

# NordFuel

Biofuels for transport from sustainably  
managed forests

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General introduction

Project environmental and regional impacts

# What is NordFuel

- Biorefinery for 2G bioethanol and biogas production to transportation use from sustainably managed forests
  - Capacity
    - 65 000 t/a bioethanol
    - 15 000 t/a biogas
  - Feedstock
    - Softwood
    - From forest and sawmill industry residues
  - Net investment after subsidies 300+ M€

# Kanteleen Voima Oy

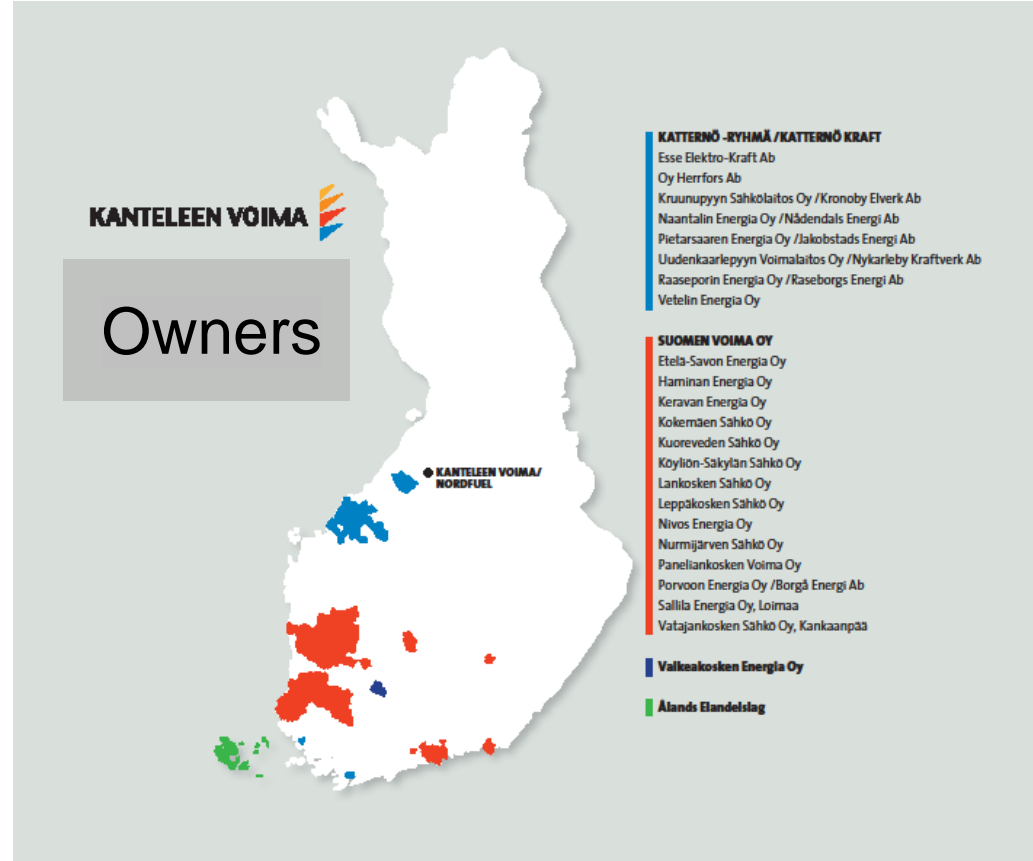
Kanteleen Voima Oy is a Finnish power producer established in October 2006.

The company has 24 private and municipal energy companies as its owners.

