

A FEASIBILITY STUDY IN KAINUU

- Promoting the use of alternative fuels and electric vehicles in Kainuu

Biodiesel, bioethanol, biogas, electricity, hydrogen and synthetic fuel are all good solutions for Kainuu. Biogas has potential limit. Electricity and clean electricity plays a remarkable role in the future because electricity, hydrogen and synthetic fuel needs electricity. Synthetic fuel could make Kainuu a forerunner. Alternative fuels are spreading into Kainuu but there are availability problems to solve. Kainuu needs few actions for reaching and maintaining the decarbonization standards like further research projects into biogas, acquirement of electric vehicles through public procurement, ensuring charging and refill stations for alternative fuel cars and action on synthetic fuels. If Kainuu wants to be carbon neutral by 2035, the target demands 1 850 biogas cars, 9 800 electric cars and 270 hydrogen cars in region by 2030.

Background information from the study

The Regional Council of Kainuu, project partner 6 of the Interreg Europe project e-MOPOLI, is implementing a feasibility study focusing on the development of alternative mobility in Kainuu. The purpose of the feasibility study is to reach insights and make recommendations about optimal options promoting the utilisation of electrical and in general alternative mobility in Kainuu region. It also presents how carbon dioxide emissions could be decreased in region. All vehicles from a farm tractor to a club car are observed. Study observes biodiesel, bioethanol, biogas, electricity and hydrogen as alternative fuels. Main focus is on biogas and electricity. The Feasibility Study mapped the views of Kainuu stakeholders, private people, entrepreneurs, politicians, experts etc. on alternative fuels and vehicles, promoting their use, and environmental benefits and CO₂ emissions. The study was conducted from 12/2019 to 03/2020. The expert carrying out the feasibility study was the University of Oulu, Measurement technology research unit (MITY) in Kainuu.

Overall situation of alternative fuels in Kainuu 2020

There are over 65 000 vehicles from a light club car to a heavy dumper in Kainuu and most of them use petrol or diesel fuel as driving power. There are over 80 plug-in hybrid electric vehicles (PHEV), 40 ethanol vehicles and 30 electric vehicles in region. That is 0,23 % of vehicles in Kainuu. Most of PHEV and ethanol vehicles are cars and 10 of electric vehicles are electric cars. Heavy vehicle which uses alternative fuels are not found. There is one bioethanol station in Kajaani and 16 electric car charging points in five municipalities in Kainuu, but not any biogas station. For comparison, Kainuu would be the forerunner if there were over 150 biogas cars and over 400 electric cars (included plug-in hybrids) in Kainuu. The next climate strategy of Kainuu is preparing in 2020.

Kainuu has a general target to decrease 25 % greenhouse gas emissions from 2009 to 2020 and the emissions caused by traffic in Kainuu are expected to decrease approximately 17 000 tons CO₂ eq from 2009 to year 2020. 17 000 tons CO₂ eq is ~7,7 % of traffic emissions in Kainuu in 2009 and it means 210 kg CO₂ eq per person. Kainuu has only reached the fraction of 17 000 tons CO₂ eq.

The main points of the legislation in the EU on alternative fuels

Revised directive 2018/2001 (RED II, the promotion of the use of energy from renewable sources) sets: "The share of renewable energy within the final consumption of energy in the transport sector is at least 14 % from 2005 to 2030". Finland's goal is 30 % by 2030.

There are two remarkable directives in EU that affect alternative fuels and electric vehicles mobility. These two directives will be transposed into Finnish national law in 2021. The first is revised directive 2009/33/EC (the promotion of clean and energy-efficient road transport vehicles) which shows that electric vehicles are in own category and the other alternative fuels (biodiesel, hydrogen, natural gas) are in another category. If a municipality buys a passenger car, it must be a plug-in hybrid or an electric car, and only electric cars or hydrogen cars are allowed after 2025. If a municipality buys city buses before 2025, 41 % of buses must use 100 % alternative fuels and half of them must be electric buses. The percent is 59 % after 2025 and the demands are the same. If a municipality buys trucks before 2025, 9 % of trucks must use 100 % alternative fuels and the same number is 15 % after 2025. This directive takes effect in the national law on the first of August in 2021 or earlier. The other directive is 2018/844 on the energy performance of buildings. The directive sets when charging points must be installed on parking places of buildings. This takes effect in the national law in 2020-21.

EU has set that CO₂ emissions of all newly registered passenger cars in the EU are to be reduced to 95 g/km on average by 2021 and 59 g/km by 2030. According to Green Deal 2020 EU wants to be carbon neutral in 2050.

Legislation in Finland in a nutshell

Finland has targets which have been written by law. The distribution obligation of biocomponent in transport fuels has been set. The biofuels' share of transport fuels rises in a linear fashion from 20 % to 30 % from 2020 to 2030.

The previous Finnish Government (called Sipilä's Government, in 2015-2019) set a target for numbers of biogas cars (50 000) and electric cars (250 000) including battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV) and hydrogen vehicles (H₂V) in Finland by 2030. If the target is shared to Kainuu after population, it is 670 biogas cars and 3 350 electric cars approximately in Kainuu by 2030. The previous government decided to support buying of electric car and conversion of petrol car to a flexfuel (ethanol) car or gas car. The support is valid in 2018-2021.

The Finnish Government (in 2019) has written in the government program carbon neutral Finland. That means higher targets. If Finland want to be carbon neutral by 2035, it demands according to the scenario 138 000 biogas cars, 730 000 electric cars (included plug-in hybrids) and 20 000 hydrogen cars by 2030. That means 1 850 biogas cars, 9 800 electric cars and 270 hydrogen cars in Kainuu by 2030.

Next steps in Kainuu

Kainuu is "a back runner" of alternative fuels and it must catch up rest of Finland. If Kainuu wants to be carbon neutral by 2035, the target demands 1 850 biogas cars, 9 800 electric cars (included plug-in hybrids) and 270 hydrogen cars in Kainuu by 2030. In Finland that means 138 000 biogas cars, 730 000 electric cars (included plug-in hybrids) and 20 000 hydrogen cars.

Kainuu should focus on alternative fuels as follows

- BIOGAS: starting biogas project(s), potential partners St1, Osuuskauppa Maakunta, University of Vaasa (BiTool project), Doranova, Ekokymppi and Envitecpolis
 - founding a biogas station or a natural gas station
 - collecting farm gas
 - updating the investigation of the biogas plant made in 2015
- ELECTRICITY
 - supporting tourist entrepreneurs to install charging points by local projects
 - getting public/semi-public institutions and municipalities to buy electric cars
- SYNTHETIC FUEL
 - starting the project of synthetic fuel (Q Power Oy / CRI)

The alternative fuels strategy for Kainuu appears to be inextricably linked to alternative energy strategy as a whole because Kainuu is both end user and also supplier of alternative energy. An optimum strategy for reaching and maintaining the decarbonization standards appears to be a combination of

- further research into biogas
- acquirement of electric vehicles through public procurement
- ensuring charging and refill stations for alternative fuel cars, especially the through traffic
- action on synthetic fuels.

Putting the results into practice

The Regional Council of Kainuu is presenting the process and results of the feasibility study to the regional stakeholders and the options agreed, will become part of the regional strategy and of the forthcoming structural funds programme. The purpose is to attach concrete project criteria & funding to such recommendations.

More information

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