Study visits – 2nd Interregional Event – Joensuu, Finland

Contents

1. Introduction

The study visits in Finland was delayed due to covid-19 pandemic to 30.11.-1.12.2021. The interregional learning process was enhanced by visiting Finnish good practices on renewable energy in agriculture and rural areas in North Karelia, Finland. Partners and stakeholders from all AgroRES participating countries were able to join the cross-cut visit to Finland. Besides learning from the region's good practices, networking between participants proved to be a valuable part of knowledge and information sharing.

2. Study visits - Finland

North Karelia is the easternmost region of continental Europe that shares a 300 km stretch of frontier with Russia. North Karelia has always been a place where east and west meet. Total population of North Karelia is 163,000. The region's undisputable strength is forest bioeconomy, and more than 500 companies the operations of which involve bioeconomy can be found in the region. The turnover of these companies is 2 billion euros, and they employ more than 6,000 people. In addition, there are more than 600 experts employed in this field in the region: researchers, developers, trainers and administrative employees. The carbon footprint of North Karelians is 36 % smaller than that of an average Finnish person. Renewable energy accounts for 64 % of the total energy consumption, which is high even on an international scale. North Karelia is also a model area in energy self-sufficiency: approximately 63 % of the energy consumed is produced in the region. Hilly landscapes covered with trees and dotted with rivers and lakes are characteristic of North Karelia.

The host of the study visits in Finland, Regional Council of North Karelia, is regional, politically guided, municipal coalition for the development and interest supervision in the region. It is responsible for regional planning and general coordination of regional development programs related to national and EU structural funds.

3. Agenda

30 November 2021

08:30 – 09:00	Welcome and presentation of North Karelia. Regional Council of North Karelia.
09:00 – 09:30	Travel to Eno by bus
09:30 – 11:30	Eno Energy Cooperative - district heating with wood chips
11:30 – 12:45	Lunch
12:45 – 13:15	Travel to Kontiolahti by bus
13:15 – 14:45	MottiMikko - solar panels for producing electricity for drying split firewood
14:45 – 15:15	Travel to Joensuu by bus
15:15 – 16:45	Sirkkala Energy Park – a learning, RD&I and service environment for bioeconomy
16:45 – 17:00	Walk to the Regional Council
17:00 – 17:45	Progress meeting and peer review & presentations by project partners
19:30 –	Project dinner and networking

1 December 2020

08:00 – 09:00	Travel to Kitee by bus
09:00 – 10:30	Koivikon Kartano Farm & BioKymppi Ltd. biogas plant – presentations in auditorium
11:00 – 12:15	Lunch
12:15 – 12:30	Travel by bus
12:30 – 13:30	BioKymppi Ltd. Biogas Plant - excursion of the biogas plant
13:30 – 14:30	Travel to Joensuu
14:30 – 15:30	BlackGreen Project – North Karelia Biochar Programme
15:30 –	Closing remarks and departure

4. Technical visits

The study visits in Finland started with a presentation on regional climate and energy policy work in North Karelia by Regional Council of North Karelia. Partners learned about regional work done for mitigating and adapting to climate change. North Karelia aims to be a forerunner in climate sustainability in Finland by 2030.

The *site technical visit 1 was Eno Energy Cooperative* which produces district heat with forest chips to a local community in Joensuu, North Karelia. This cooperative was established by 12 local forest owners in 1999. At that time, there was no proper market for energy wood and the cooperative created that for Eno district. The initiative was well-received as the municipality wanted to profile itself as a clean and environment-friendly place. Currently the co-operative is owned by over 50 local forest owners. Members provide about 20-30% of energy wood and the rest is acquired from different suppliers nearby. The raw materials used are small diameter trees by manual felling (15%), by multi-tree processing (70%) and logging residues (15%) from clear cut areas. Eno Energy Cooperative is among the first energy cooperatives in Finland producing district heat with forest chips to local communities. The cooperative owns three district heating plants in Eno community supplying district heat both to public and private buildings.

In the context of Eno Energy Cooperative, producing district heat with forest chips replaces about 2 million litres of oil annually. Carbon dioxide emissions are also reduced by about 5 million kilos annually. Besides saving oil, the local economy saves about 2 million euros when local forest chips are used instead of oil. The local community benefits also in terms of employment as the energy cooperative activities provide an additional 7 to 10 full-time equivalent workload for local employment. The cooperative produces 15,500 MWh energy annually which corresponds to the energy consumption of about 800 detached houses.

Photo 1. Partners and stakeholders visiting Eno Energy Cooperative. Wood chips storage in the district heating plant.

The *site technical visit 2 was a split firewood enterprise MottiMikko*. The enterprise produces dry split firewood to the local community from locally sourced wood. Solar energy is used for producing electricity for splitting wood and machine-drying of split firewood. A large part of electricity needed in operations is produced by solar panels.

Photo 2. Partners and stakeholders visiting split firewood enterprise MottiMikko. Entrepreneur in front of his split firewood terminal (right-hand side) and firewood drying kiln (left-hand side).

The *site technical visit 3 took place in Sirkkala Energy Park*. Sirkkala Energy Park is a research, demonstration and educational platform which promotes both national and regional development goals to increase know-how, production and use of renewable energy. Sirkkala Energy Park collaborates with enterprises and increases their knowledge on energy solutions with joint RD&I work. It is a real-life R&D environment at Karelia University of Applied Sciences located near the campus area offering an accessible learning and benchmarking environment for students and visitors. Sirkkala Energy Park provides a large set of technical solutions for

testing and development, such as: mobile Volter CHP unit with real-time monitoring, combined wood log/pellet boiler, nano CHP pellet boiler system, large collection of solar collectors and panels, wood fuel dryer and a wide variety of laboratory equipment and analysers.

Photo 3. Partners and stakeholders visiting Sirkkala Energy Park. On the left-hand side movable CHP unit.

Sirkkala Energy Park improves stakeholders' ability to adapt to changes in construction and energy system regulations. It produces actual cost structures of renewable energy production and maintenance, as well as creates synergies between enterprises, education and research.

On the second day of study visits, *the site technical visit 4 took place to Koivikon Kartano farm* which is an organic farm. The farm has about 140 dairy cows. The vision of the farm is "Energy and nutrient self-sufficient farm". Now heat energy is produced with wood chips.

Investments in renewable energy are being planned. Koivikon Kartano works in close collaboration with the nearby BioKymppi biogas plant buying for instance organic fertilizer from them.

Photo 4. Partners and stakeholders visiting Koivikon Kartano farm.

The *site technical visit 5 was BioKymppi biogas plant*. The plant produces around 10,000 MWh of heat and electricity a year from biogas. Raw materials used in the process include household and supermarket biowaste, manure and food industry waste. In addition to energy, the anaerobic digestion process produces solid and liquid fertilizers that are sold to farmers. BioKymppi has also plans to build a biogas refueling station.

Photo 5. Partners and stakeholders visiting BioKymppi biogas plant.

The last day of study visits in Finland ended with a presentation from *BlackGreen Project – North Karelia Biochar Programme*. This ERDF funded RDI-project brings together several local research and business development organizations to develop biochar business in North Karelia. The project aims at generating new knowledge on biochar products, production, markets, logistics and other related aspects for developing biochar production in North Karelia.

Photo 6. Partners and stakeholders attending presentation by the BlackGreen project in the premises of Regional Council of North Karelia.