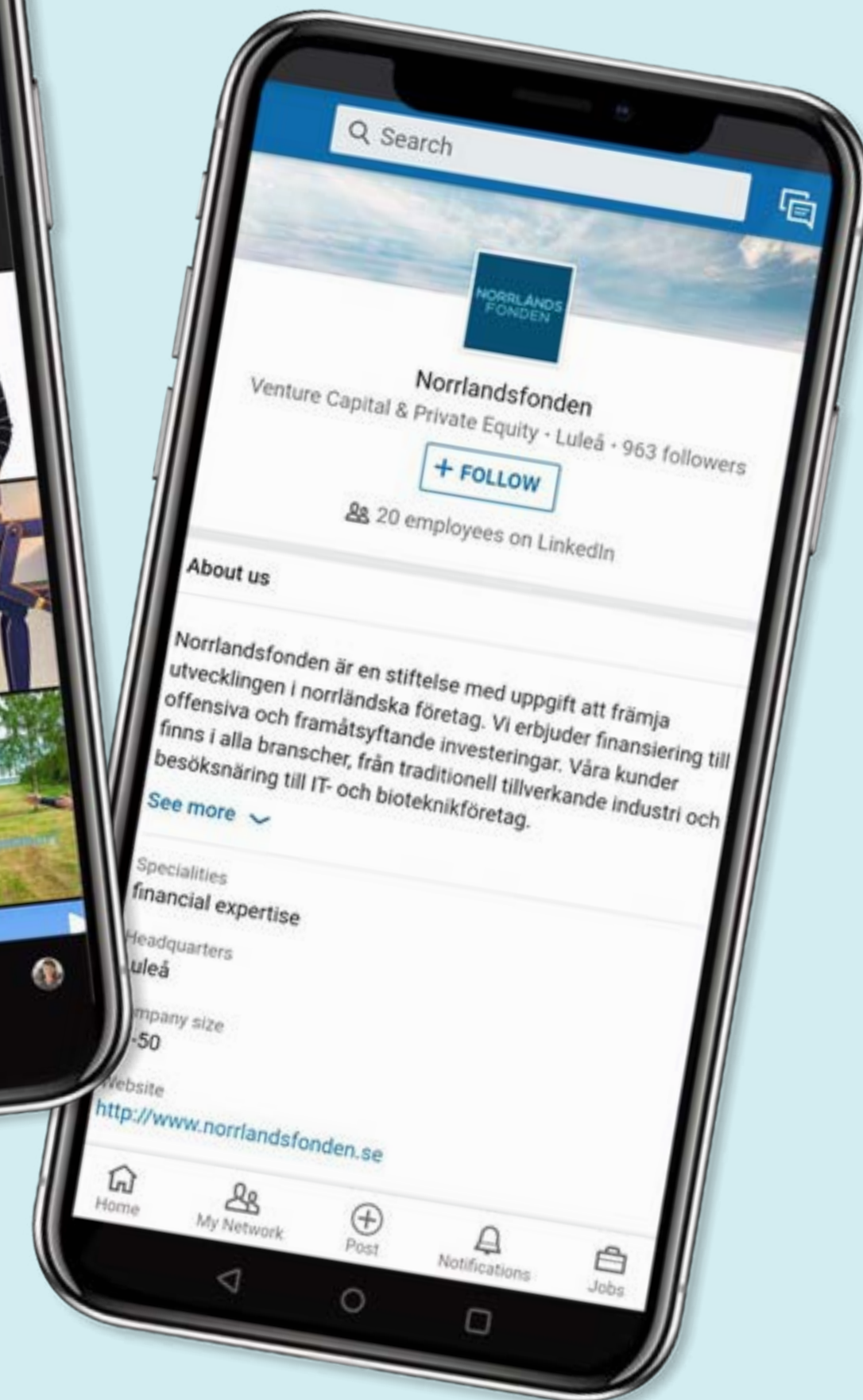
Facebook



LinkedIn



Instagram



Twitter

THANK YOU!

**NORRLANDS
FONDEN**

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Luleå, 10-12 October 2023



Barents Forest Forum 2023

Rovaniemi, October 4-5, 2023



Pasi Poikonen Natural Resources Institute Finland Luke (Luonnonvarakeskus)

Green Transition and Regional Sustainability Seminar in Luleå 11.10.2023

Background Information of the Event

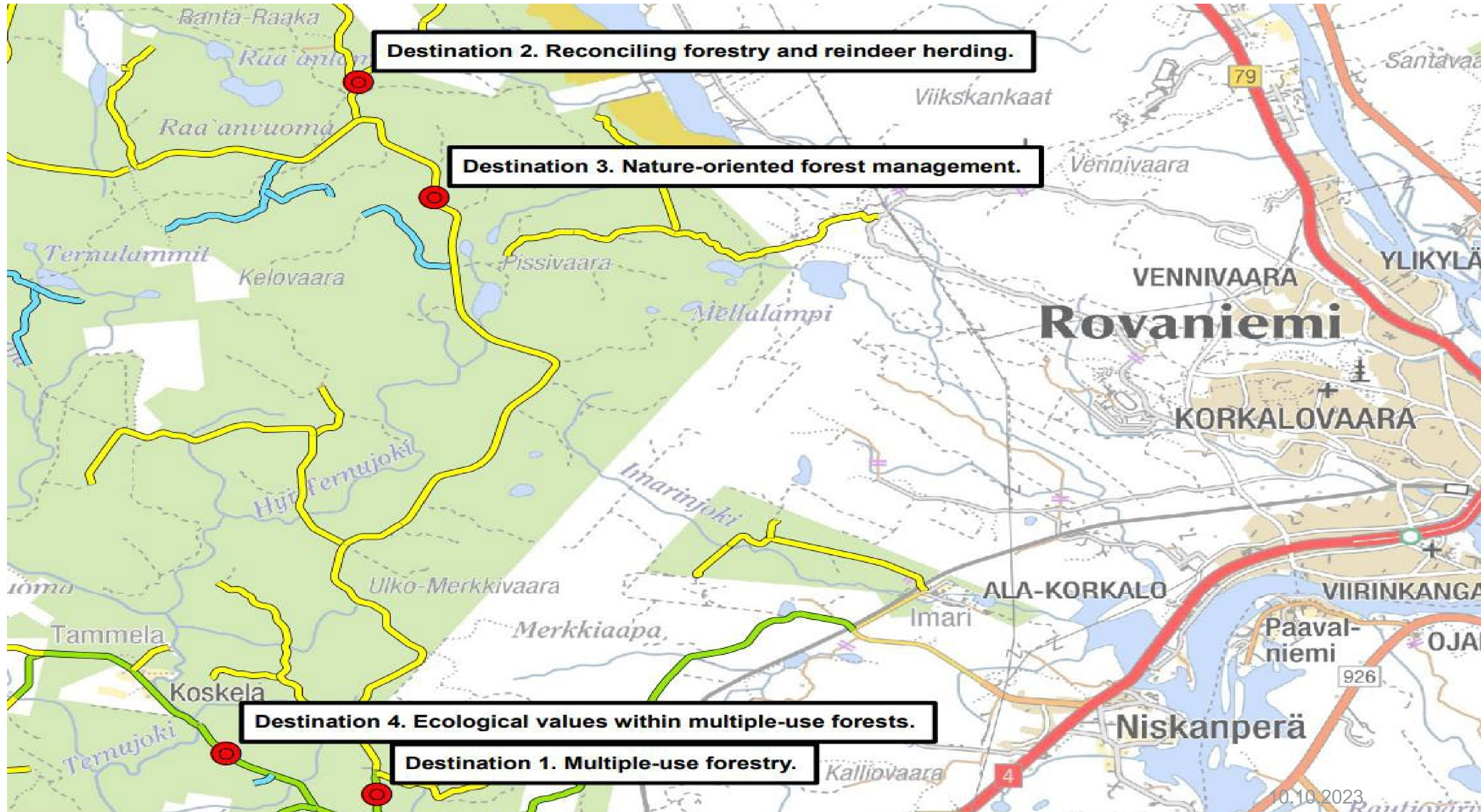
Organizers:

Natural Resources Institute Finland
Finnish Forest Center
Ministry of Agriculture and Forestry of Finland

86 participants from forest related business, research, education institutes and agencies

15 presentations & 5 forest demonstration sites

Forest Demonstration Sites



Issues discussed during BFF 2023

Climate Smart Forestry (Carbon Sinks vs. Biodiversity)

Rotation Forestry vs. Continuous Cover Forestry Economic Importance of Forestry in the

Regional Economy Restrictions for Forest Utilization (EU Directives)

Reindeer Husbandry

Tourism and Recreational Needs

Challenges for the State-owned Forests (Metsähallitus)

New Types for Private Forest Ownership Wood Construction

Security of Supply – New Investments, Renewable Energy Timely Managed Silvicultural

Operations

Barents Euro-Arctic Council Working Group on Barents Forest Sector

Finland: Sanna Paanukoski, Pasi Poikonen & Jyrki Haataja

Sweden: Lars Andersson, Kristina Nilson, Rosario Garcia Gil & Dimitris Athanassiadis

Norway: Anne Delphin Gjerlaugsen, Knut Øistad & Guro Aanerød Stenhammer





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Green Transition and Regional Sustainability

Luleå, 10-12 October 2023



Interreg



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Aurora

INTERREG AURORA

Tina Nilsson
Programme Director



Interreg



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THE GOAL OF INTERREG AURORA 2021-2027

To encourage cross-border collaboration, and thereby strengthening the competitiveness, sustainability and attractiveness of the programme area through social inclusion, digitalisation and just green transition.

Kainuu

Pohjois-Karjala

SVERIGE

Norrbottn

Västerbotten

Västernorrland

NORGE

Finnmark

Troms

Nordland



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SUB AREA SÀPMI



Priority 1 - A smarter Europe **Smart and sustainable growth**

Specific Objective 1.1 Smart specialization, research and innovation
Specific Objective 1.2 Competitiveness of SMEs



Priority 2 - A greener Europe **Green and sustainable transition**

Specific Objective 2.1 Climate change adaptation
Specific Objective 2.2 Nature protection and biodiversity
Specific Objective 2.3 Sustainable mobility



Priority 3 - A more social Europe **Education, culture and sustainable tourism**

Specific Objective 3.1 Education and lifelong learning
Specific Objective 3.2 Culture and sustainable tourism



Priority 4 - A better Interreg Governance **Better and more sustainable cross-border cooperation**

Specific Objective 4.1 Cross-border capacity building



Summary of the Interreg Aurora Programme document



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Priority 1

Smart and sustainable growth

Specific Objective 1.1

Smart specialisation, research and innovation

Specific Objective 1.2

Competitiveness of SMEs

**GREAT
IDEAS
KNOW NO
BORDERS.**



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Priority 2

Green and sustainable transition

Specific Objective 2.1
Climate change adaption

Specific Objective 2.2
Nature protection and biodiversity

Specific Objective 2.3
Sustainable mobility

**CLIMATE
CHANGE
KNOWS
NO
BORDERS.**



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Priority 3 Education, culture and sustainable tourism

**Specific Objective 3.1
Education and lifelong learning**

**Specific Objective 3.2
Culture and sustainable tourism**

**COMPETENCE
KNOWS NO
BORDERS.**



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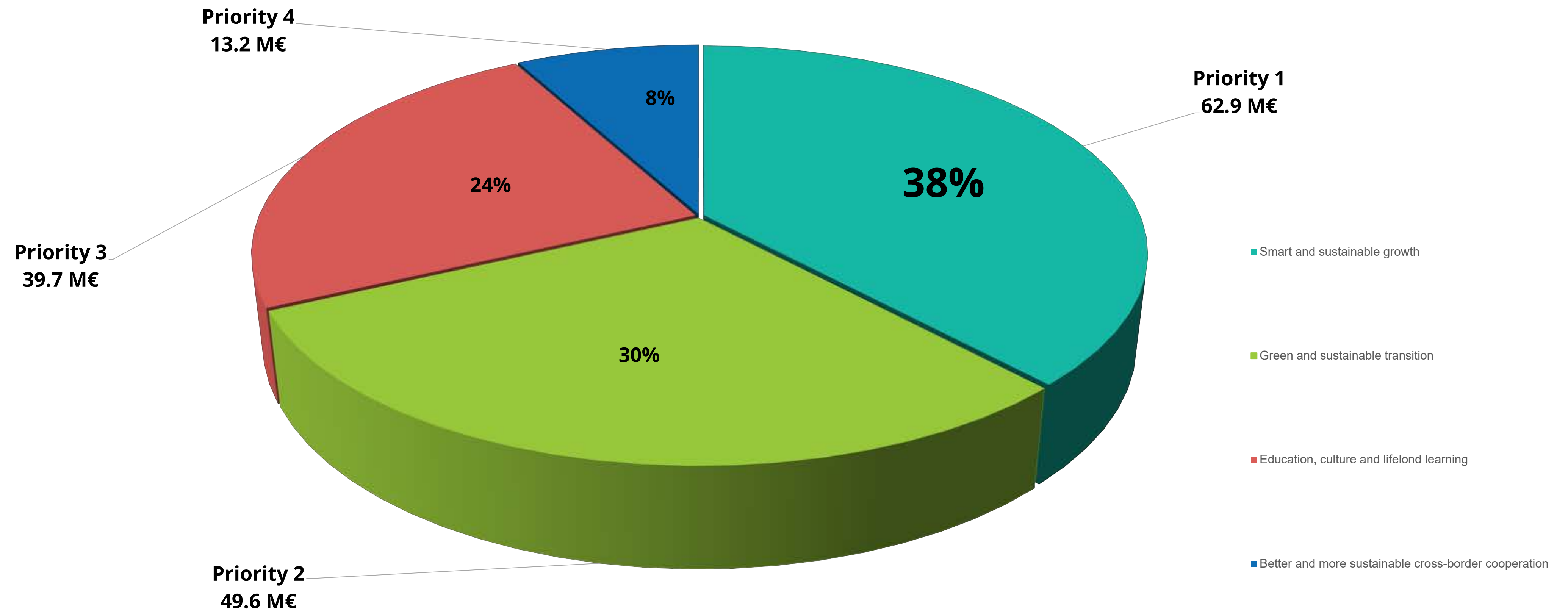
Priority 4 Better and more sustainable cross-border cooperation

