

# NordFuel

Biofuels for transport from sustainably  
managed forests

# Biokaasua maatiloilta teemapäivä ma 4.4.2022

General introduction

Project environmental and regional impacts

Biogas production and liquefaction



## 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 (liquified)
  - Feedstock
    - Softwood
    - From forest and sawmill industry residues
  - Net investment after subsidies 300+ M€

# Kanteleen Voima Oy

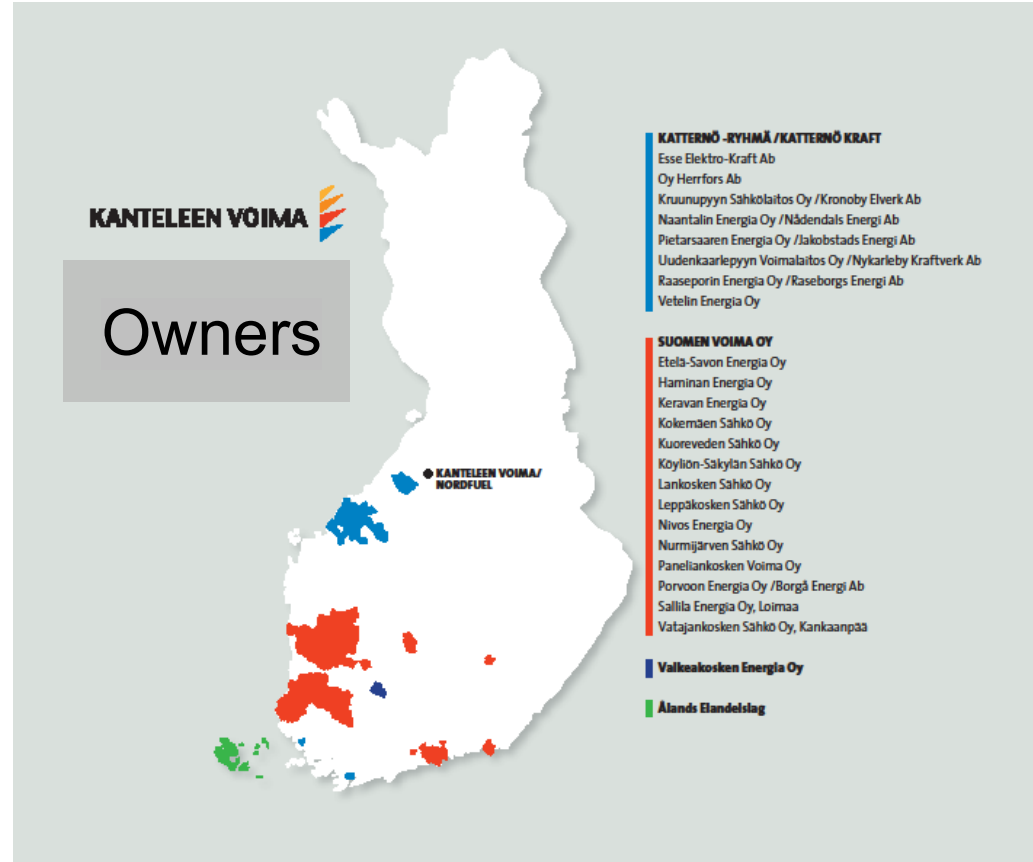
Kanteleen Voima Oy is a Finnish power producer established in October 2006.

