Forest Bioeconomy in North Karelia
North Karelia – perfect for forest bioeconomy

Forerunner in smart forest bioeconomy, since the 1990s:

- Strong and dynamic forest cluster
- World-class knowledge hub in forest research and expertise

163 000 inhabitants • size 21 585 km² • 89% forest • 13 municipalities
North Karelia’s forest bioeconomy cluster

- Cornerstone of the region’s business life and industry sector
- Share of renewable energy of the total energy consumption: 64%
- Forest resources are processed:
  - into high added-value bioproducts and services
  - for domestic and export markets
Forest resources and world-class expertise

- 89% of total land area covered by forests
- Annual growth of forests: 9.3 MIL M³
- Annual usage of forests: 5.9 MIL M³
- 500 companies, turnover of 2 BILLION €
- 6000 employees
- 600 experts
Unique collaboration and expertise

- European Forest Institute – EFI HQ
- Natural Resources Institute Finland (Luke)
- Finnish Forest Centre
- University of Eastern Finland – UEF
- Karelia University of Applied Sciences
- Riveria Vocational Education & Training
- Finnish Environment Institute (SYKE)
- Forestry Management Association
- Business development: Business Joensuu, regional business development organisations

= the GreenHUB Team
GreenHUB: an open innovation platform

Committed co-operation between:

- R & D
- Practice
- Education
- Business

Aiming at sustainable, smart and innovative green growth
GreenHUB builds added-value

The GreenHUB team and companies work together on:

- advanced wood products
- forest technology
- non-wood forest products
- education
- green energy
- international wood technology and transfer of know-how

Over 100 business cases
Our circular forest bioeconomy cluster

- Forest technology
- Industrial symbioses
- Distributed biorefining
- Wood construction
- Renewable energy production
- Forests & Photonics
- Advanced wood products
- New biobased products
- Natural products
- Forest information solutions

SUSTAINABLE FOREST MANAGEMENT
Forest ownership in North Karelia

- A significant source of income for private, small-scale forest owners
- Total annual net income from timber sales: 130 000 000 €
- Social, economical, ecological and cultural aspects of sustainable development are taken into account
Smart and Strategic Forest Bioeconomy
Long-term strategic work

Our strategic work on renewable energy began 25 years ago

- The follow-up of the region’s energy sector has been a part of our strategic programmes
- A social contract on sustainable development 2015, North Karelia the first region to take part
- Towards Low Carbon Municipalities -> Roadmap for oil free and low carbon North Karelia 2040
Timeline of our strategic work

- Climate and Energy Programme of North Karelia 2020 (2011)
- Roadmap towards Oil-free and Low Carbon North Karelia 2040 (2011)
- Bioenergy Programme of East Finland 2020 (2017)
- North Karelia 2040
Our regional network
Strategies in action

ENO Environment network
A global network of schools and communities for sustainable development in over 100 countries
Strategies in action

Eno Energy Cooperative

- Produces district heating energy
- Woodchips for the three heat production/distribution plants
- Most of the capital investment stays within the municipality
- Benefits employment, energy, forestry
- Combustion of wood does not result in a net increase in carbon dioxide emissions
- The ashes and its nutrients can be returned back to the forest
Visionary and ambitious goals

Our forest bioeconomy targets are a vital part of these goals.

North Karelia invests in selected productive sectors to increase the international competitiveness of the region.

Emerging bioeconomy and climate change considerations provide opportunities for resource efficient activities in North Karelia to help it to become an oil-free region.
Sustainable targets for 2030

- 100% fossil oil free
- 100% share of renewable energy in total consumption
- 80% net reduction of greenhouse gases
- 2.7 billion € bioeconomy turnover

North Karelia
Within bioeconomy, our aims are:

- **Oil-free, low-carbon** and resource-efficient region
- Fossil fuels and materials replaced with renewable ones
- Forerunner in **wood construction**
- Wide range of **value-added** bioproducts and natural products
- **Service sector** with a key role
- **Creating jobs** for the entire bioeconomy value chain
- Ensuring **ecosystem** services
- Efficient use of **by-products** of the forest industry, reduction of negative environmental impacts
- Open and secure environment for **industrial piloting**
- **Climate smart forestry**, maintaining healthy and diverse forests
- Knowledge and **research applied** for the needs of business life
- Innovative use of **digital forest data**
- **Education** of forest bioeconomy experts at all levels
Smart – Focus on Regional Strengths
Smart forest bioeconomy

- Wood and its by-products, non-wood products and ecosystem services of the forests used and combined innovatively and efficiently
- Decentralised biorefining, renewable energy production and hybrid solutions

Photo: Riitta Weijola

North Karelia
Bioeconomy investments in North Karelia

Target:

- Annual turnover 2.7 billion €
- Five bioinvestment areas
- Refined products
- Network of subcontractors
- Excellent infrastructure
Programmes in action: GreenPark Business Park – Joensuu

- Mechanical engineering companies with 550 employees
- Joensuu deep-water port and a major wastewater treatment plant are nearby
- Industrial Internet and new digital opportunities are forthcoming
- Aims:
  - improving competitiveness
  - a close-knit network of subcontractors around John Deere Forestry Oy’s plant completed, with 1000 employees by 2030
Programmes in action: Iiksenvaara – Joensuu

- Includes a power plant, bioheating plant, pyrolysis oil production plant, pyrolysis heating plant, storage area for the raw material and a tank area
- Employment for 100 people
- Bio-oil plant operations based on the fast pyrolysis technology
- The first industrial-scale facility of its kind in the world
- Replacing fossil fuels with bio-oil leading to reduction of CO$_2$ emissions in heat generation by 70%
Programmes in action: Uimaharju – Joensuu

- 45 kilometres northeast of the centre of Joensuu
- Several companies
- 350 employees
- Enocell:
  - bleached softwood pulp
  - dissolving pulp for textile industry
- Uimaharju sawmill
  - commercialising thermally modified timber
Programmes in action: Kevätniemi – Lieksa

- Companies specialising in wood processing and production of sawn timber
- 250 people employed in the Kevätniemi bioindustrial area
- 800,000 m³ of wood is used in the area annually
- Sizeable investment plans
- Excellent road, railway and waterway connections
Excellent road and rail links with other parts of Finland and Russia
Waterway connections to Europe
High-quality infrastructure
Long history in manufacturing wood products and in wood processing
Employment for 220 people
Programmes in action: Green Industry Area – Nurmes

- Total area of 50 hectares
- Designed for bioindustry and circular economy
- Environmental impact assessment made for wood-based industry and energy production
- Vacant plots available with urban infrastructure
- New railroad terminal and logistic services for round wood and industrial products
Member of the Forested Regions Network in Europe

- Developing and implementing regional (forest-based) bioeconomy strategies
- Identifying successful policies and policy measures as well as existing barriers with an impact on forest-based bioeconomy
- Facilitating European forest-based value chains and value-added products and services
- Developing innovative financing models to help boost forest-based circular bioeconomy regions across Europe
Welcome to the Forest Capital of Europe!