Specific Objective 4.1 Cross-border cooperation capacity building

**MOTIVATION
KNOWS NO
BORDERS.**



Total Budget Allocation 165 M€



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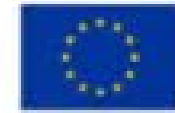
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Do you have an idea for a cross-border project?



www.interregaurora.eu

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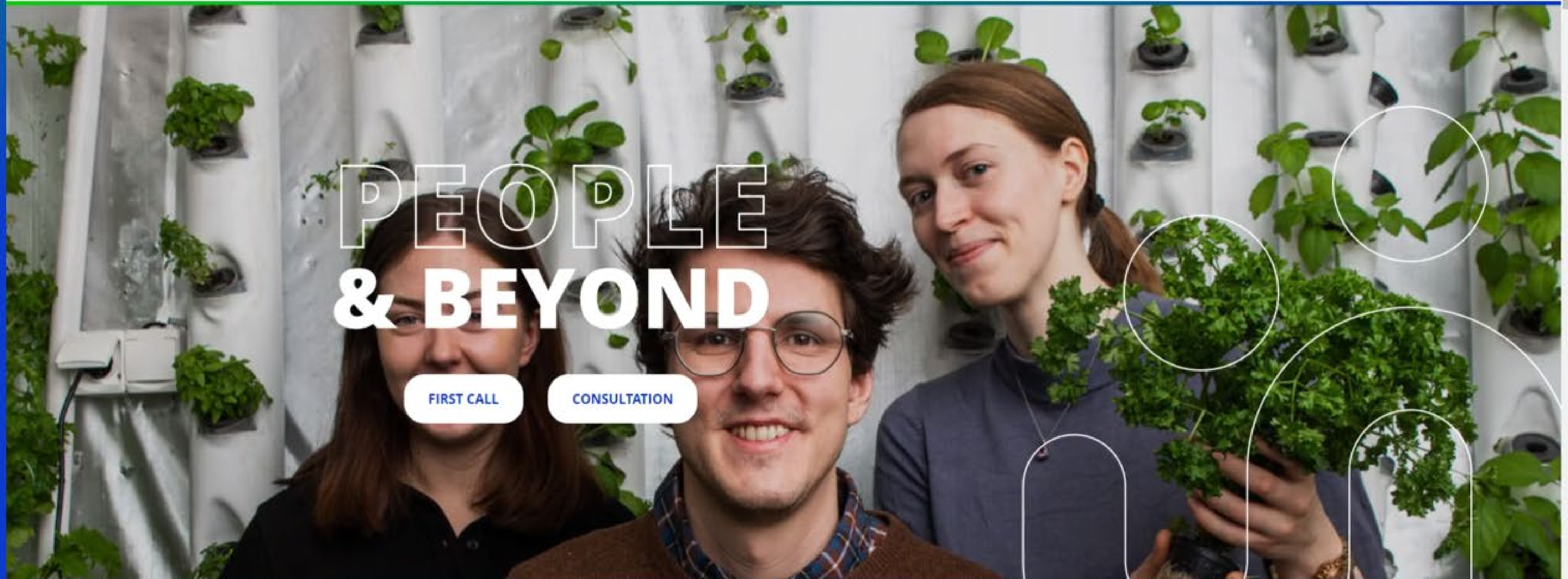
CONTACT US

MY APPLICATION

PEOPLE & BEYOND

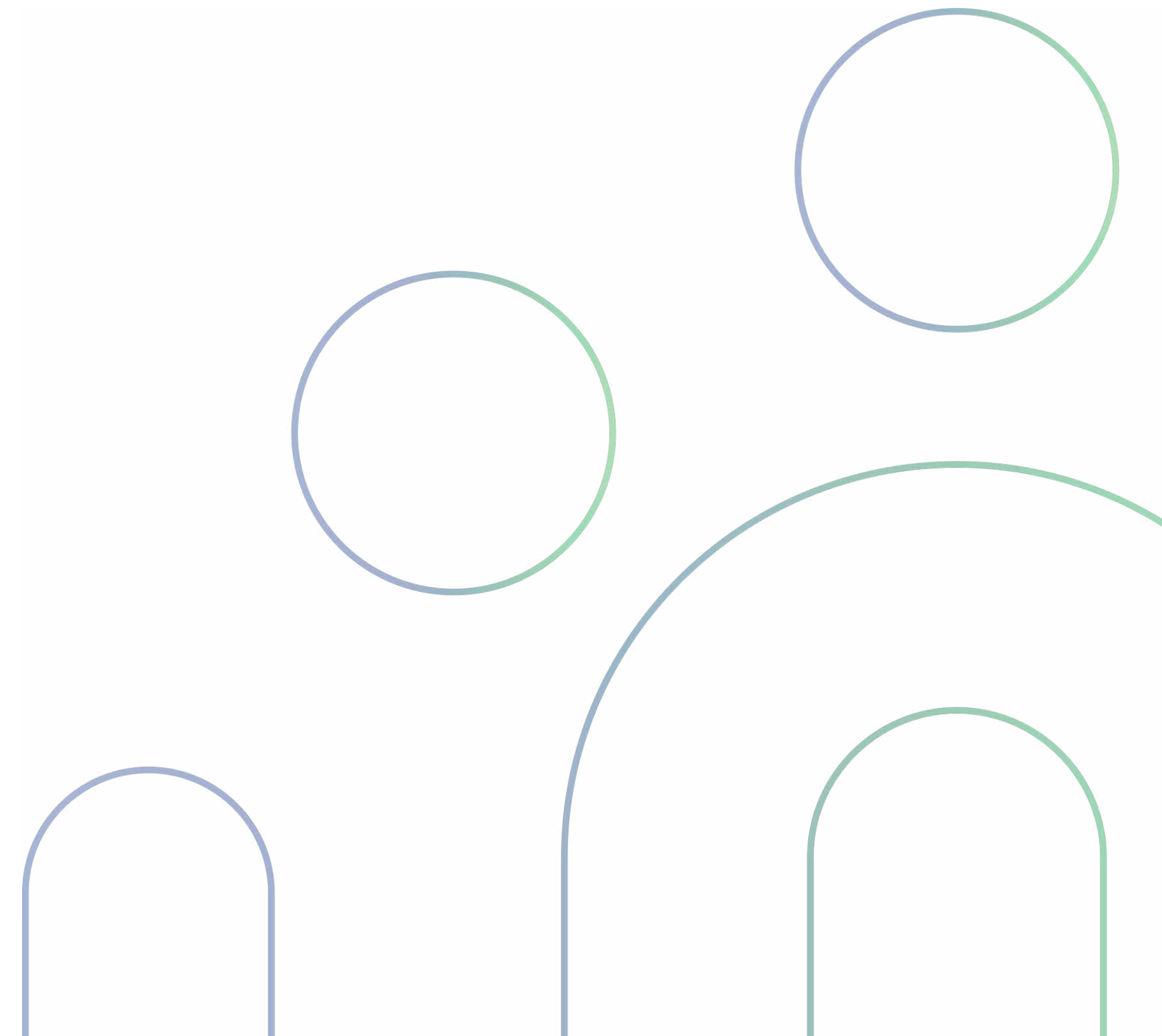
FIRST CALL

CONSULTATION



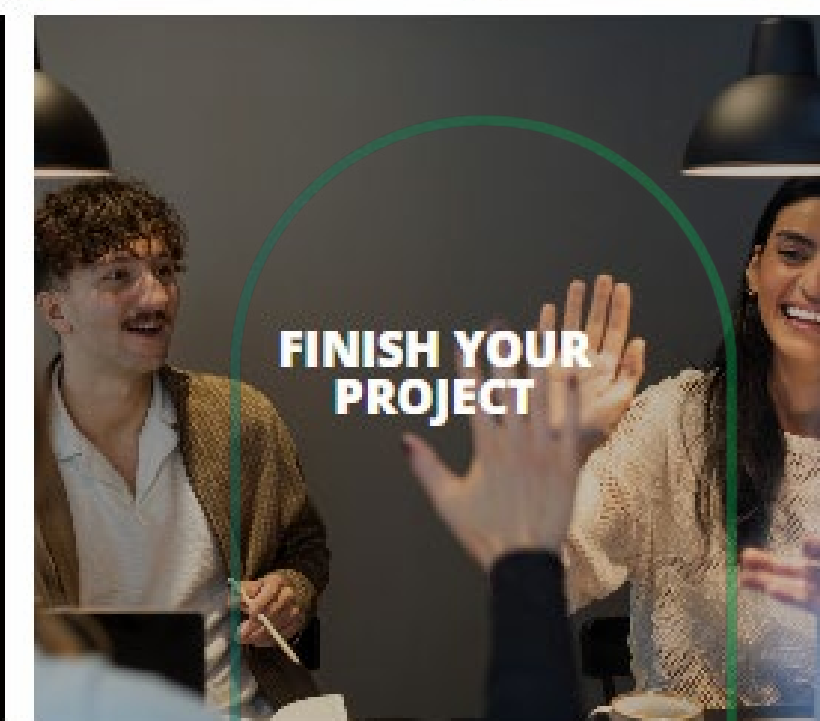
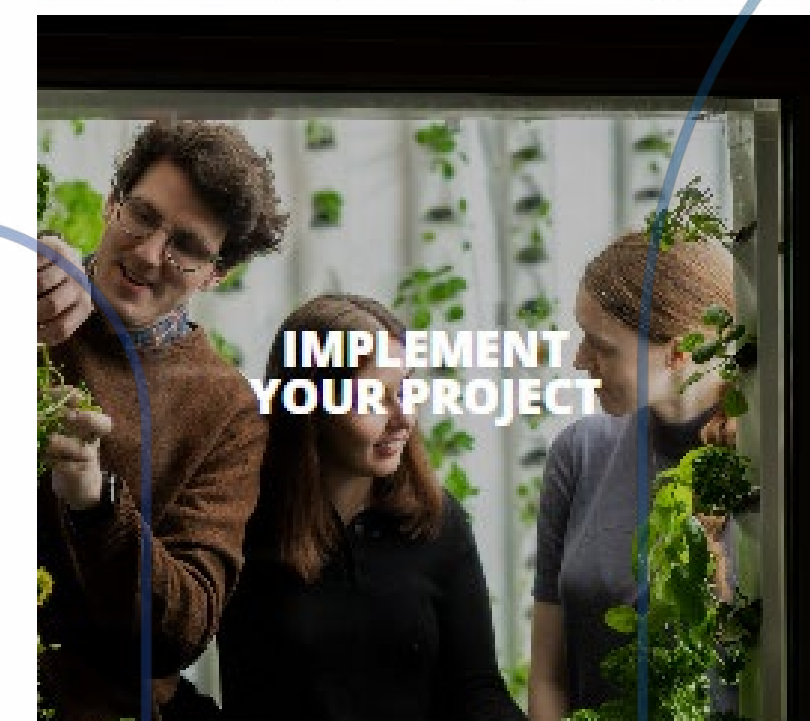
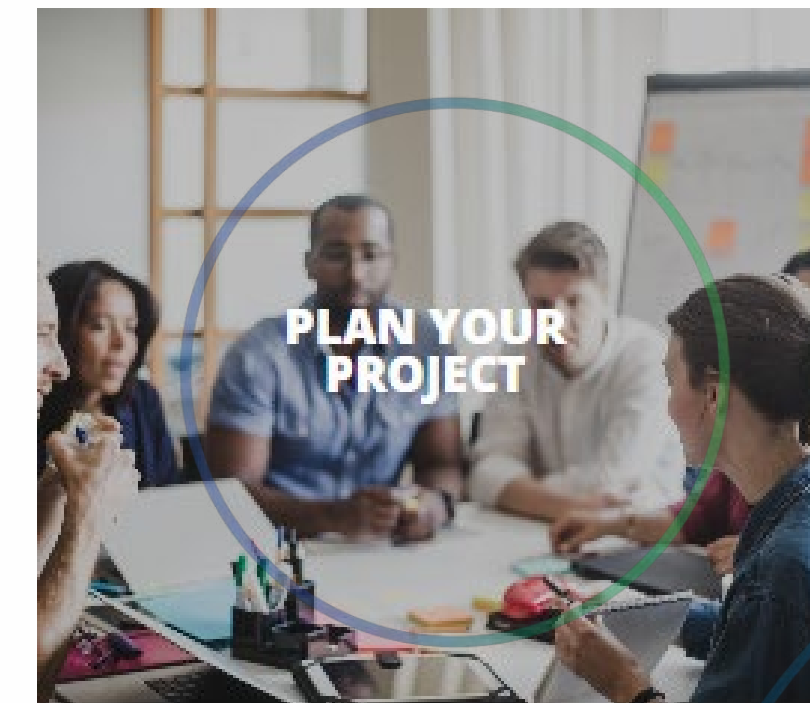
What signifies a good Interreg Aurora project?