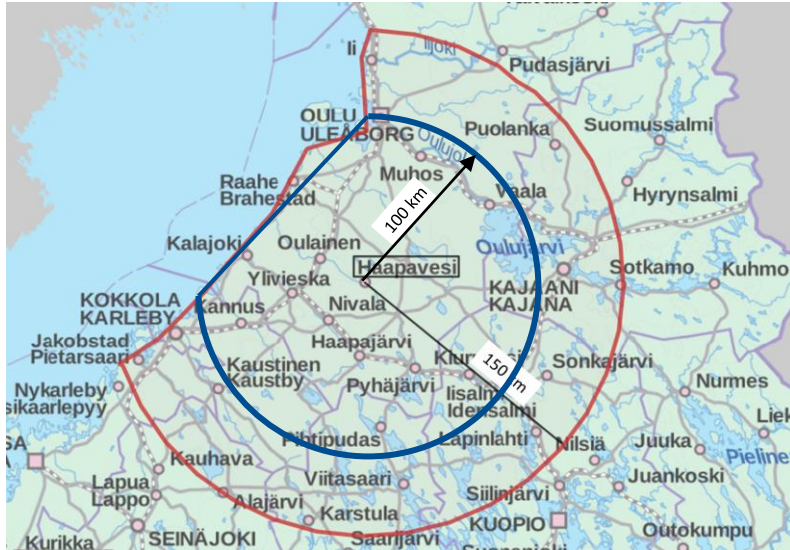
# Kanteleen Voima Oy

100%

NordFuel Oy



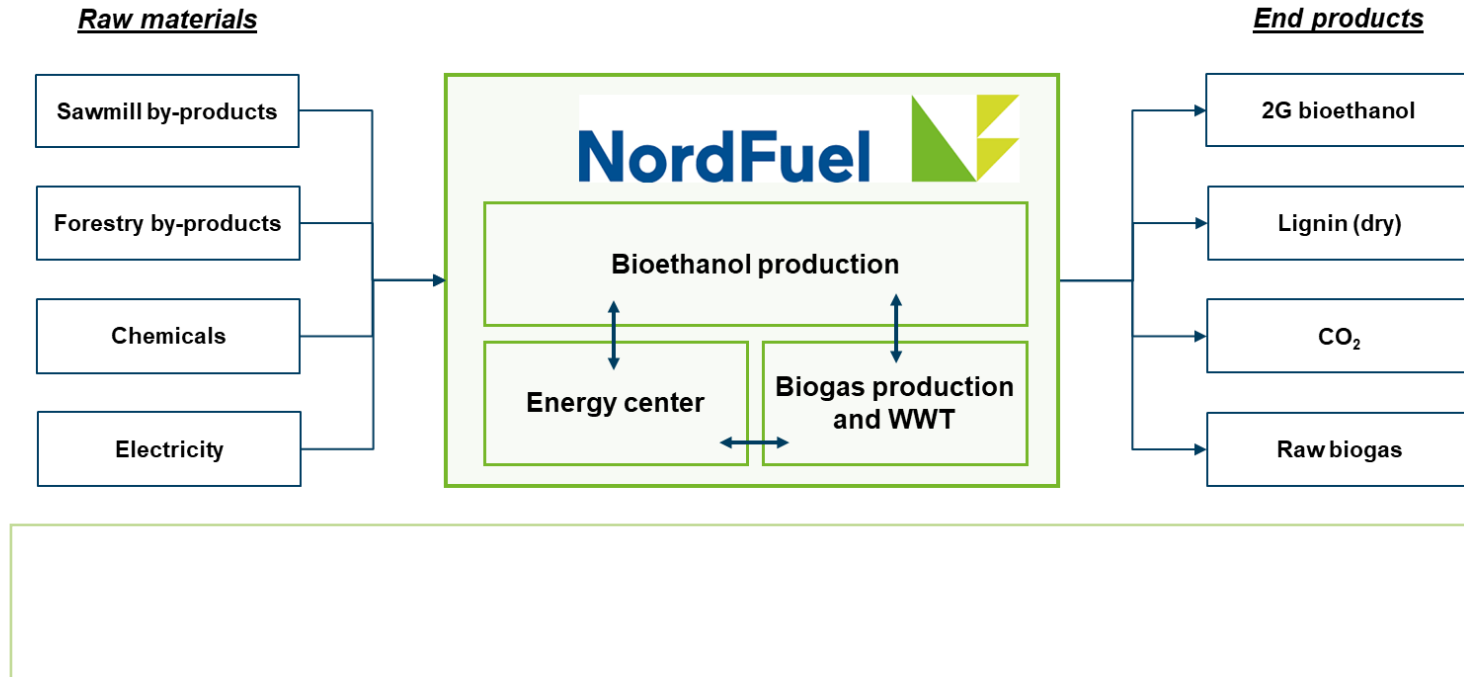
## Overview of the location



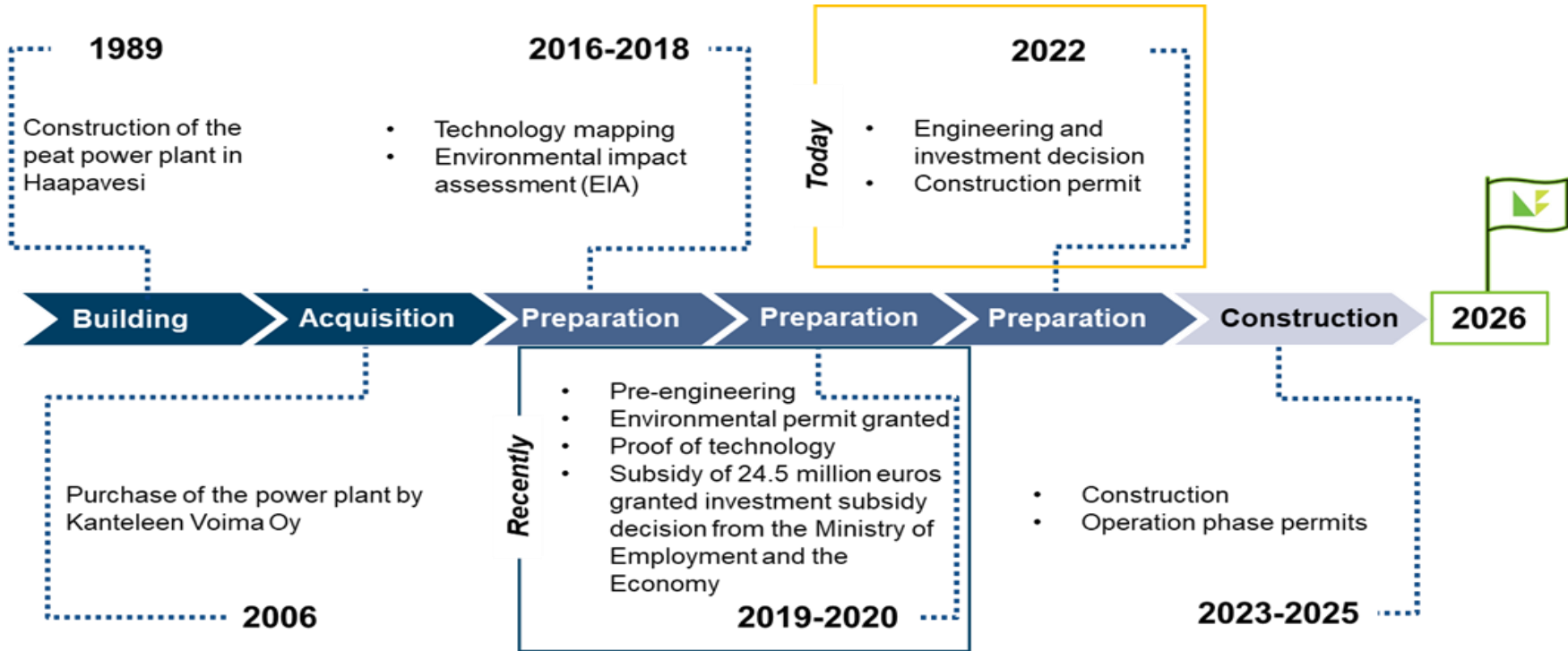
## Why NordFuel project

- World's largest peat power plant at the time of starting operation (1989)
  - Peat is not anymore an economical fuel to produce electricity
  - Something new was needed => bioethanol
- Existing features and infrastructure of the Haapavesi site provide several benefits for the NordFuel project
  - Existing power plant and buildings related
  - Infrastructure related to the power plant (e.g. grid connection, feedstock/fuel handling, etc.)
  - Plot suitable for planned new operations providing e.g. electricity and heat, cooling water and storage areas for feedstocks/fuel
- Easy access to feedstock

# Biorefinery – Simplified and Preliminary Overview



# Schedule



## Biorefinery as a basis for bioproduct innovation

Potential for power to X solutions at the site

Other biobased innovations

## Environmental impacts

- The biggest advantage for the environment is by use of the biobased transport fuels, that are directly replacing the fossile fuels.
- More value from the wood
- The carbon footprint of the products are aligned with RED II → considered as second generation fuels
- Water intensive industry but remarkably modern and efficient waste water handling with strict emission limits



# Distribution obligation – Ministry of Economics Affairs and Employment of Finland

- Biofuels are liquid or gaseous fuels used in transport. Biofuels include bioethanol and biodiesel. Bioliquids are liquid fuels, such as pyrolysis oil, made for purposes other than transport (e.g. heating). Biofuels and bioliquids are made from biomass.
- Biofuels and bioliquids must fulfil the sustainability criteria set by the EU. The Act on Biofuels and Bioliquids (393/2013) lays down provisions on the sustainability criteria of the EU and the procedures to be used to verify compliance with them.
