

Biofuels in Finland

Overview of Biofuels in Finland

The actual share of biofuels in the transportation sector in 2014 was 12.3 % (energy share). Calculated according to RED, the share of biofuels was as high as 23.5 %, including double counting. Production capacities of the main biofuels in Finland are at Neste ~385 ktoe of HVO (NEXBTL), at UPM ~100 ktoe of hydrotreated renewable diesel (UPM BioVerno), and at St1 Biofuels ~10 ktoe of bioethanol.

Finland is a sparsely populated country with long (transportation) distances. Energy use for transportation work per capita, for both people and goods, is among the highest in the world. Transportation consumed about 174 PJ of Finland's primary energy in 2014, which was about 13% of the country's total energy consumption. The share of renewable energy of general total energy consumption increased in 2014 to 33%. When calculated according to RED the share of renewable energy was 39%. Wood fuels represented the majority, 25%, of the renewable energy.

Biofuels policy, regulations, market development

A national law requires that fuel distributors provide biofuels to the market. The target is 10% for 2016, and then it increases incrementally to 20% (share of energy) by 2020. Biofuels and EHV's are supported by fuel and vehicle taxation.

Under the new Government Programme: Finland's target will be to increase its share of sustainable, emission-free, renewable energy so that in the 2020s its share will be more than 50%. In addition, the use of fossil oil should be cut in half; the target is to have a 40% share of renewable energy in transport by 2030.

Recent study on the 2030 EU climate targets concluded that the most cost-efficient way to reduce emissions in Finland is to invest in the production and uptake of domestic, advanced drop-in biofuels as they do not require changes to the vehicle fleet or fuel distribution system. Biogas and EHV's are also complementary options, but they will require additional infrastructure investments.



Country information

Finland 2014	
Population	5 471 753
GDP (per capita)	€37 819
Final Energy Consumption (Mtoe)	32
Final Energy Consumption in Transport (Mtoe)	4,16
Final Energy Consumption in Transport Share	13%
Biofuels share in Transport Fuels	23,5 % (calculatory)
Fuel-Mix	38% Petrol 62% Diesel

Advanced biofuels demonstration and R&D Projects

Bioethanol and renewable diesels will be used as biofuels more and more over time in Finland.

The use of ethanol produced by **St1 Biofuels** in Finland is increasing. A bioethanol plant (5 ktoe/a) is built in Kajaani that will use sawdust and chips as feedstock. **Suomen Bioetanoli Oy** received €30 million in support from the Ministry of the Employment and the Economy (MEE) to invest in a new straw based bioethanol plant at Myllykoski (45 ktoe/a).

In 2015, **Neste** Corporation and Boeing will promote and accelerate the commercialization of renewable aviation fuel. Finnair has also tested biofuel mixtures.

Neste was granted €3.3 million in support from MEE to develop the co-feeding of tall oil pitch, at its Naantali refinery (~40 ktoe/a).

The LNG infrastructure is currently being built up for marine transportation. New plans will be built which offer LNG options for HD- and marine transportation. The first bio-LNG plant will be built in Äänekoski in 2018 EcoEnergy SF (2 ktoe/a).

The first integration of wood-based pyrolysis oil production in a power boiler was done by **Metso** for **Fortum** in Finland in 2013. The bio-oil plant produced bio-oil amounting to ~50 ktoe in 2014. Currently, bio-oil substitutes for heavy and light fuel oils in heating applications. However, in the future, bio-oil could also be feedstock for producing transport fuels and various chemicals.

Public city transport in Helsinki capital area will be carbon neutral by 2020. The buses will use up to 100% paraffinic renewable diesel, as well as, biogas and ED95. Local emissions (NO_x, PM, and CO₂) will be reduced radically.

In the R&D cellulosic BTL (biomass-to-liquid) fuels are focus of national industrial and public development and piloting activities. Several new concepts in various EBTB-value chains are coming to piloting phase supported by national and EU funding.

References: [IEA AMF Annual report](#), [Statistics of Finland](#)

Biofuels ministries, organisations and agencies in Finland

Bioenergy Association of Finland
Finnish Biogas Association
Finnish Energy
Finnish Forest Association
Ministry of the Employment and the Economy
Ministry of the Environment
Ministry of Transport and Communication
Motiva
Petroleum & Biofuels Association
Tekes

Key biofuels industry and research stakeholders

Chempolis Ltd.
EcoEnergy SF
Finnair
Gasum
Helsinki Region Transport
Natural Resources Institute Finland
Neste Corporation
Pöyry Finland Oy
St1 Biofuels Oy
UPM Corporation
Valmet
VTT Technical Research Centre of Finland