- Relevance for the Programme
- Cross-border cooperation
- Sustainable development
- Partnership
- Project logic
- Relevance to target group
- Value for money
- Dissemination of project results



Get prepared!

- A continuous call system for Small-scale projects
- Third call for Regular projects closed 10 October 2023
- Fourth call for Regular projects Feb 5-March 5, 2024
- One joint application (SE/FI/NO)
- Simplifications
- Programme Manual
- Early project idea template/project consultation
- Contact the Joint Secretariat for questions



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WELCOME

[Interreg Aurora event
2023 - Interreg Aurora](#)



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IN OULU, FINLAND

SEE YOU 27-28 NOVEMBER, 2023

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**GREAT IDEAS
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Thank you for your attention!

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#interregaurora

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RE-HYDRO

RE-HYDRO : POWERING GREEN TRANSITION IN A MORE SUSTAINABLE WAY

11/10/2023

Anders Andersson, Associate Professor, Division of Fluid and Experimental Mechanics, Luleå University of Technology



We work across borders in the project
RE-HYDRO

HYDROPOWER 2.0 – POWERING GREEN TRANSITION IN A MORE SUSTAINABLE WAY

Want to know more?
www.interregaurora.eu



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Team RE-HYDRO



- Prof. Ali Torabi Haghighi
- Prof. Anu Soikkeli
- Dr. Ritesh Patro
- Niko Hänninen

(PhD/Master Researchers)

- Ali Mchayk
- Christine Kagawa Nakigudde
- Alireza Sharifi Garmdareh
- Emma Ahtiainen



- Associate Prof. Anders Andersson
- Associate Prof. Gunnar Hellström

(PhD/Master Researchers):

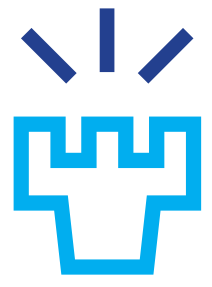
- Lovisa Sjöstedt



- Prof. Navinder Singh
- Adj. Prof. Patrik Andreasson (Vattenfall)

(PhD/Master Researchers):

- Jani Ahonen
- Pia Knobloch



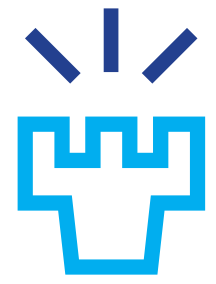
Motive

- Trade-offs and challenges for hydropower in recent years
- Comprehensive approach to hydropower that balances environmental protection with renewable energy goals.
- Changing role of Hydropower from baseload to a flexibility source

Cross-border cooperation?

- The Nordic region shares a similar climate, topography, nature, water resources, and culture, and is bound by similar social and cultural rights (such as the right to roam - allemansrätten) to nature.
- Many hydropower companies work across borders.
- Cross-border cooperation will build capacity and enable representatives of each country to learn from the others, tapping into methods and solutions that are developed or applied elsewhere.

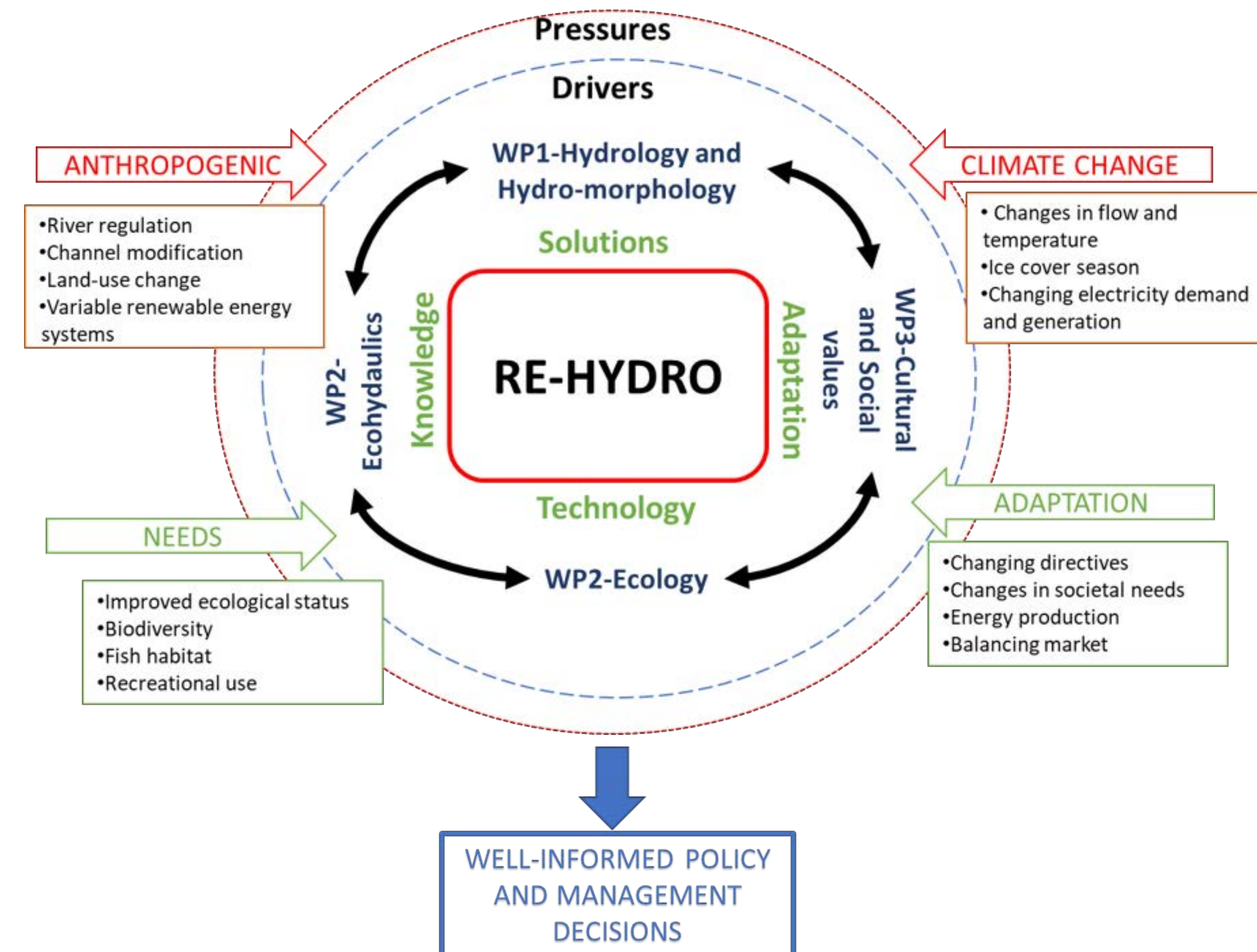
It is therefore natural and important to cooperate when it comes to tackling joint problems linked to global climate change and biodiversity loss.



The RE-HYDRO project (Feb 2023- Jan 2026)



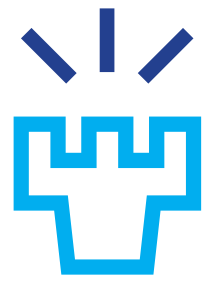
- **WP1:** Retrofitting and updating hydropower operations
- **WP2:** Ecohydraulic analysis of seasonal variations in regulated rivers
- **WP3:** Assessing the social-cultural perception of the impacts caused by the hydropower operations



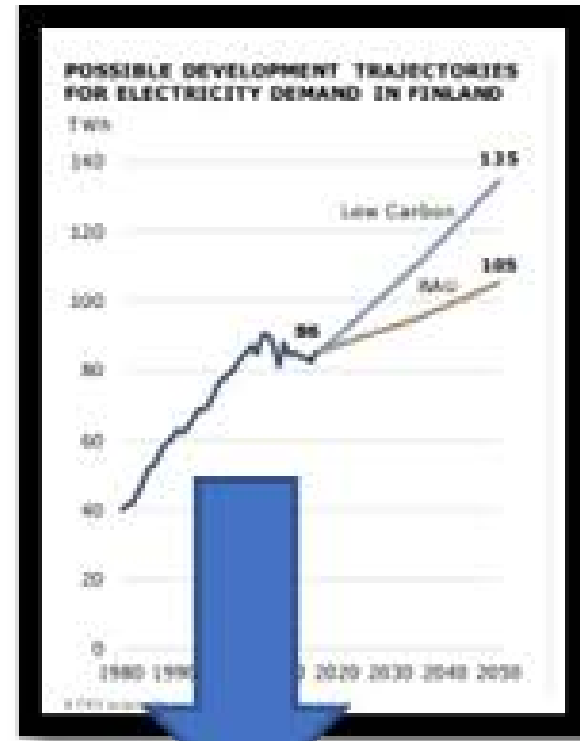
Our Objective:

- Developing integrated modeling approaches (WP 1 and WP 2) to assess complex climate-water-energy nexus interactions in river basins.
- Studying ecological conditions in the river systems regulated by hydropower through measurements of biodiversity with novel methods, to better assess scenarios of river restoration and changing flows (WP 2).
- Identification of various groups of interest and, a multiple-criterion analysis of socio-cultural needs and options of relevant stakeholders (WP3).
- Finally, producing recommendations for the sustainable management of water, energy, and biodiversity in Finland and Sweden (WP 1, 2 & 3).

