

## Micro-ESCOs

### Enespa working with the Make Energy Change Happen Toolkit

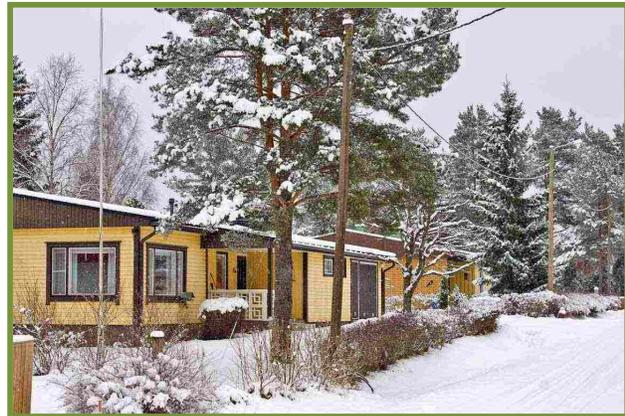
#### What are Micro-ESCOs?

“Our pilot aimed to stimulate homeowners to make investments that promote energy efficiency and reduce CO<sub>2</sub> emissions”, says Mikko Jalas, Chairman of the Board of Enespa, Finland’s smallest and oldest energy service company (ESCO). Enespa wanted to explore the possibilities to develop a full service package for residential energy efficiency investments. The focus was on existing detached houses and heating systems upgrades. In particular, the pilot explored the possibilities to develop a shared heating infrastructure for multiple detached houses in a residential area.

#### How did the project develop?

Particular attention was devoted to finding an amenable context, and hence the project was located in Mynämäki, a rural municipality that has made a commitment to become carbon-neutral. Here, an existing residential area was selected of about 100 houses built in the 1960s-1970s, mainly with oil and electric heating. Residents were supported by home audits, meetings, technical support, and support for organising funding for the investments. Meetings were organized with the residents and key stakeholders such as municipality representatives, the bank, equipment suppliers and service providers.

Few commercial initiatives preceded Enespa’s attempt to offer this type of hands-on services for private households. In the existing cases that the company representatives were aware of, utility companies were offering energy efficiency advice and management, as well as financing and operational responsibility over technologies such as ground-source heat pumps for their customers. Moreover, air-to-air heat pumps had been customarily marketed with simple leasing finance. Yet, a comprehensive model of planning, managing and financing energy efficiency investments at the household level did not exist despite a sizeable market of existing homes with oil and electricity as heat sources.



Following this logic, the Micro-ESCO initiative focused on developing a model for the promotion of energy saving and CO<sub>2</sub> emissions reduction in detached houses by stimulating homeowners to make investments that promote energy efficiency. A technical analysis was conducted of options for improving energy efficiency and their costs, payback times and internal rates of return. On this basis, plans were developed for the introduction of a common heating system based on ground-source heat wells and a common heat pump. This matched Enespa’s aim to develop and promote larger single investments and a particular logic of neighborhood-scale solutions as opposed to single house solutions.

In the end, it turned out that a common heating system was too ambitious for this area, and more individual solutions were selected. Residents in the area were supported in the joint procurement of ground source heating systems. However, the idea of a common heating system was kept on the agenda in the municipality, now for areas that have a (municipally-owned) school, which can serve as the centre for the heating system. The project developed a manual for such joint initiatives on the basis of the experiences gained in the Micro-ESCOs project.

## Enespa's experience with the Make Energy Change Happen tools

“Together with our research partners, we tested most of the activities of the toolkit in our heating systems upgrade project. Some of these activities were more relevant and had greater effect than others. In our case, understanding the context was crucial, as was planning for an with our target group using a flexible approach, and testing our ideas with our target group. But we also gained some useful insights from testing our communication material with our target group”, says Project Manager Samuli Rinne from Enespa. These three steps of the toolkit used by Enespa and their effects are detailed below.

### 1. Understand your context

Early on, we decided to locate our project in one of five Carbon-Neutral Municipalities, a high-profile project by the Finnish Environment Institute and five small municipalities that had pledged to work toward carbon neutrality, in which Enespa is one of the participating companies. Our first task in understanding the context was to narrow down the selection to one or two of these. We made an inventory of the building stock in these municipalities. Fairly early on, Enespa also conducted a study on the cost-effective energy efficiency potential of buildings in the municipalities. It was found that there was a 40-50% cost-effective potential.

