

Bioenergy in North Karelia, Finland

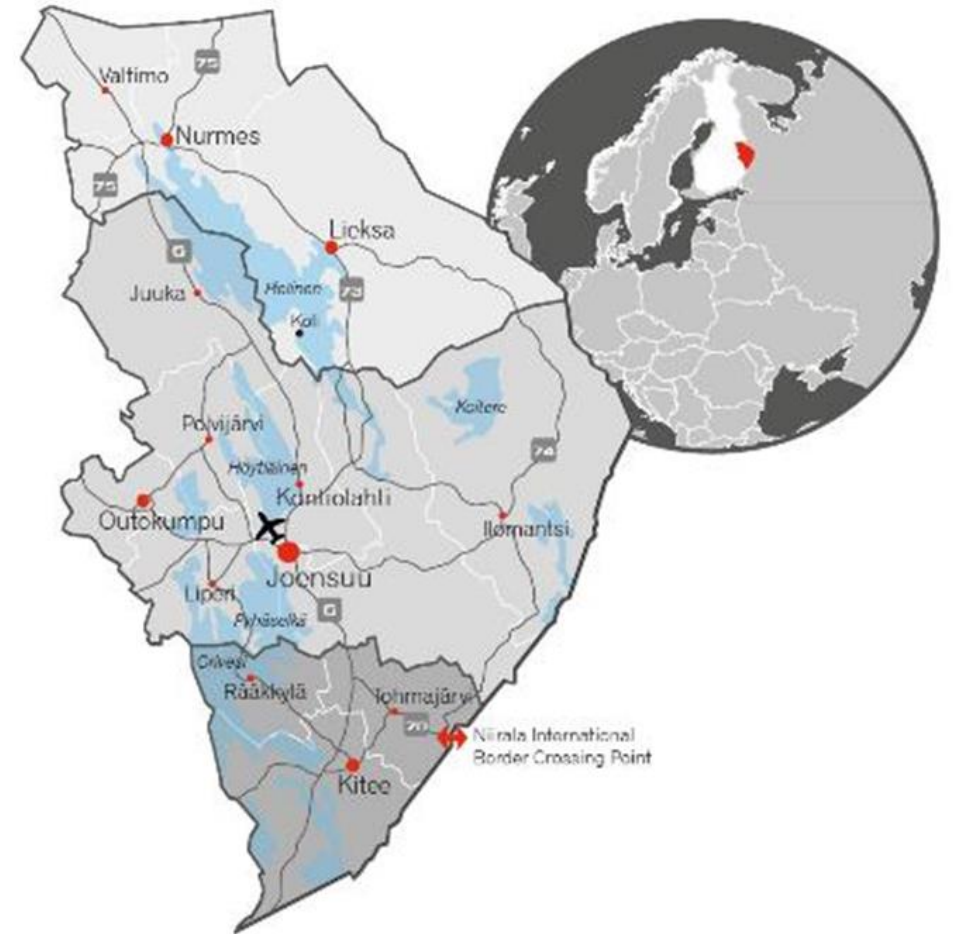
BIO₄ECO , final conference, 17-18 September 2020