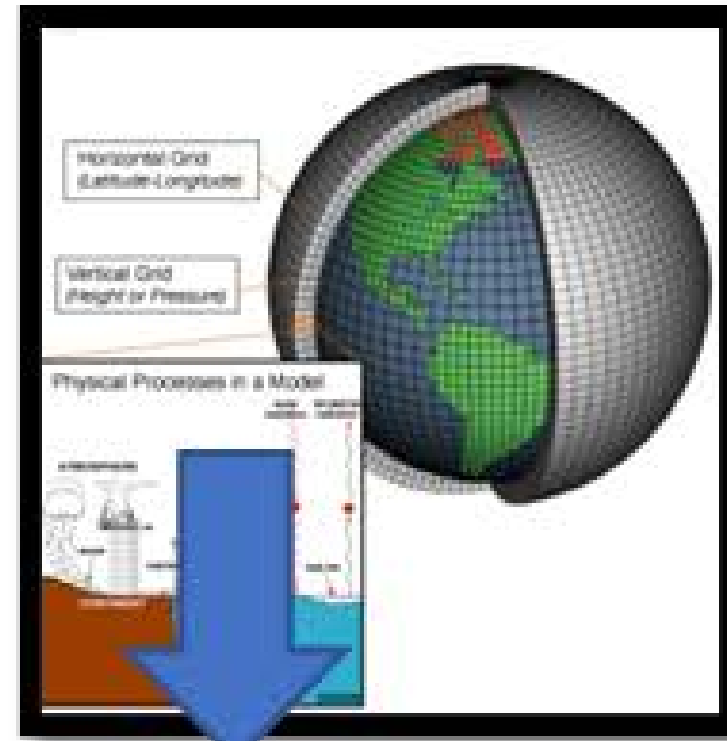




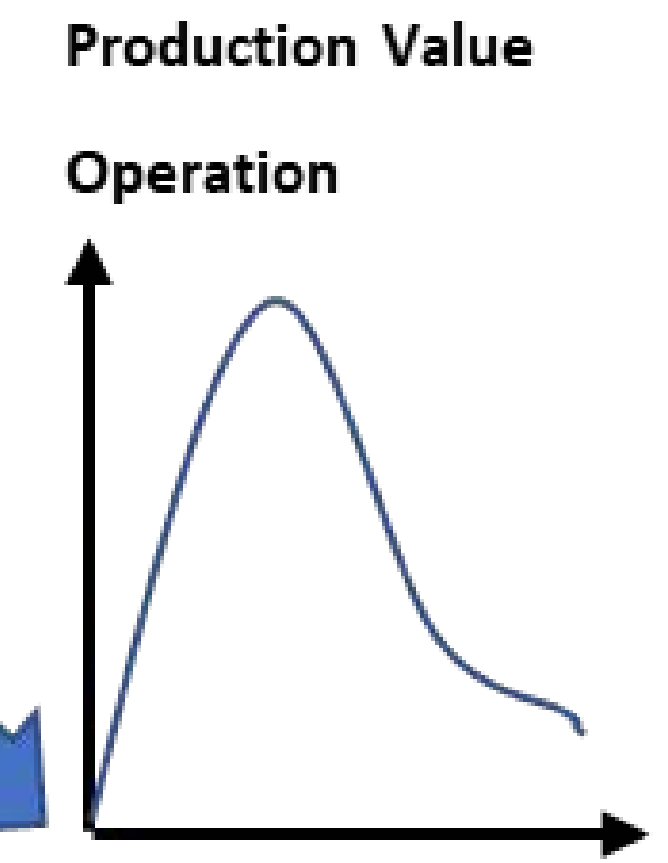
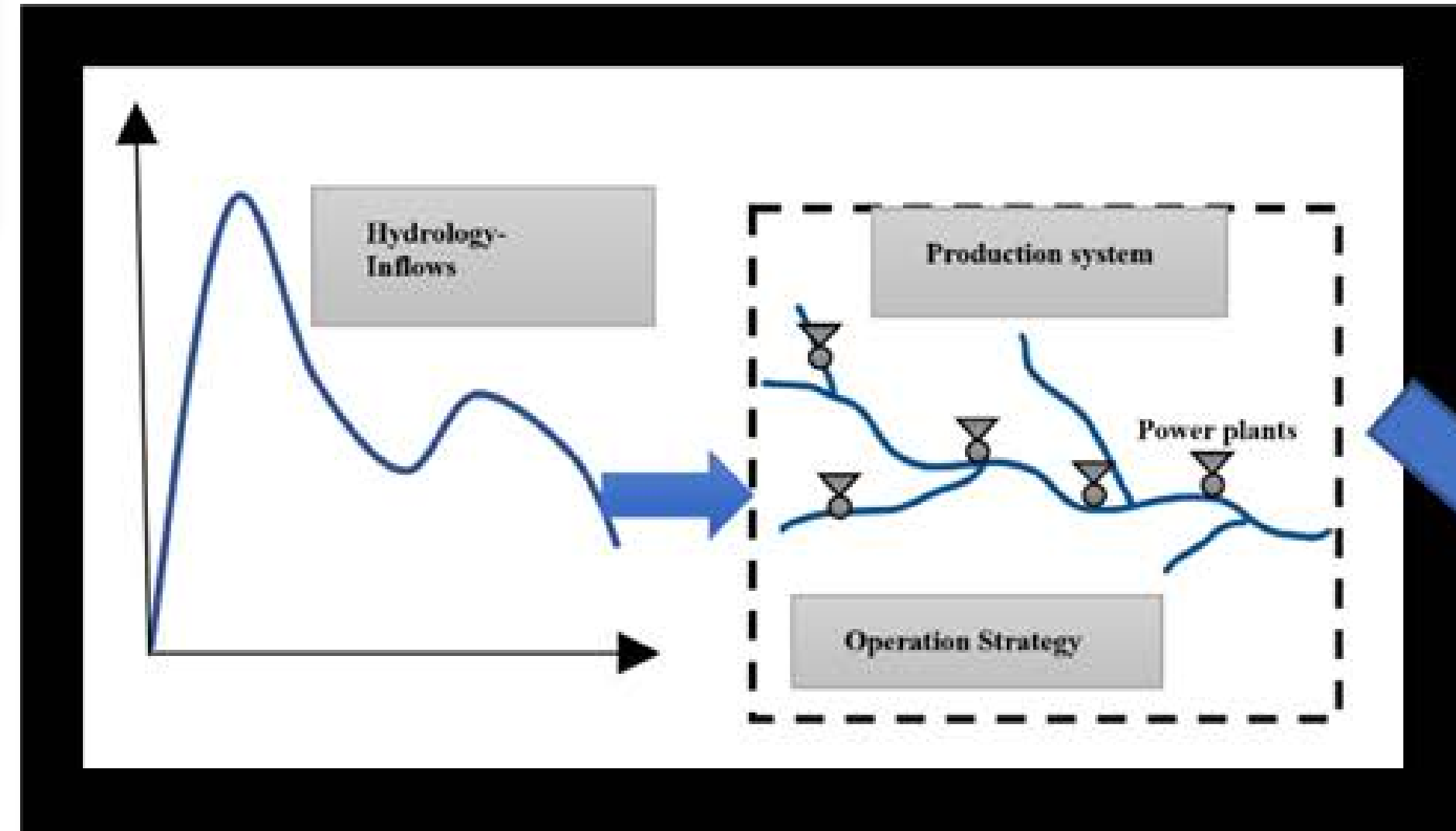
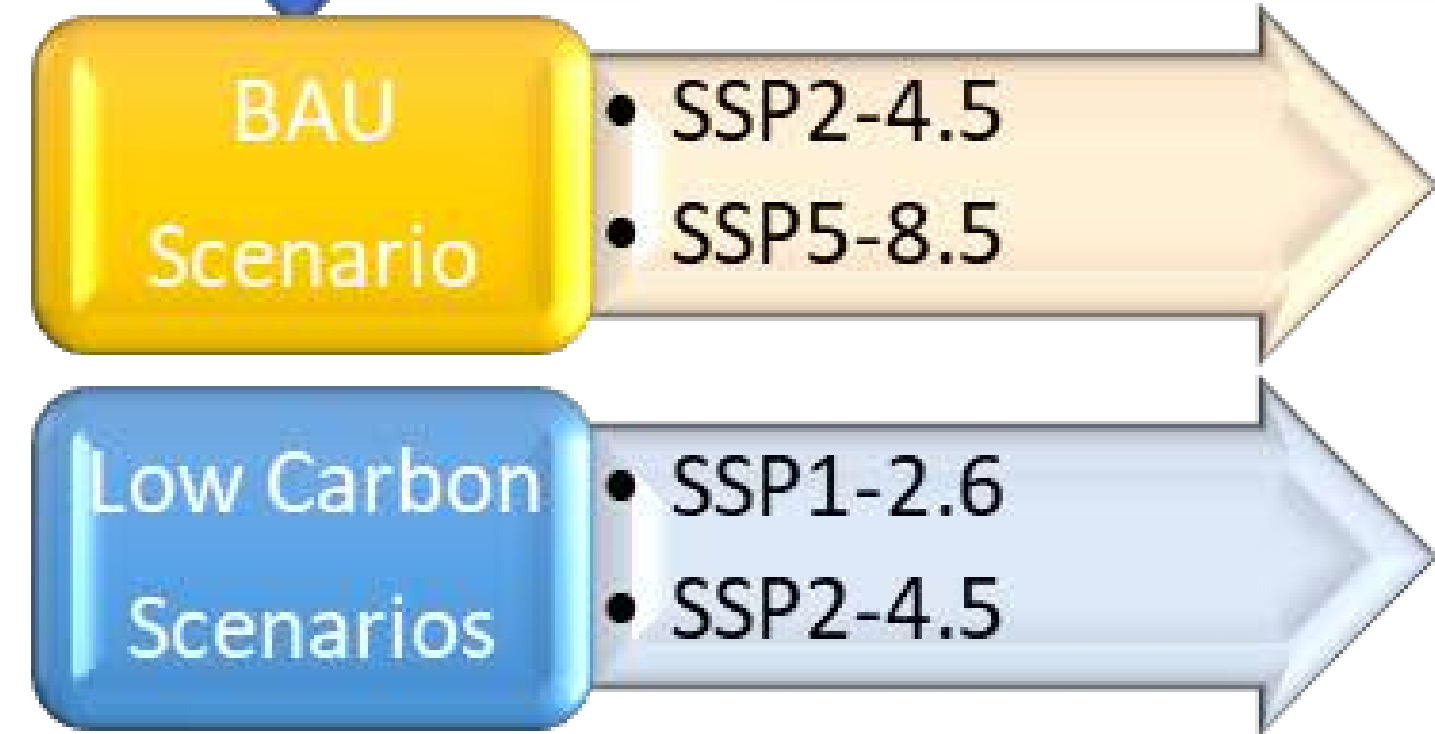
Energy systems