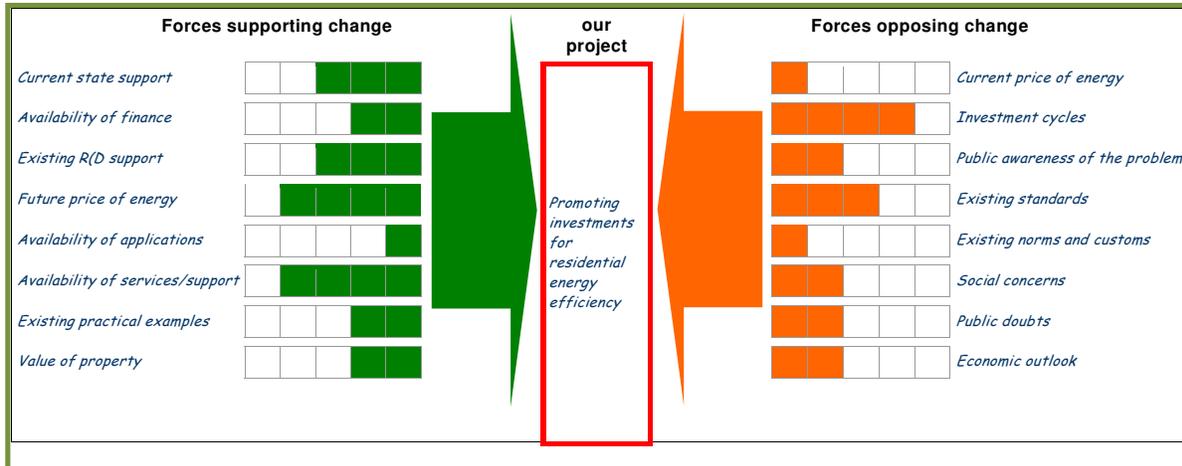
In understanding the context, one important issue was to understand *what people in the municipalities knew and expected* about the Climate Neutral Municipalities project. We did this by interviewing the project managers, reviewing newspaper articles and organising meetings with people from the municipalities. We learned that the municipalities decided to join this initiative because they expect to gain environmental improvements, but importantly also economic development, new investments, innovative solutions and more visibility and a better reputation nationally. In general, the focus on energy efficiency was low at first in the Climate Neutral Municipalities project, and we needed to create awareness of energy efficiency as a low-cost and quick way to reduce CO<sub>2</sub> emissions.

We decided to focus on one of the municipalities, Mynämäki in Southwest Finland with about 8000 residents. In discussions with the mayor, building inspector and the technical director we further narrowed down to one residential area, Raimela, near the town centre. In a meeting with the municipal officials and active residents, we learned that many of the residents are middle-aged or older (some retired) and middle-income households. There was an ongoing project to build a district heating network in the centre of Mynämäki, and Raimela, despite being located in proximity, had been left out of this network. An obvious difficulty with understanding the context is that in many cases one needs to make commitments to a certain context before getting to know it very well. This was the case with Raimela. We had prior knowledge of the building stock and demographic characteristics of the area, but few ideas of the potential local key actors. Some clues were however available: there was an active resident's association in Raimela as well as a local plumbing entrepreneur. We also learned that there were some plans or ideas among the residents to co-operate in heating system renovations.

The pros and cons of various solutions (from the household's point of view) were carefully explored. Internal discussions about the possibilities for Enespa turned the interest to more centralised or large-scale solutions, which are also cost-effective for individual households in a fairly dense residential area. We also spoke with national-level regulators and financial institutions to find out about upcoming regulations and finance alternatives. As district heating is the most efficient and climate-friendly solution, Enespa searched for a similar option in areas where district heating is not available. This gave rise to the idea of a combined solar-ground heat solution serving multiple households, at least as one option. We found some barriers, but also opportunities for this solution in the existing context (see figure below).

*We discussed the opportunities and barriers in our context at every project meeting, and continually refined our understanding as knowledge accumulated. The Toolkit questions helped us focus on key issues to monitor.*

Mikko Jalas, Enespa



## 2. Plan for and with your target group

Heating system upgrades are expensive investments. People will not make them unless they are absolutely confident that the promised benefits will be achieved and that the systems will work as planned. In a small project with limited resources, it is absolutely necessary to plan this type of project in close cooperation with members of the target group.

In order to design a project that meets the residents' needs, we planned together with them at various stages:

- Initial ideas were collected at public meetings organized for the residents. Enespa also attended a number of events organized by the residents or the local municipality to gain input on the project plans. These meetings gauged the residents' interest in heating systems upgrades and alternative solutions (including a common residential-scale heating system) and collected their concerns and ideas.
- Project details were planned at smaller meetings with the residents who were actively participating. Here, decisions were made concerning how to implement the heating system upgrade. The project changed a lot at this final stage. Instead of a common heating system, we decided to opt for individual ground source heat pumps, but ask and evaluate the suppliers' bids collectively.

*Because the challenges of climate change are so huge, a bottom-up approach seems hopeless ... but on the other hand, a purely top-down approach is not sustainable in the long term. Residents have to accept and actively participate in order for change to happen.*

Samuli Rinne, Enespa



### 3. Test your ideas with your target group

Testing ideas was, of course, done throughout the project. However, one crucial stage at which ideas needed testing was the *first* communication material developed of the project. This was a brochure describing what the project offers to residents. It was the first material we sent to residents, accompanied by a small 'self-audit' questionnaire, which helped both the residents and Enespa to find out who was interested and what their houses were like.

*We got lots of valuable comments from our 'test-users', especially concerning language and details. For example, our original title was "Cost-effective energy renovations for detached houses". One test user noted that the word "renovations" raised negative thoughts about trouble, mess and worries. The title was giving the wrong signal. So we changed the title to "Cost-effective energy improvements".*

Samuli Rinne, Enespa

In order to test our brochure and questionnaire, we organized a focus group with six participants, and invited a few others by phone who could not attend. We could not involve the 'actual target group' (as we were just planning our first contact with them), but tried to find people with similar residences and similar problems in our own networks. We tried to involve a diverse range of participants. We made a draft of our brochure and questionnaire and sent it to participants beforehand. At the focus group discussion, we asked the following questions:

- What problems do you encounter in your own home heating?
- What questions does the proposed service raise?
- How interested would you be in joining and why?
- Are there any details in the brochure that could be improved?