Regional Council of
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: 67%

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 €

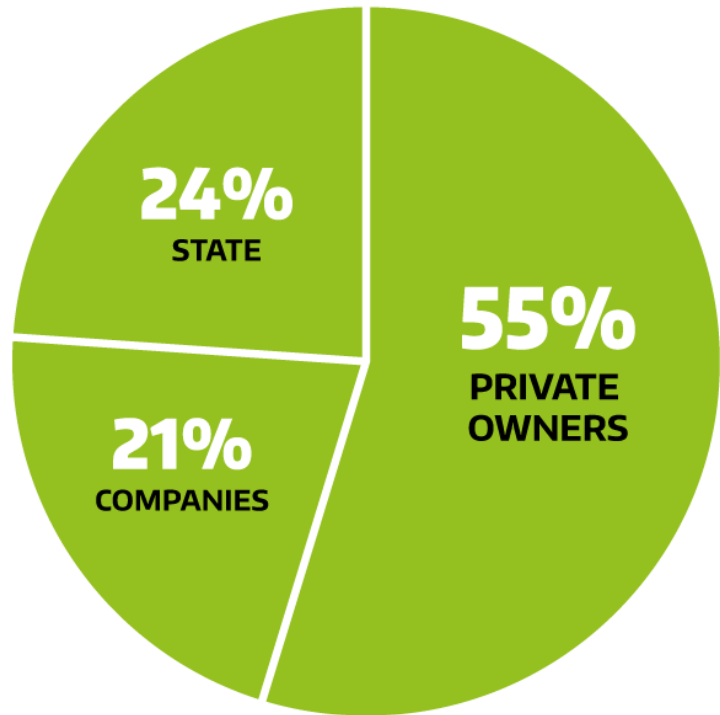


6000
employees

600
experts



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 fulfilled

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)

Business development: Business Joensuu,
regional business development
organisations