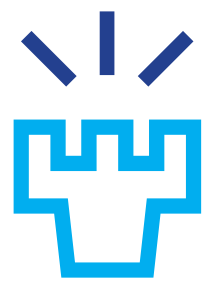


Climate scenarios



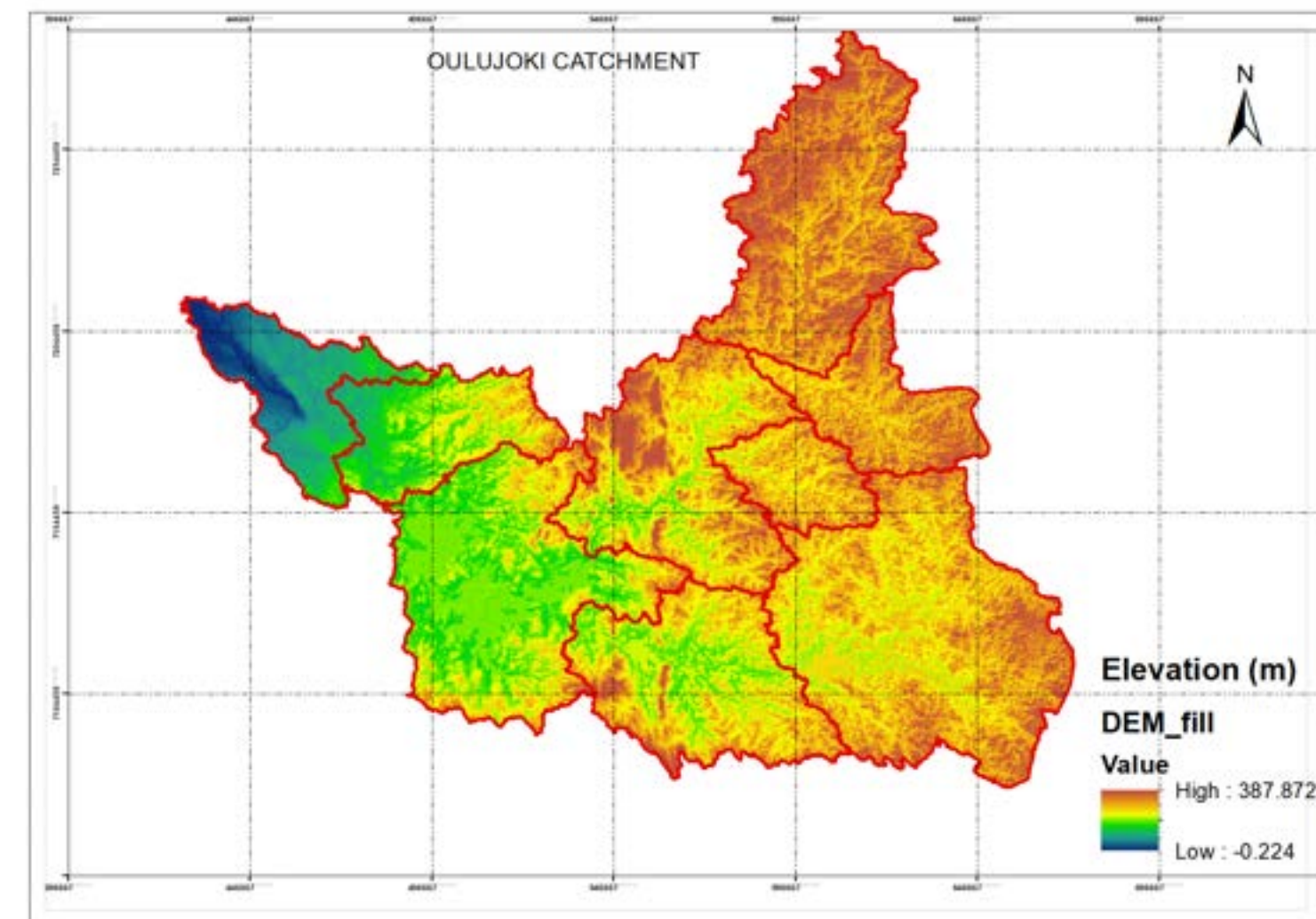
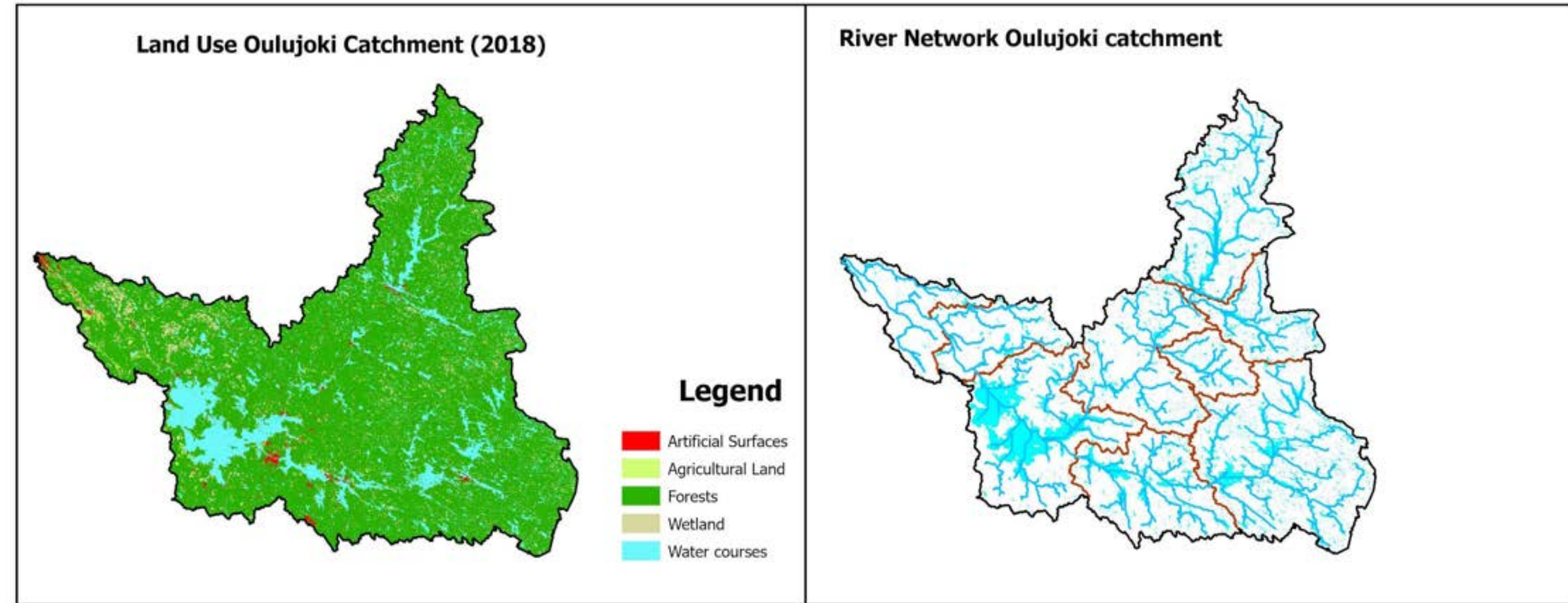
Oulujoki Catchment Hydropower production model



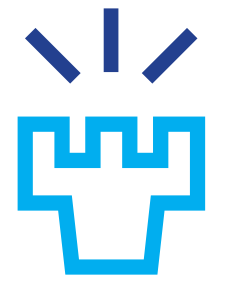


Hydropower adaptability of climate change and changing energy markets

Oulujoki Catchment

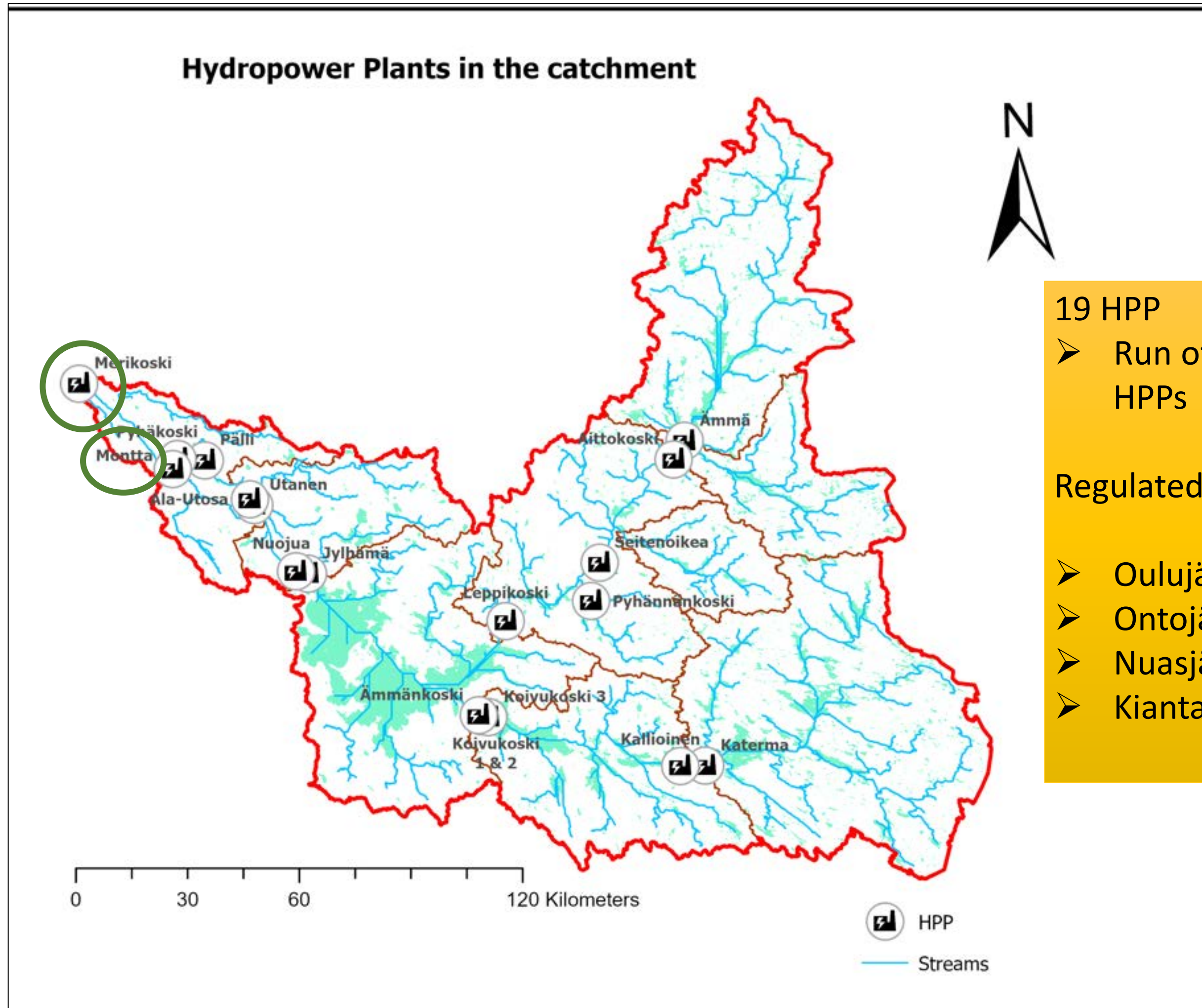


Location	Lat 63 ^o 48, 65 ^o 41 Lon: 25 ^o 27 ^o 30 ^o 33
Catchment: Oulujoki	Watershed no: 59
Area (sq. km)	22,473
Number of Hydropower plants in the catchment	19

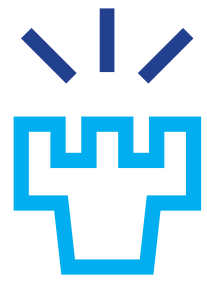


Oulujoki Hydropower

WP1



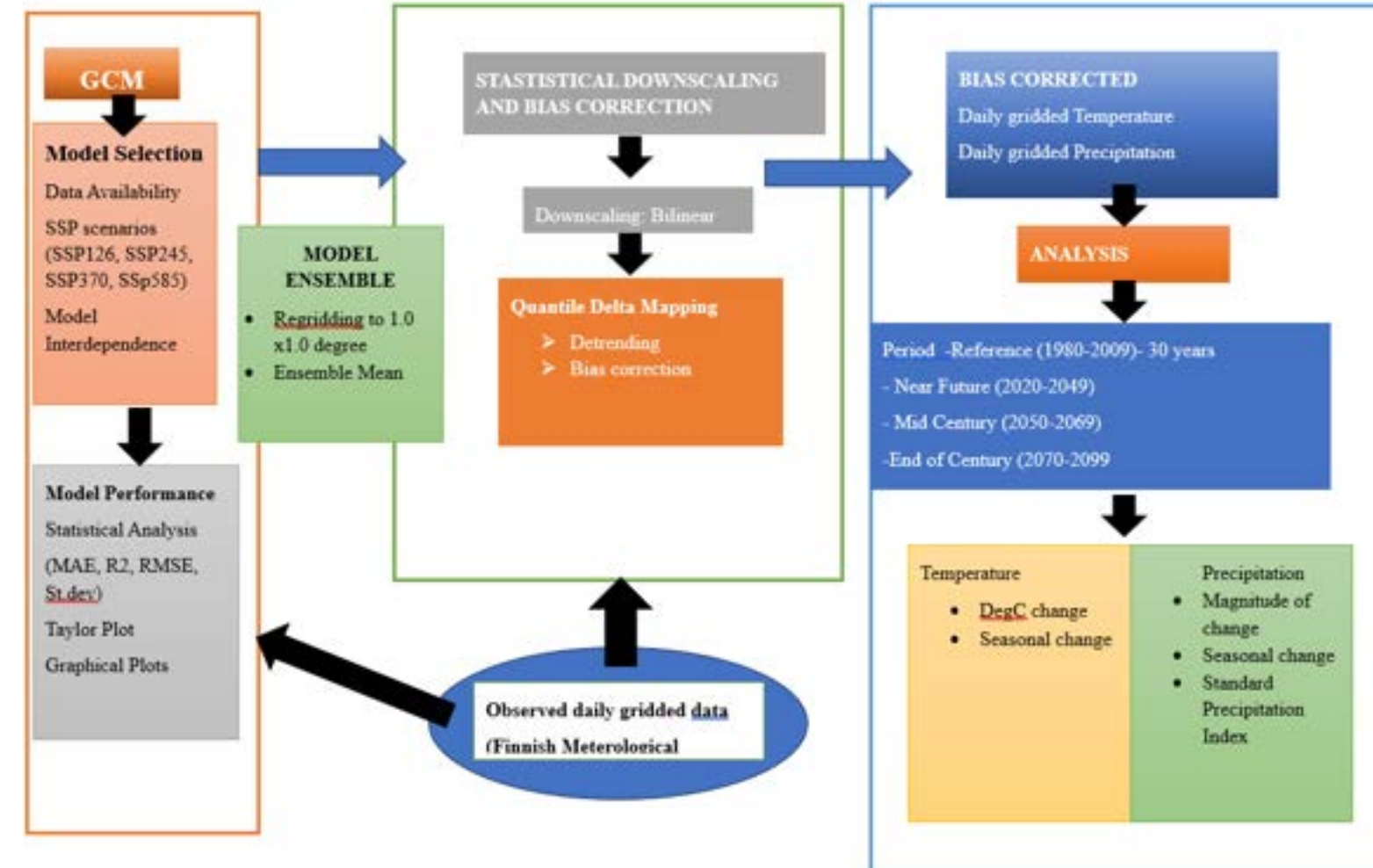
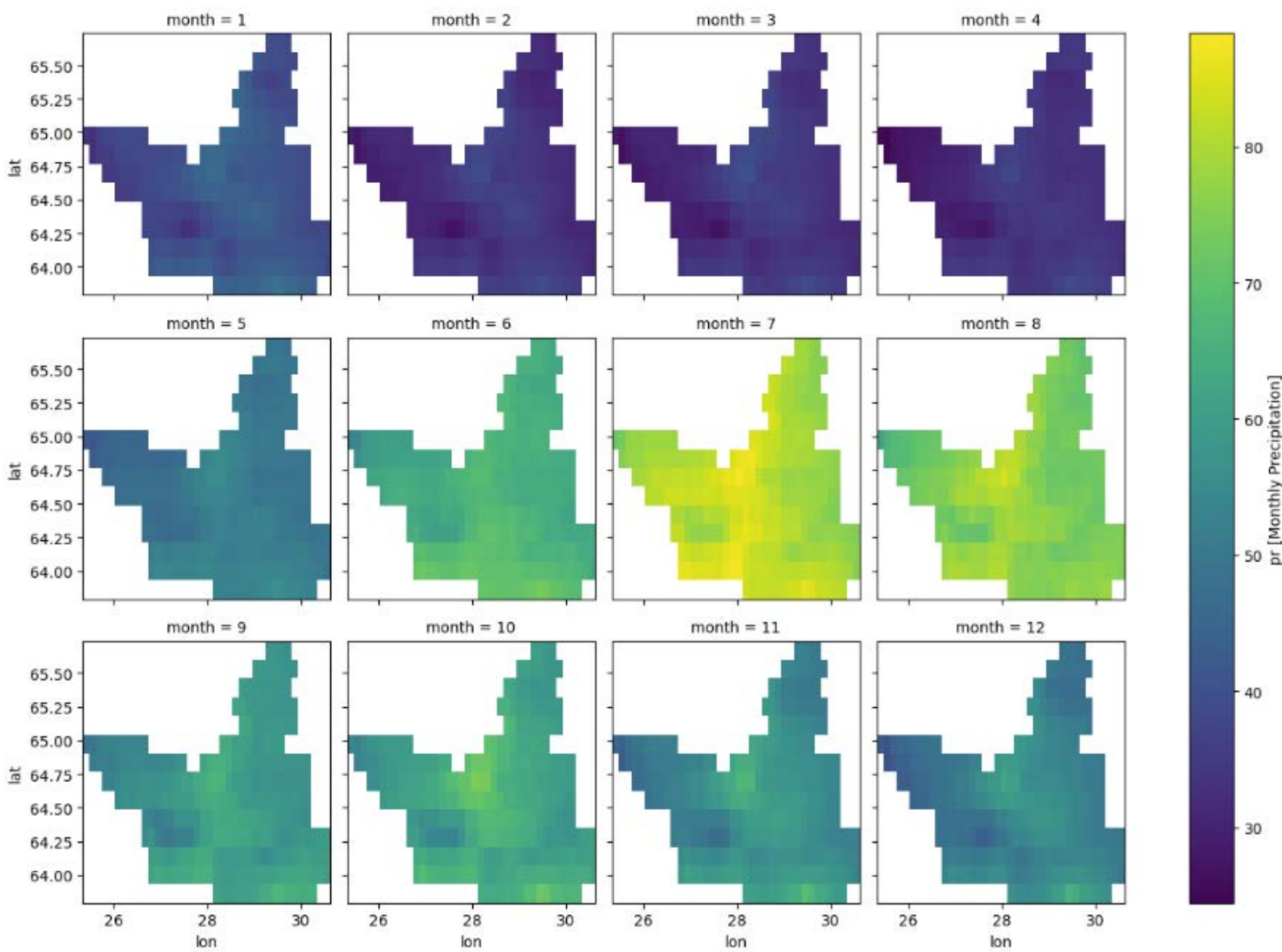
Power plant	Head(m)	Power(MW)	Energy (GWh/a)
Merikoski	11	35	180
Montta	12	47	185
Pyhäkoski	32	149	575
Pälli	14	51	235
Ala-Utos	6,0	1,0	1,3
Utanen	16	58	245
Nuojua	22	81	355
Jylhämä	11 to 14	55	200
Leppikoski	11 to 13	21	75
Pyhäntä	12	4,1	6,0
Seitenoikea	16	39	130
Aittokoski	30	45	125
Ämmä	10 to 13	16	37
Ämmäkoski	7,0	4,0	11
Koivukoski 1&2	8,0	6,0	16
Koivukoski 3	15	25	73
Kallioinen	10	15	40
Katerma	10	15	37



