



# The Finnish Green Recovery plan: role and opportunities for Bioenergy

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# Role of Bioenergy in the Nordic Countries?

**Sustainability is key. Focus on sidestreams.**

**Short-term: Bioenergy offers a readily available option to imported fossil fuels in particular in heat generation and transport.**

**Mid-term: Bioenergy combined with Carbon Dioxide Capture and Use (CCU) enables a zero emission energy system in particular in industrial applications.**

**Long-term: Bioenergy combined with Carbon Dioxide Capture and Storage (CCS) enables negative emissions i.e. removal of carbon from the atmosphere. Norway building an infrastructure for CCS.**



# Vision for Finnish Bioenergy

**Finland has excellent conditions for development of sustainable or even carbon-negative biomass-based products.**

**We aim at high added value from biomass and exports. We are part of a circular bioeconomy and support energy self-sufficiency, energy security and employment.**

**Energy is derived from sidestreams.**

# Future of Finnish Bioenergy: Current Investments



Integrated production in biorefineries:

**NordFuel** 



A full truckload of traffic  
2G fuel every fifth hour



Bioethanol for 400,000  
cars (10 % blend) and  
biogas for 30,000 cars



The power plant can  
produce flexible and non-  
weather related power  
200-300 GWh/year

Advanced liquid biofuels



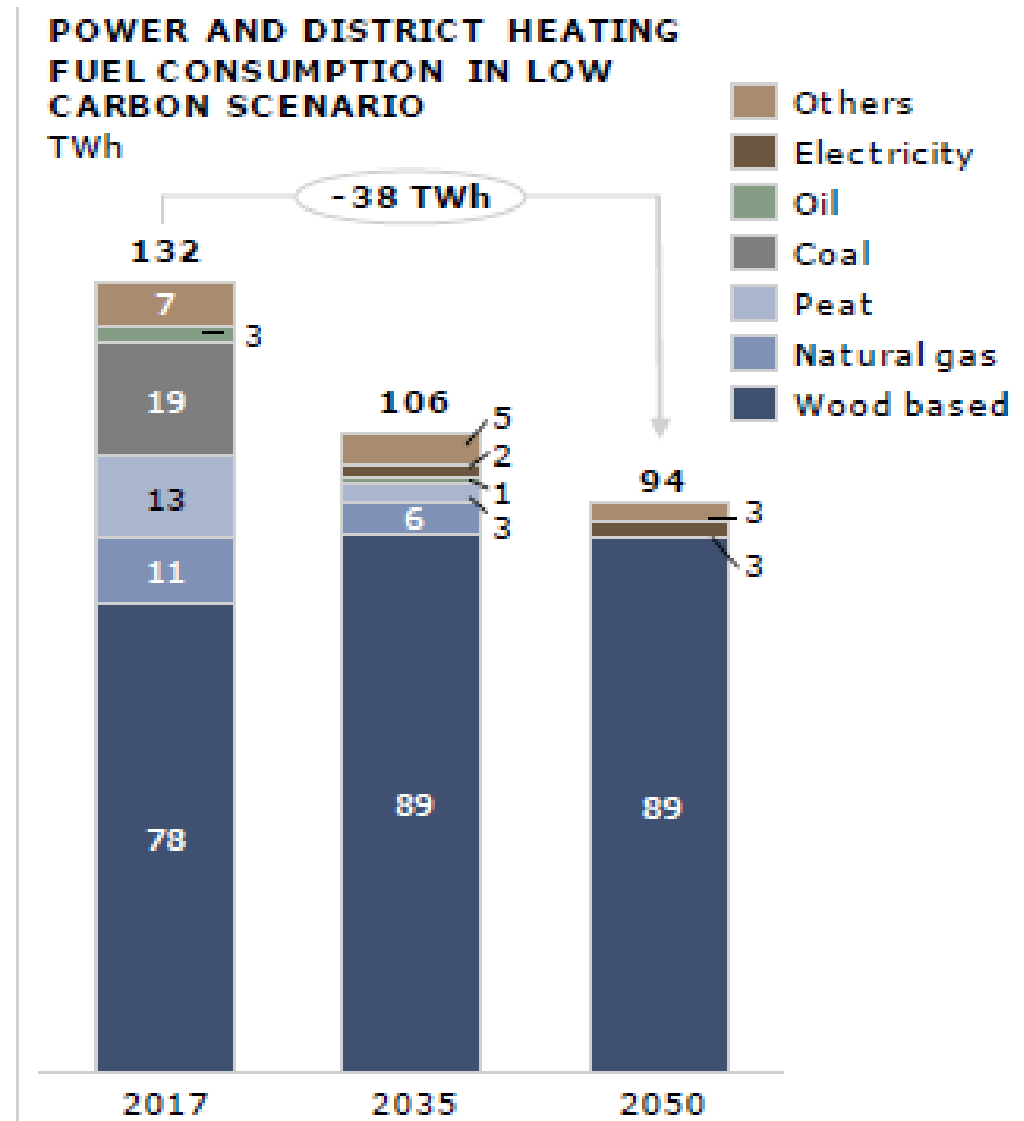
Large biogas plants refining manure and plant  
biomass from agriculture



# Green Recovery: Heat/Cool and Power Generation



- 2020s' key trend:
  - Fuel use decreasing
  - Use of coal and peat rapidly decreasing, renewable energy increasing
  - Controlled transition needed e.g. energy security, different uses of wood
- Need to direct the demand for wood fuels to best sources and avoid the use of industrial wood for energy
  - E.g. Young thinning stands in Finland with inadequate forest management: ca. 800,000 hectares in 2019
  - Recovery funds could be mobilized with provisionally better conditions, biodiversity considerations could be integrated in a new way => quick impacts, immediate employment in rural areas and eventually better forests



Source: Finnish Energy Low Carbon Roadmap, AFRY 2020

# Green Recovery: Transport



- Need to speed up decarbonization (with an all-hands-on-deck –mentality)!
- Foreign trade balance can be improved in parallel
- Ideas for consideration:
  - increase subsidies for conversions (ethanol, gas)
  - switch to renewable diesel and biomethane in public transportation with green public procurement
  - provide aid and/or loan guarantees to heavy trucks and delivery trucks using ED95 and biomethane
  - support low carbon infrastructure such as filling stations
  - release renewable fuels exceeding the blending mandate (18 % in 2021 => 30 % in 2029) from excise tax



Thank You for Your Interest!

More info:

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