Our circular forest bioeconomy cluster

Forest technology

Forests & Photonics

Industrial symbioses

Advanced wood products

Distributed biorefining

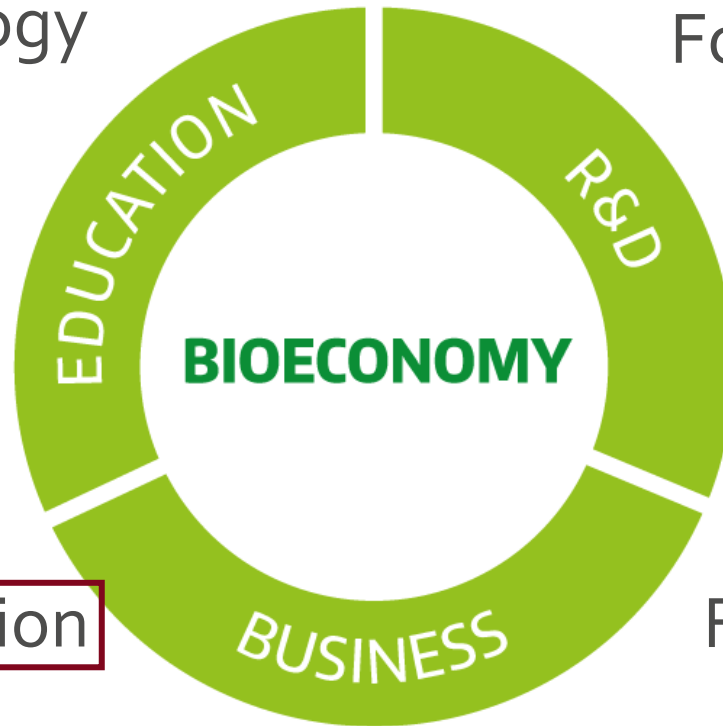
New biobased products

Wood construction

Natural products

Renewable energy production

Forest information solutions



SUSTAINABLE FOREST MANAGEMENT

Bioenergy / renewable energy

Our strategic work on renewable energy began 25 years ago



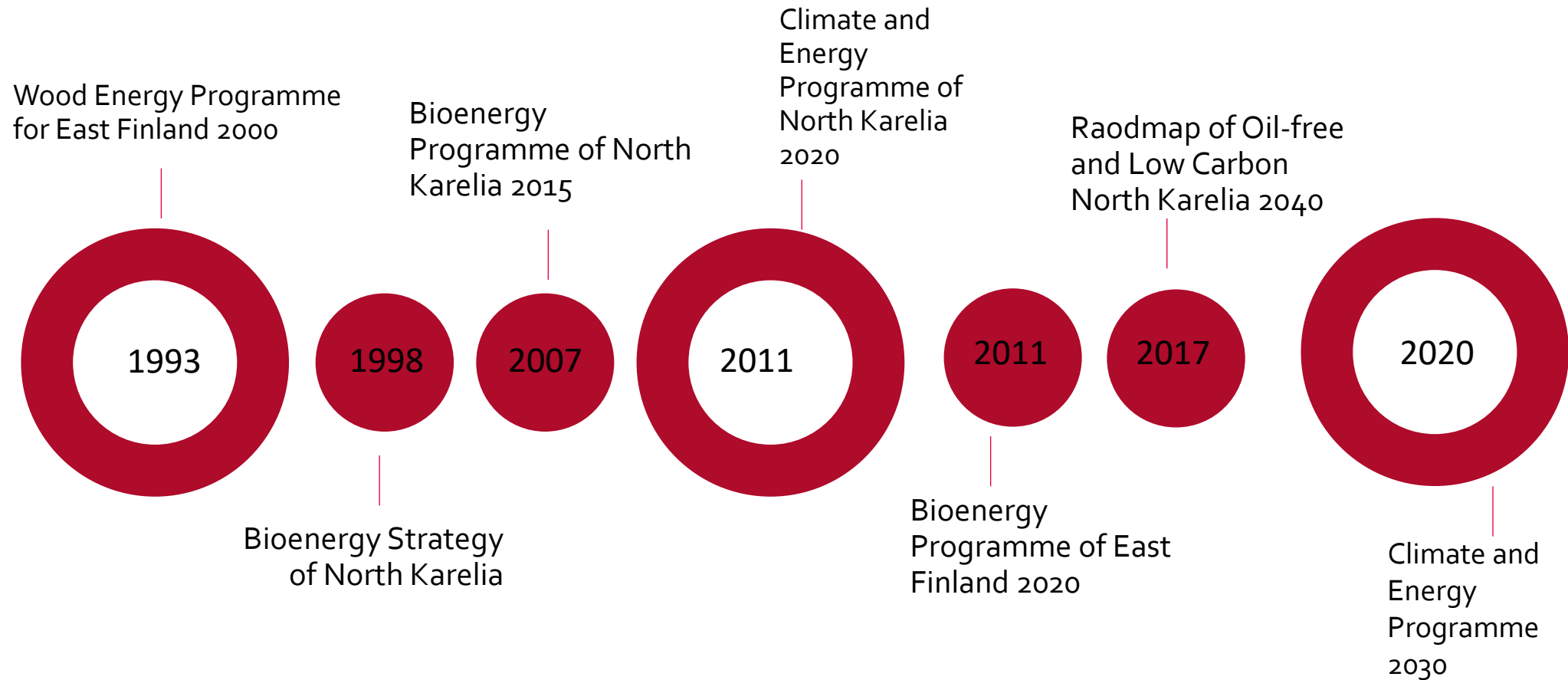
- › The follow-up of the region's energy sector has been a part of our strategic programmes
- › A social contract on sustainable development 2015, North Karelia the first region to take part
- › Towards Low Carbon Municipalities -> Roadmap for oil free and low carbon North Karelia 2040
- › Carbon neutral region commitment in 2020

Energy in North Karelia

Energy	Situation in 2018
Total energy consumption	11, 8 TWh
Share of renewable energy	67 %
Energy independence	64 %
Wood-based bioenergy	5,6 TWh
Other renewable energy:	
Biogas	20,6 GWh
Water energy	765 GWh
Heat pumps	260 GWh



Timeline of our strategic work



Sustainable targets for 2030



100%
fossil oil free



Share of renewable energy
in total consumption

100%

Net reduction of
greenhouse gases

80%

Bioeconomy
investments
turnover

2.7 BILLION €





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

Strategies in action: an example

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



Programmes in action: liksenvaara

– 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 CO₂ emissions in heat generation by 70%



Programmes in action: Kevätniemi – Lieksa

Companies specialising in wood processing: sawn timber, biorefinery – biodiesel, bioenergy

250 people employed in the Kevätniemi bioindustrial area

600 000 m³ of wood is used in the area annually

Sizeable investment plans

Excellent road, railway and waterway connections





Programmes in action: Green Industry Area – Nurmes

Total area of 50 hectares

Designed for bioindustry and circular economy

Investments for biogas

Environmental impact assessment made for wood-based industry and energy production

New railroad terminal and logistic services for products





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NORTH KARELIA

Thank you for your interest

sari.pitkanen@pohjois-karjala.fi



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