Future Climate Scenarios

Precipitation (1980-2022)

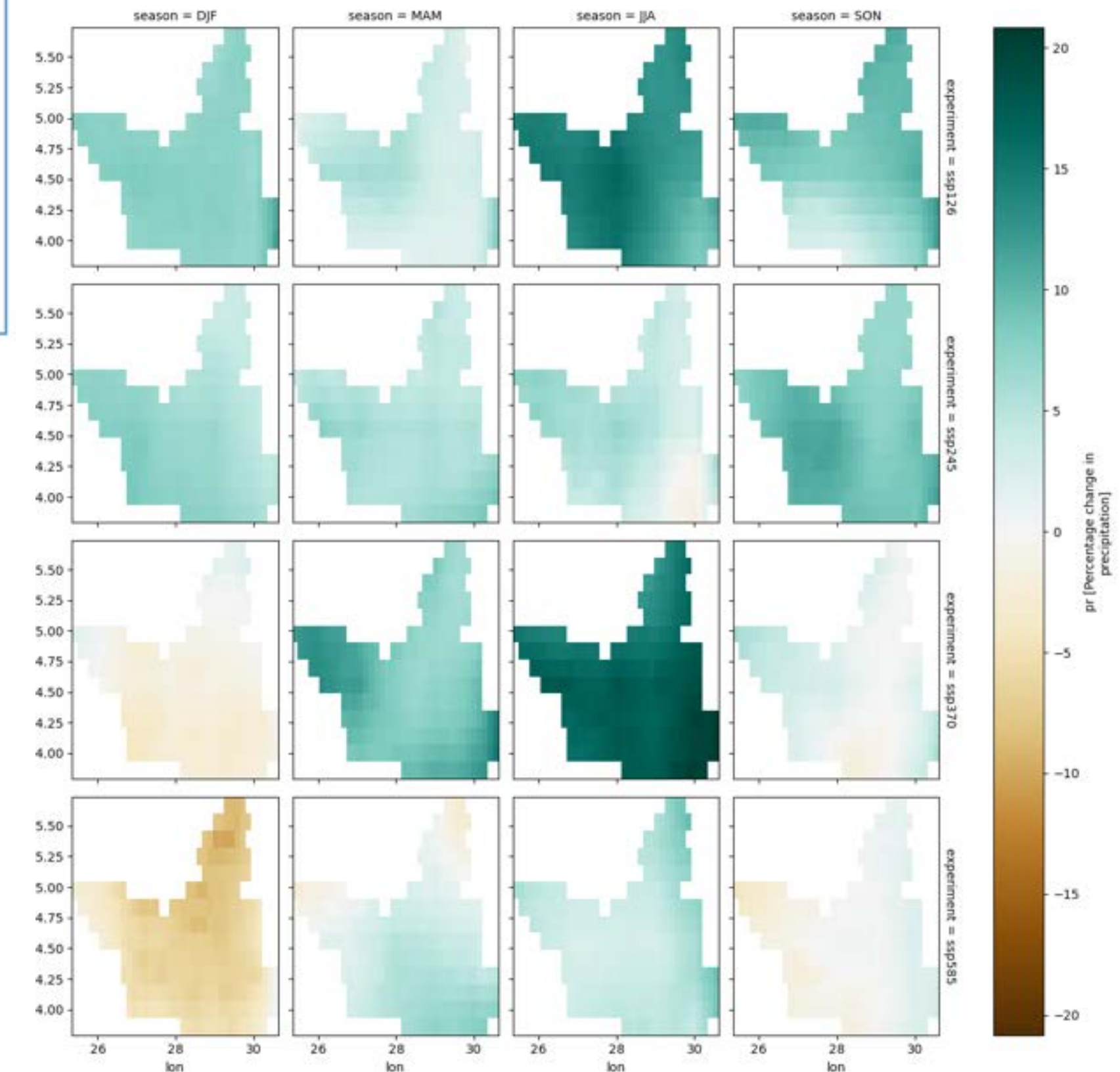
Historical Monthly Precipitation Oulujoki



Changes in Seasonal Precipitation Near Future (2020-2049)

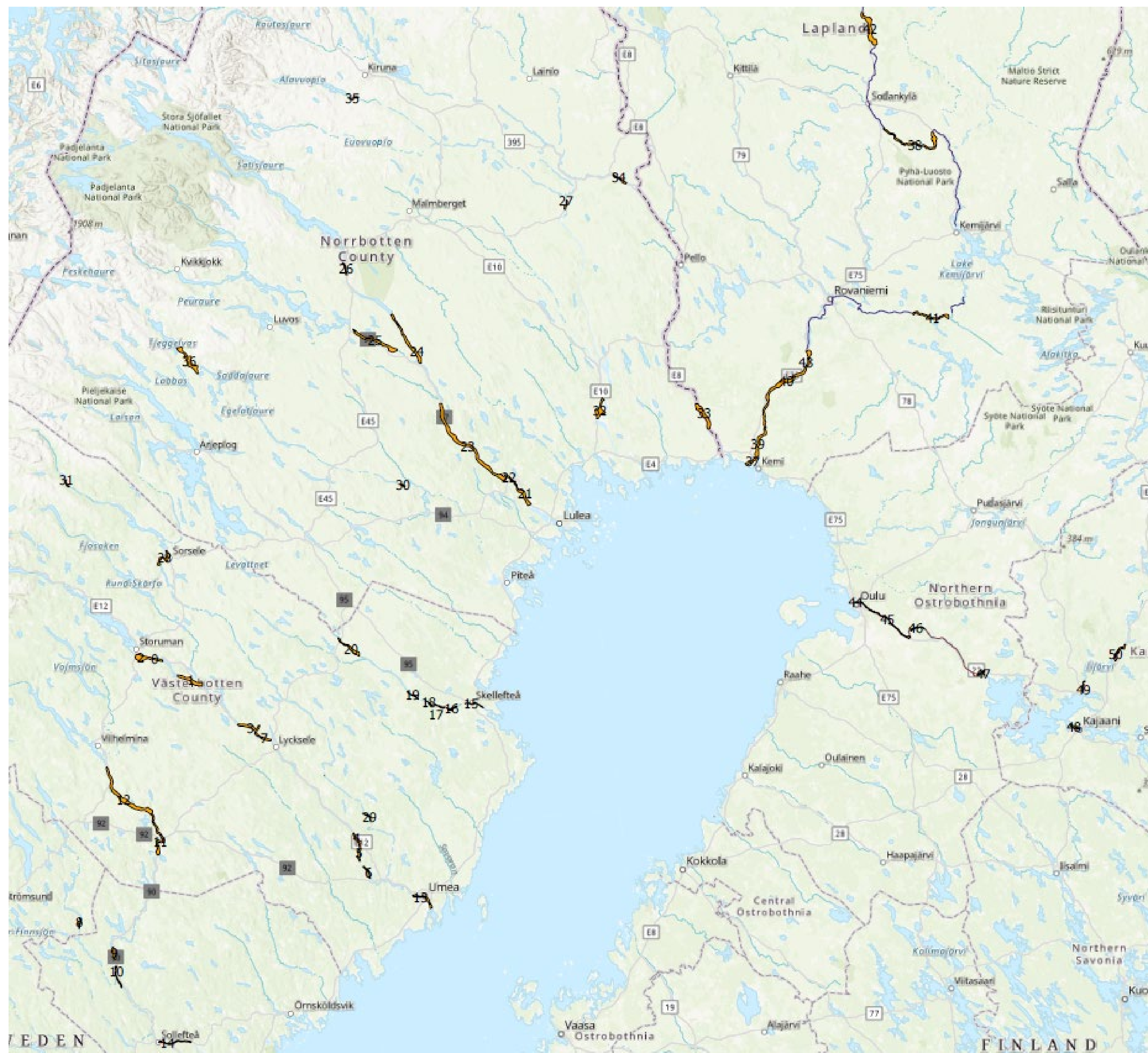
- SSP126- Increase up to 20%
- SSP245- Increase up to 10%
- SSP370-
 - Decrease in winter precipitation
 - Much wetter summers
- SSP585
 - Decrease in winter precipitation
 - Summer precipitation increase up to 5%

Seasonal changes (2020-2049)



WP 2 Biodiversity Conservation Potentials in Hydropower affected sites

- **Biodiversity conservation potential of dredged habitats along regulated rivers**
- **Potential of eDNA method for biodiversity measurements in regulated rivers – space, time and site comparisons**