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

# Kanteleen Voima Oy

100%

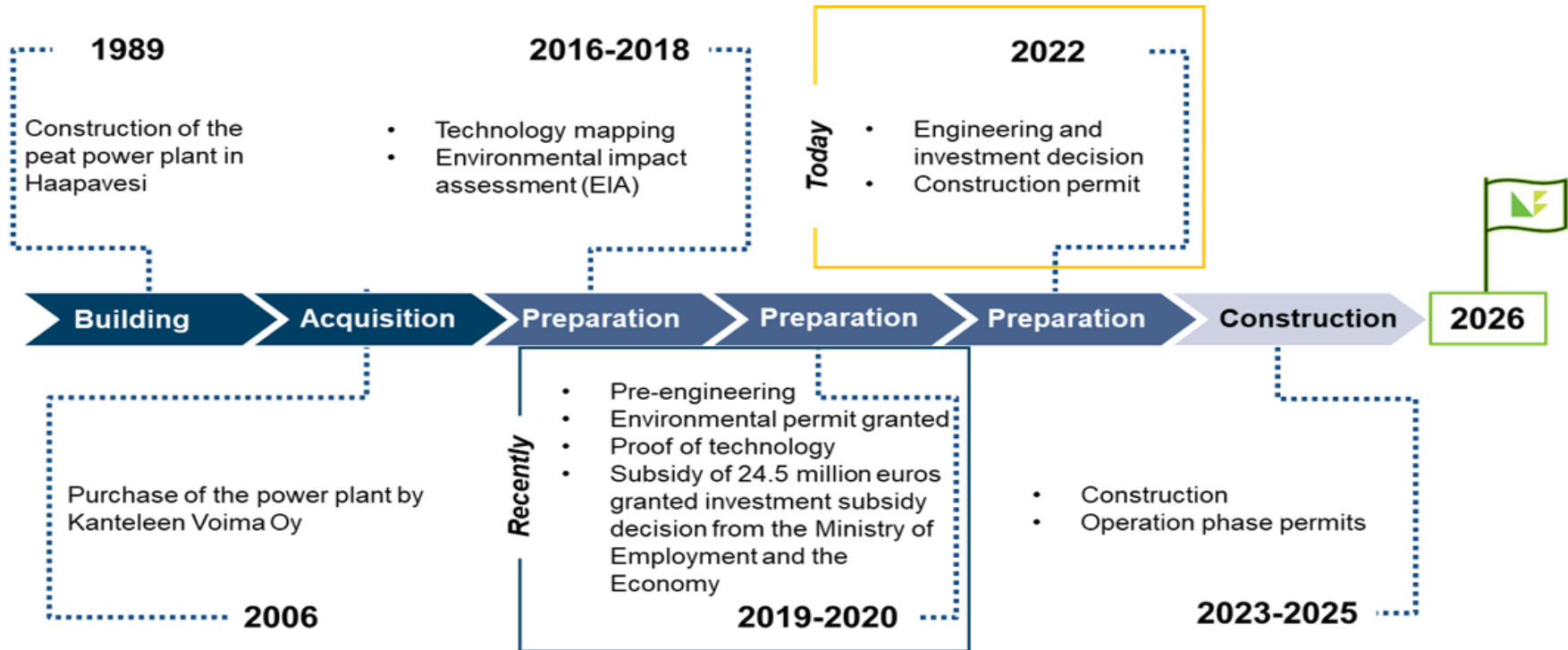
NordFuel Oy



- 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



# 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

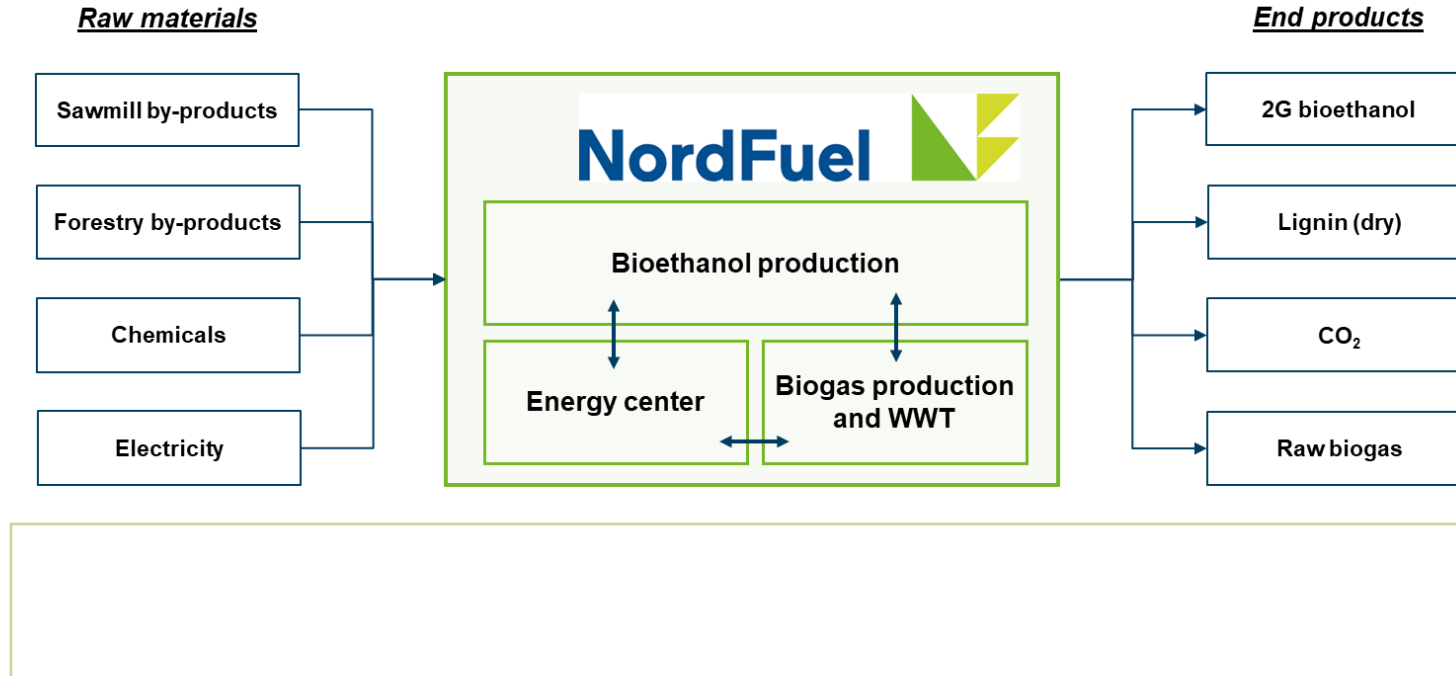


## Reagional impacts

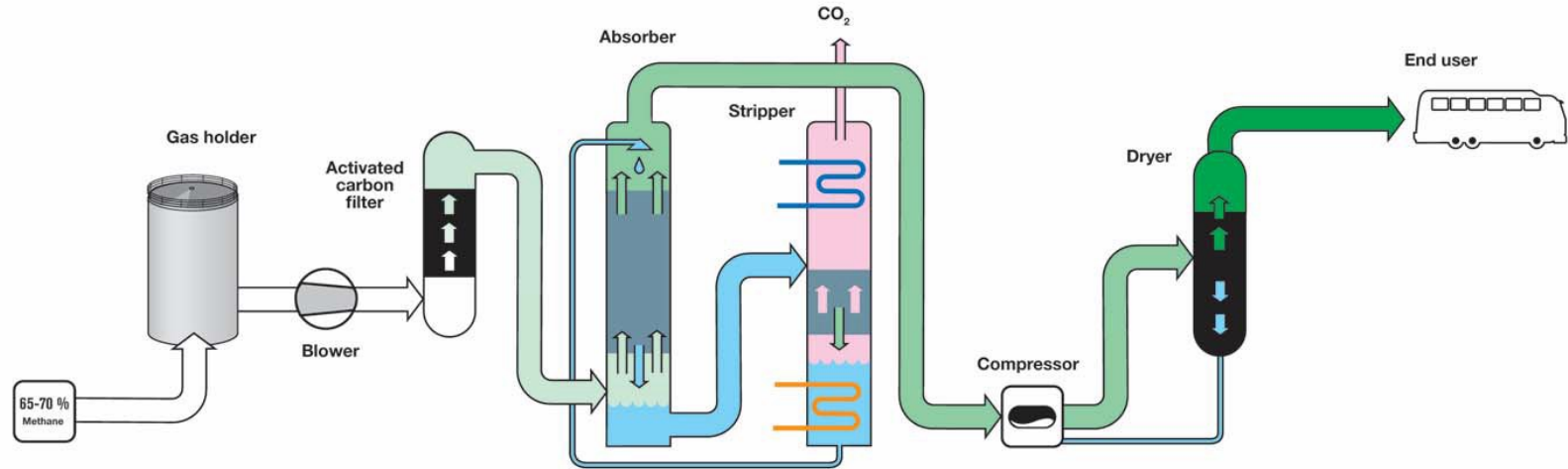
- Positive climate impact
- Remarkable employer, total of 250 jobs
  - Appr. 100 at site and 150 in supply chain and logistics
- Regional biocluster expected to be developed next to the biorefinery
- Creates attraction for the reagon
  - New education needed
  - New skills and professionals attracted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



# Biorefinery – Simplified and Preliminary Overview



# Biogas upgrading



Liquefaction with cryogenic heat exchanger, pressure ~20bar, temperature ~-160°C

## Biogas upgrading

- NordFuel can do the liquefaction or another party can be involved
- Environmental permitting ongoing for gas upgrading, including also CO<sub>2</sub>
- Clean/ purified biogas can be imported from other production sources such as farms or small facilities (5 t/a, ~40GWh) to be liquified at site