1.2 FINLAND: CASE STUDY 2. LOHTAJA COOPERATIVE

Case study report for Finland: Community owned energy project from initiation to completion
Centria University of Applied Sciences

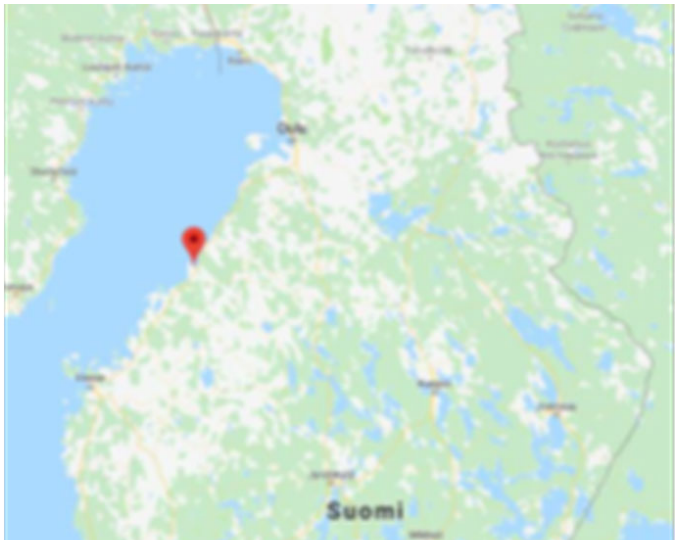
1 Introduction

In the beginning of the 21st century, there were plenty of potential heating customers in Finland's rural village communities. Suitable targets included community residential areas, municipal buildings, and industrial buildings with outdated heating systems, in many cases oil-heated. These outdated heating systems combined with the rising oil price relative to woodchips, fueled the emergence of energy cooperatives. Outsourcing of the heating process became a simple and economically sensible solution for the property-owners.

The more sophisticated and versatile plant solutions that began to enter the market, automation, and more advanced combustion technology made the plants more functional and easier to maintain. The available technology, business climate and heat demand, fueled the formation of **Lohtaja Heat Cooperative** (Fi=Lohtajan energiaosuuskunta).

2 Description of community

Lohtaja Heat Cooperative was founded in 2001 and its aim was to collect mostly stem wood from the forests of its 40 members, chip it, run a member owned heat plant and supply energy for few buildings near the plant. Lohtaja Heat Cooperative operates in the village of Lohtaja, which is located in the city of Kokkola on the west coast of Finland.



3 Renewable Energy Project

The cooperation's goal was to build a 300 kW wood chip heating plant in the area of Lepola located near Lohtaja. The heat plant was going to provide 750-800 MWh annually to three different properties, and the biomass would come from a maximum distance of 20km. The total amount of wood chips required was 500m3, and there was plenty of biomass available from the member's own forest areas. This was the first energy-cooperation in the area, and would replace 100 000 liters of oil used to heat the properties.

4 Ownership structure and financial model used

The co-op acquired the 300kW wood ship boiler (Ariterm Oy, Arimax Bio 300S boiler) and constructed the 50-meter long heating network with external capital. The cooperation took out a loan that required all members to write a personal guarantee to the bank. The cooperation did receive 30% refund in form of energy aid from the state when the plant was in operation. The co-op members did a large amount of the plant and heating network construction and installation work, and therefore labor costs was not a significant part of the total investment.

The cooperation has five board members and a secretary and consists of municipality residents and local forest owners. After the formation of the cooperation, new co-op members are required to pay a membership fee and resigning members will receive the current co-operative payment. Members can also be paid separate compensations for construction and maintenance work done.

When establishing the cooperative, the new entrepreneurs received valuable help from the Finnish Forest Center in the form of consulting. This was of great help in establishing the cooperative. There were also significant subsidies for plant investments, including subsidies for harvesting machines and choppers. Certain subsidies were directed only to energy cooperatives, which in part contributed to their formation. The Finnish state also supported the efforts of the forest owners to improve forestry when it was poorly profitable. This so-called Kemera support was available for the management of young forests and improved the profitability of the cooperative.

5 Implementation Process

The heat plants were quite small regarding thermal power, therefore the licensing process was more straightforward and no environmental permit was required. In smaller thermal plants, no special training is needed for plant managers, which made recruiting staff easier.

300kW heating plant

The wood chipping process, handling and transportation are outsourced and the costs are paid centrally with the cooperative's funds. Wood chip deliveries are well documented, and compensated to the specific member. One wood ship delivery can consist of 40-50 m3 (loose cubic meters). The co-op has two price levels. A high quality chips and moisture content below 35 % and low quality chips or moisture content well over 35 %. The moisture content of the wood chips is measured regularly. The price of higher-class chips is 12 % higher than class lower-class chips.

6 Project results: Lessons learnt & post- project benefits

Total heat sales and maintenance costs have met expectations. The cooperative-model has proven to be a good form of conducting this kind of business in Finland. The co-op board actively leads the organization, but decision-making is collectively in the hands of the members. The members are kept up to date and the, and are continually informed about new projects. The cooperative has also proven to be a good platform to jointly acquire forests and land areas.

A couple of things that the co-op would now do differently, would be to build a larger storage warehouse for the wood chips and a larger boiler room. This would reduce the need for single biomass chippings, and would make it easier to do maintenance work in the boiler area. The co-op had to expand the premises afterwards.

Heat entrepreneurship in Finland has become more challenging in recent years. Investment costs have increased and profitability has deteriorated. It has grown more difficult to act solely as a supplier of woodchips without owning the thermal plant due to the low price of peat. New heating solutions such as heat pump-based technologies have increased their market share and partly weakened the popularity of woodchip heating. Wood chip heating is no longer considered a current technology and consumers are poorly aware of the benefits that the usage of local energy sources brings to the municipal economy. The relatively low price of electricity and oil has not actively pushed consumers to seek more cost-effective heating systems.

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