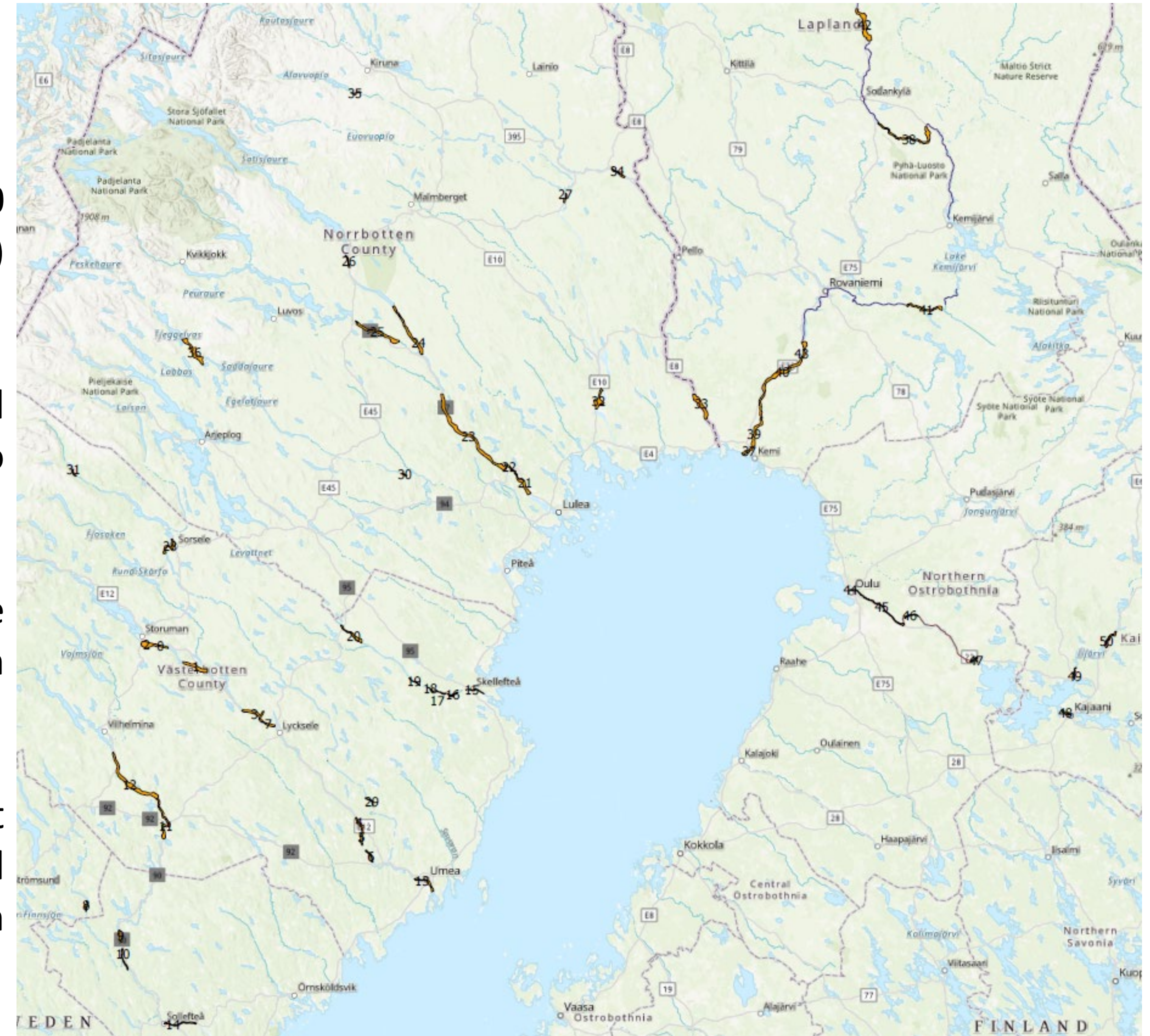
Potential study Sites- Identification and sampling

WP 2 Biodiversity Conservation Potentials in Hydropower affected sites

WP2

Work Ongoing.....

- Field studies to and satellite data analysis of more than 40 presumptive study sites in Finland (Kemijoki and Oulujoki Rivers) and Sweden (Ångerman, Ume, Skellefte and Lule Rivers).
- Field studies to and satellite data analysis of 10 potential reference sites in Vindel, Pite, Kalix and Torne rivers were also performed.
- Collection of relevant existing biodata connected to the presumptive study sites from both Finnish and Swedish databases. This work is ongoing.
- Initiation of communications with relevant hydropower plant owners about obtaining hourly water flow data for the period 2008-2020. This data will be used to quantify flow fluctuation intensities at the different sites.



Potential study Sites- Identification and sampling

Ecohydraulics and hydropower

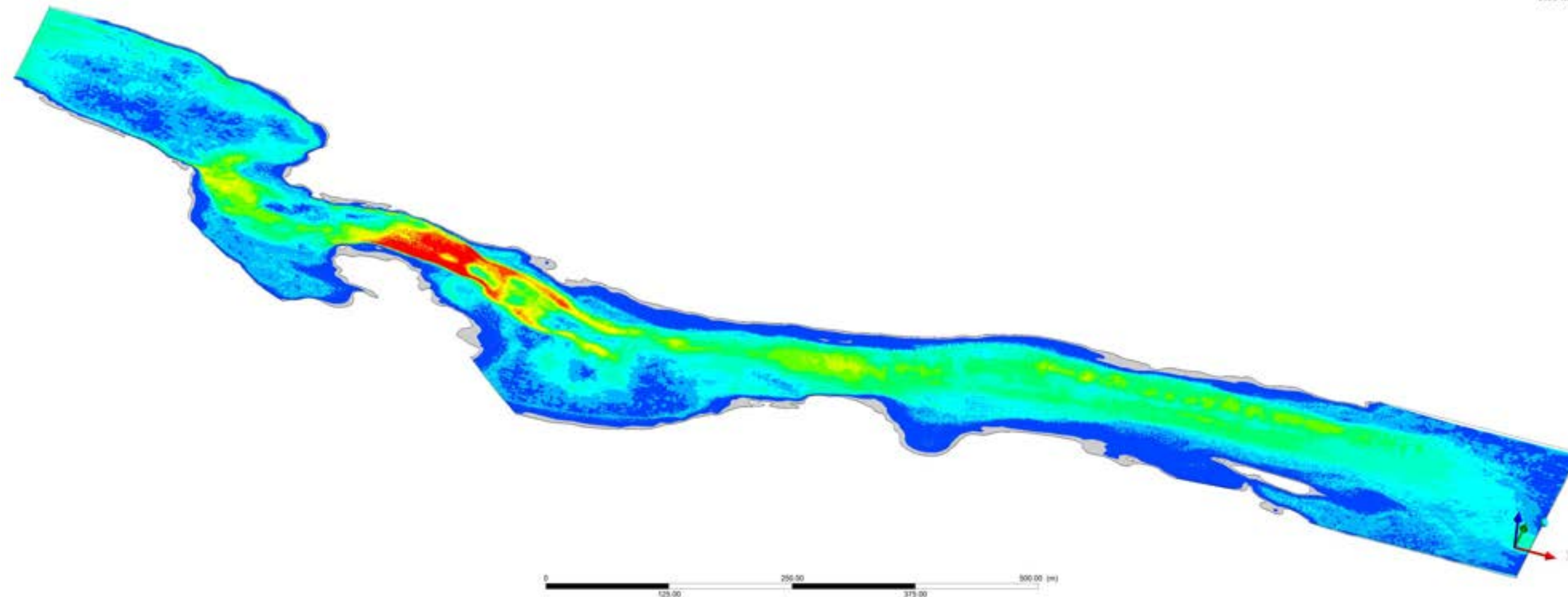
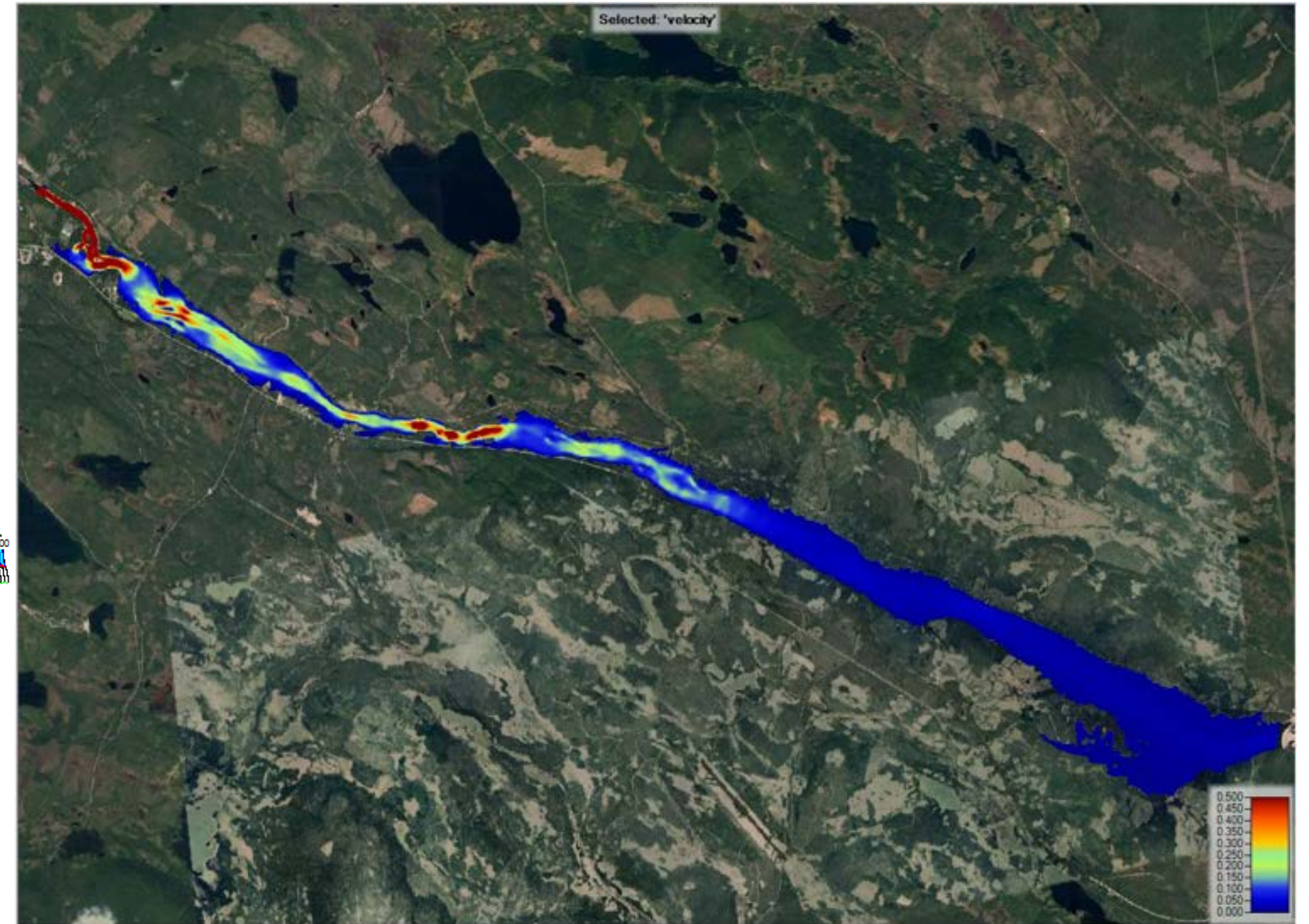
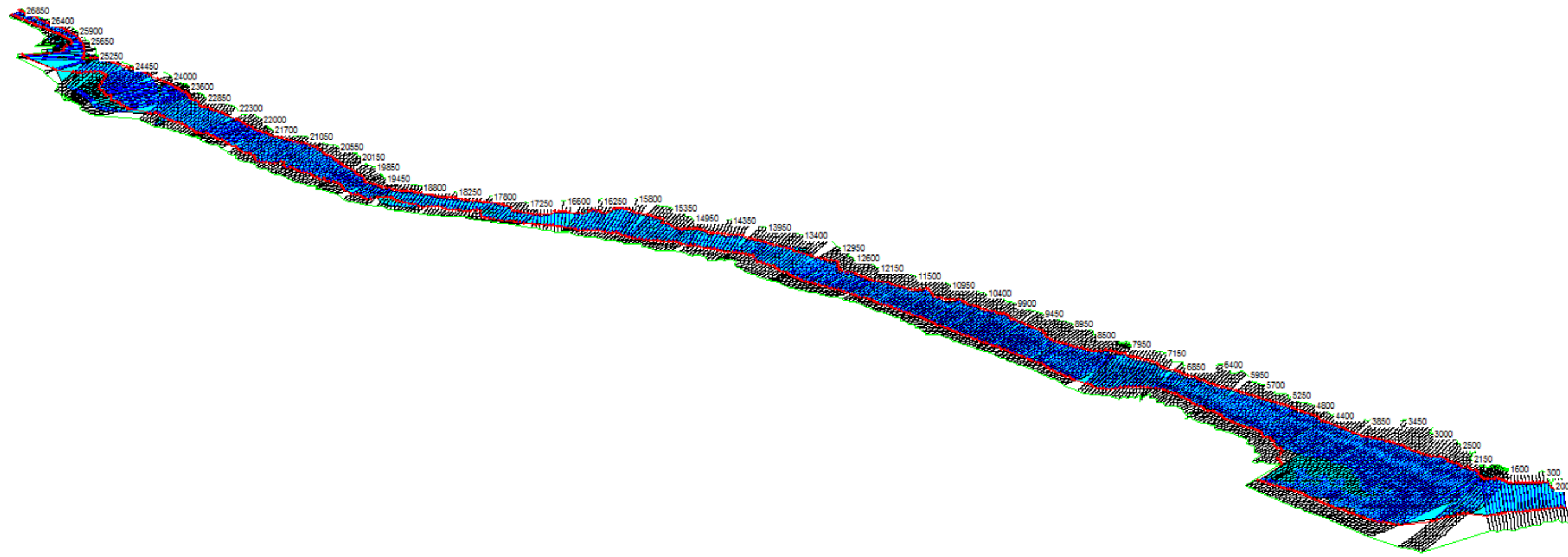
- Hydropower has had a large negative effect on river ecosystems through fragmentation and flow alterations, but is very important to provide green electricity and increased regulation
- Governing initiatives such as the Water Framework Directive and the Swedish National Plan (NAP) for modern environmental conditions sets new requirements regarding biodiversity
- The understanding of the hydraulic conditions in a water course is important to achieve good ecological status