- Under the Act on promoting the use of biofuels for transport (446/2007), a distributor of transport fuels liable to pay tax has the obligation to supply biofuels for consumption. By 2020 the share of the total energy content of the petrol, diesel oil and biofuels supplied by the distributor for consumption to be accounted for by the energy content of biofuels will steadily increase to 20 per cent (distribution obligation). For the purposes of this objective, the amounts of biofuels produced from waste and leftovers specified in the act are doubled. The biofuels included in the distribution obligation must meet the sustainability criteria of the EU.
- The targets for biofuels for the post-2020 era are set in the National Climate and Energy Strategy to 2030. In November 2016 the Commission gave a proposal for a new Renewable Energy Directive (RED II) that creates a framework for promoting renewable energy to 2030. The proposal is now in the European Parliament and Council. The Commission proposal contains provisions concerning biofuels and sustainability criteria for the time after 2020.

## Reagional impacts

- Positive climate impact
- Remarkable employer, total of 250 jobs
  - Appr. 100 at site and 150 in supply chain and logistics
- Regional biocluster expected to be developed next to the biorefinery
- Creates attraction for the reagion
  - New education needed
  - New skills and professionals attracted to the area

## Challenges during the way

- Permitting requires a lot of time
  - Application in 6/2018
  - Permit in 7/2020
  - Complaint of the permit to VHaO 8/2020
  - Rejection of the complaint 12/2021
  - Complaint of the rejection 1/2022 – ongoing process

• More resources required both for environmental authorities and for complaint handling!

Regional support important for the project