(Photo: Vattenfall)

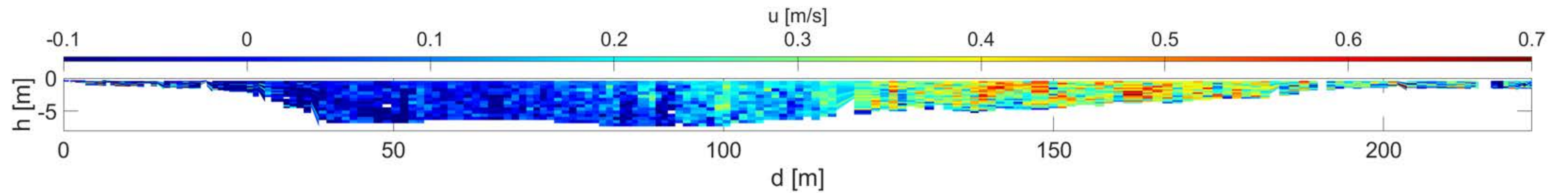
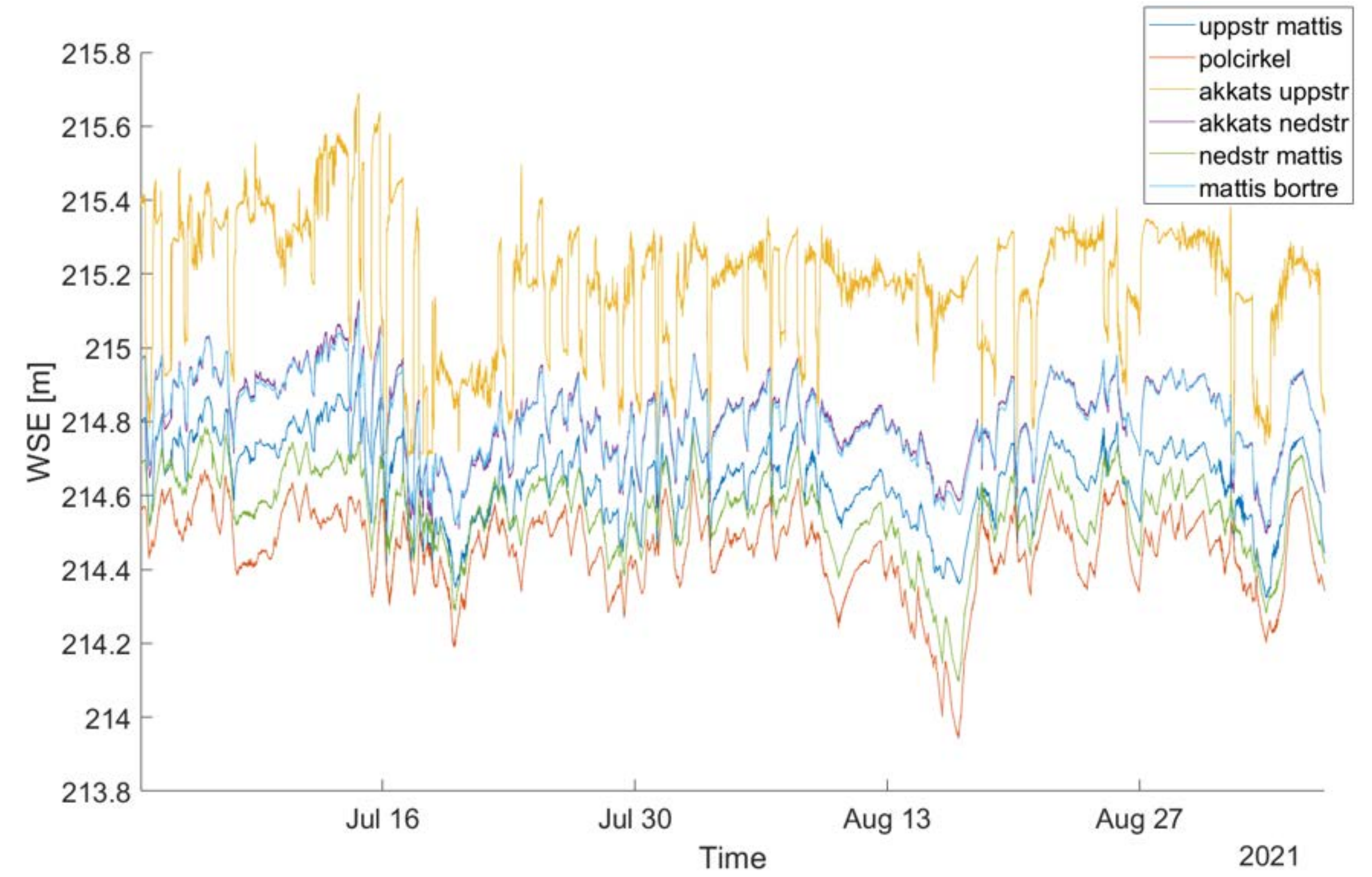
Work in progress: Identify a couple locations that are particularly interesting in terms of river ecology in a modernized production scheme and determine the consequent river hydraulics.

Hydraulic models



1D / 2D / 3D

Field measurements



WP 3 Cultural Heritage – Oulujoki river

Two case areas – Oulu and Muhos

- Four power plant areas

Before the power plant, the Oulujoki river

- Important for fishing salmon.
 - Salmon tourism already in the 19th century (“English lords”)
- Route for boats that brought tar from the hinterland.
- Farming along riverbanks
- Timber rafting



- **Cultural environment** means the environment created as a result of human activity, such as buildings and built-up areas with their surrounding landscapes, where human handprints can be seen in the landscape, in the soil or under water, structures and formations made by humans.
- Although the cultural environment can be renewed and developed over time and as needs change, it is good to keep in mind the values of the already existing environment when making changes.
- The damming of Oulujoki river surely had effects on the well-being of the inhabitants, but on the other hand, the identity of several later generations has been built in the cultural environment of the dammed river.

Case Oulu Merikoski as an example

- The research on harnessing Merikoski for electricity production started in 1915, when Oulu was a small wooden town.
- The Oulu city made the decision to build the power plant in 1939



Strong historical value:

- The constructing work was interrupted by the start of the Winter War but continued during with the help of women, older men and prisoners of war.

High architectural value:

- In 1941, a design competition was organized, as a result of which the architect Alvar Aalto was commissioned to design the site plan and the architect Bertel Strömmer to design the layout of the power plant building.

The Finnish reconstruction phenomenon:

- The plant was completed in 1947, and the first machine was connected to the grid in 1948.



Architecture and cultural landscape:

- Valuable built environment
- Evidence from the reconstruction era.
- Reflects Oulu's development and growth as the capital of Northern Finland
- Important factor of place identity / individual identity
- The Greens' (political party) proposal to dismantle the dam in 2018.
 - The city did not even start to investigate the dismantling of the dam and its economic effects.



Today, the Oulujoki power plant environments are nationally valuable cultural environments

 **Museiverket**

Bygga kulturmiljöer av riksintresse RKY
suomeksi om tjänsten tyck till

+ SÖKALTERNATIV

objekt landskapsvis

KARTSÖK



Texterna är tillsvdare enbart på finska i enspråkigt finska kommuner.

Kajaani Kuhmo Muhos Paltamo Ristijärvi Sotkamo Suomussalmi Oulu Utajärvi Vaala

Oulujoen ja Sotkamon reitin voimalaitokset

Siirry Museoviraston valtakunnalliseen karttapalveluun: [Oulujoen ja Sotkamon reitin voimalaitokset](#)

Kuvaus

Oulujoki Osakeyhtiön valtakunnallista sähköntuotantoa varten Oulujoen ja Emäjoen vesireitille rakentamat voimalaitos- ja asuntoalueet ovat laajuudeltaan, arkkitehtuuriltaan ja rakennustekniikaltaan yksi maan merkittävimmistä jälleenrakennuskauden rakennushankkeista. Voimalaitosalueista Montta, Pyhäkoski, Pälli, Utanen, Nuojua ja Jylhämä kuuluvat myös kansainvälisen DOCOMOMO-järjestön hyväksymään suomalaisen modernin arkkitehtuurin merkkiteosten valikoimaan. Samaan vesistöön liittyvät myös Kajaani Oy:n puunjalostusteollisuuden tarpeisiin rakentamat voimalaitosympäristöt.

Oulujoessa on Oulun kaupungin rakentaman Merikosken voimalaitoksen lisäksi kuusi voimalaitosta, Emäjoessa on neljä voimalaitosta samoin kuin Kajaanin ja Kuhmon välillä. Rakennettu jokiosuus on kaikkiaan noin 250 kilometriä, pudotuskorkeutta on yhteensä noin 200 metriä ja padotuskorkeudeltaan suurin on Pyhäkosken voimalaitos, 32 metriä. Lisäksi Oulussa Pikkaralassa on Imatran Voima osakeyhtiön rakentama sähköasema ja muuntamo pohjoisen jokien vesivoimatuotannon voimasiirtoa varten.

Change in the identity of place and people

Before:

- “Sometimes we were fishing near it, and I remember how the strong suction of the rapids made me afraid. In the summer, the rapid was a place with several boats for fishing. We sat by the campfire and spent the night on the beaches. There were young and old, a nice summer life was lived there.”
- “Due to the construction of the power plant, some beaches and fields remained under water. The rapids were dredged and the water leveled out. Most of our fields were also flooded.”



During and after:

Internationality

- "People came to Leppiniemi from all over the world and I remember that the power plant had engineering trainees from at least India and Arab countries"
- "The teacher was good at drawing and drew on paper while teaching us the basics of English. We, on the other hand, taught him how to hunt under these conditions."



Hierarchy:

- “In Leppiniemi there was a hierarchical system where the masters were masters and the workers were workers. I would compare this to the Indian caste system, as the division was so severe.”



Happy and safe childhood:

- “Childhood in Leppiniemi was the best in the world... The whole village raised a child here. If you did something good or bad, the word had spread home even before you had time to go there yourself.”
- “It was good to go to study, as the good schools were close by and we got free school rides there on behalf of the company.”



Upcoming stakeholder and communication activities

- As the results and outputs are available, it will be also presented and shared in upcoming conferences along with raising awareness and visibility of to the project in conferences such as HYDRO 2023 (<https://www.hydropower-dams.com/hydro-2023/>)
- A 3-day short course is planned for in November 2023 in University of Oulu, to engage with university researchers and stakeholders working on this topic. The course is open to all (hybrid mode), and credits will be provided to attending Master and PHD students participating the course.
- RE-HYDRO will moderate a special session “Integrating Scientific, Societal and Engineering Approaches to Assess Water Resources Management in a Changing Arctic” at Arctic Congress Bodø 2024 (<https://www.arcticcongress.com/>)
- A session on Hydropower is being planned to be convened by the project members in EGU 2024 (<https://www.egu24.eu/>), to further strengthen the visibility and communicate results.

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RE-HYDRO

Summary

- Developing integrated modeling approaches for the climate-water-energy nexus interactions in river basins
- Studying ecological conditions in river systems regulated by hydropower through measurements and numerical models for current and future flow scenarios
- Analyzing socio-cultural needs and options of relevant stakeholders
- Produce recommendations for the sustainable management of water, energy, and biodiversity in Finland and Sweden

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RE-HYDRO

Green Transition and Regional Sustainability

Luleå, 10-12 October 2023

