July 2021

Deliverable D8.3: Report on innovation/ co-creation activities at the trial sites

The project Flexible Energy Production, Demand and Storage-based Virtual Power Plants for Electricity Markets and Resilient DSO Operation (FEVER) receives funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no 864537.

Project name	FEVER – Flexible Energy Production, Demand and Storage-based Virtual Power Plants for Electricity Markets and Resilient DSO Operation
ID & Title	D8.3 – Report on innovation/co-creation activities at the trial sites
Work package:	WP8 – Measures to maximize the project´s impact: communication, dissemination and exploitation preparation
Contractual delivery date:	31.07.2021
Actual delivery date:	26.07.2021
Main responsible:	Anna Lene Maaß, B.A.U.M. Consult GmbH
Security:	Public
Nature:	Report
Version:	v1.0
Total number of pages:	13

Authors and reviewers

Main responsible:	B.A.U.M. Consult GmbH, Anna Maaß a.maass@baumgroup.de
Author(s)/contributor(s):	B.A.U.M. Consult GmbH, Rita Dornmair University of Cyprus, Maria-Iro Baka
Reviewer(s):	University of Patras, Nikos Andriopoulos Intracom Telecom, Ilias Lamprinos

Abstract

This document describes the innovation / co-creation activities that were conducted at the FEVER trial sites at the moment of the deliverable's submission. It exposes which stakeholders were reached, the feedback gotten by them and how it will be incorporated in the further development of the pilots. It also sets out the activities that are planned for the second phase of the project.

Keyword list

Innovation, workshop, co-creation, dissemination, trial sites, collaboration, stakeholder feedback

Executive summary

The solutions developed in FEVER are implemented and tested in three pilot sites in Germany, Spain and Cyprus. To support the development and testing, a series of innovation workshops are being organised and carried out by B.A.U.M. Consult and the trial site partners to involve and gather feedback from relevant stakeholders. Due to the ongoing COVID-19 pandemic and some delays in having the full list of prosumers confirmed for the pilots, the original planning was abandoned, the events were scheduled for a later stage of the project and relocated from real-life into the virtual space.

Two innovation workshops have been conducted in the first project phase.

A workshop supporting the progress of the German trial site was organised in November 2020 with utility and DSO experts from the project partners SWW and SWH. The discussion focussed on the role of municipal utilities and DSOs in the future energy system, setting a focus on the relation to energy communities. The main insights were the following: the effort for private consumers to join an energy community should be kept at a minimum with the option to get more involved depending on the personal interest. The local DSO should be involved in the formation of the community to bring in their grid management knowledge. Different services can be provided by the local utility to energy communities and vice versa. Regulatory changes are crucial for the success of peer-to-peer trading. Regarding the FEVER services, it was said that several of them are relevant to support DSOs with the digitalisation of the electricity grid.

In the Spanish trial site, a workshop was organised in July 2021 with the project partner Estabanell Pahisa (local DSO) and Estabanell Mercator (energy retailer). It focussed on getting feedback from the industrial clients in order to know how to better involve them in the future. The main insights gained were: it is important for the companies that their energy supply is renewable and several of them have plans to install PV cells to produce energy for self-consumption. However, it is not planned to connect the installations to the local grid due to the high administrative burdens this implies. The unpredictable and quickly changing legislation makes it difficult for companies to get strongly involved in the energy transition process. A better counselling by the DSO would help them. The quality of the energy supply is crucial for some of the industrial clients. Even micro-outages cause a loss of money and operational time since part of the production gets ruined. The insights will be used to further improve the collaboration with the industrial customers and to gain new participants.

Three additional innovation workshops are already planned for the first two quarters of 2022 at the German and the Cyprian pilots. These events are foreseen as face-to-face events, subject to the further development of the pandemic, of course.

In Wunsiedel, the peer-to-peer technology currently developed to facilitate the trading of flexibilities within Local Energy Communities (LEC) will be presented and discussed with the members of the LEC in a first step. After a testing phase, a second workshop will take place to gather feedback and develop ideas for further improvement of the solution in a co-creation process.

In Cyprus, an interactive workshop with citizens is planned to engage consumers and increase their acceptance for the technological solutions developed in FEVER within their daily lives.

Table of contents

1 Introduction

The applications and services developed in FEVER are implemented and tested in three European pilots in Germany, Spain and Cyprus under realistic conditions and supplemented by a laboratory simulation in Greece. To support the development and testing of the solutions in the trial sites as well as the largescale uptake of local flexibility provision and the integration of local renewable energy sources, innovation workshops are being carried out at the FEVER trial sites to get feedback from the relevant stakeholders. The target groups for the events are consumers, prosumers, local utilities, DSOs, energy communities and municipalities.

By the time of the application, it was foreseen that the innovation workshops would be carried out as face-to-face events at the trial sites within the first project year. In light of the COVID-19 pandemic and some delays in having the full list of prosumers confirmed for the pilots, the planning had to be adjusted. The first workshop was pushed back to November 2020 and turned into a virtual event. It took place on 2 November involving energy experts from the utilities and local DSOs SWW and SWH, both project partners in FEVER. The focus of the event was on the developments in the energy system and how they will affect the future role of municipal utilities and DSOs. Many of them are also residents in the trial sites and potential participants in the planned energy communities.

To get feedback on the peer-to-peer flexibility trading tool that is currently developed within FEVER and will be tested at the German trial site, two innovation workshops are planned for the first half of 2022.

At the beginning of July 2021, a virtual workshop was organized at the Spanish trial site to get feedback from the industrial clients. The goal was to get to know their needs and worries and be able to incorporate them in the further development of the pilot.

For the Cyprian pilot, an innovation event is planned within the first semester of 2022 to actively engage consumers in order to increase social acceptance for energy related technology innovation within their daily lives.

2 Activities at German pilot

2.1 Workshop with SWW & SWH

At the centre of the German demo pilot are the two Bavarian utilities and Distribution System Operators SWW Wunsiedel GmbH (SWW) and Stadtwerk Haßfurt GmbH (SWH) that aim to ensure an affordable and environmentally compatible supply for their customers. Within the FEVER project, there are several goals the trial site is aiming at. Among others, it is planned to establish energy communities in the SWW & SWH grids area to demonstrate how local flexibility trading within an energy community could work. To achieve that goal, a peer-to-peer flexibility trading tool will be developed. This should enable participants to trade their energy flexibility among each other. Another aim is to establish a so-called *flexibility bridge* between SWW and SWH or their energy communities to exchange flexibility needed for grid management actions to keep their grids stable.

With the changes in the energy system in general and the establishment of Energy Communities aiming to maximize self-supply, the roles and responsibilities of utilities as well as DSOs are expected to change to a certain extend. To get a better idea of these upcoming changes, the first innovation workshop at the German trial site focussed on the developments in the energy system and how they will affect the future role of municipal utilities and DSOs. Within these developments, a special focus was set on their roles with regards to energy communities. In a last step, the current and future challenges for DSOs and potential solutions from the FEVER were discussed.

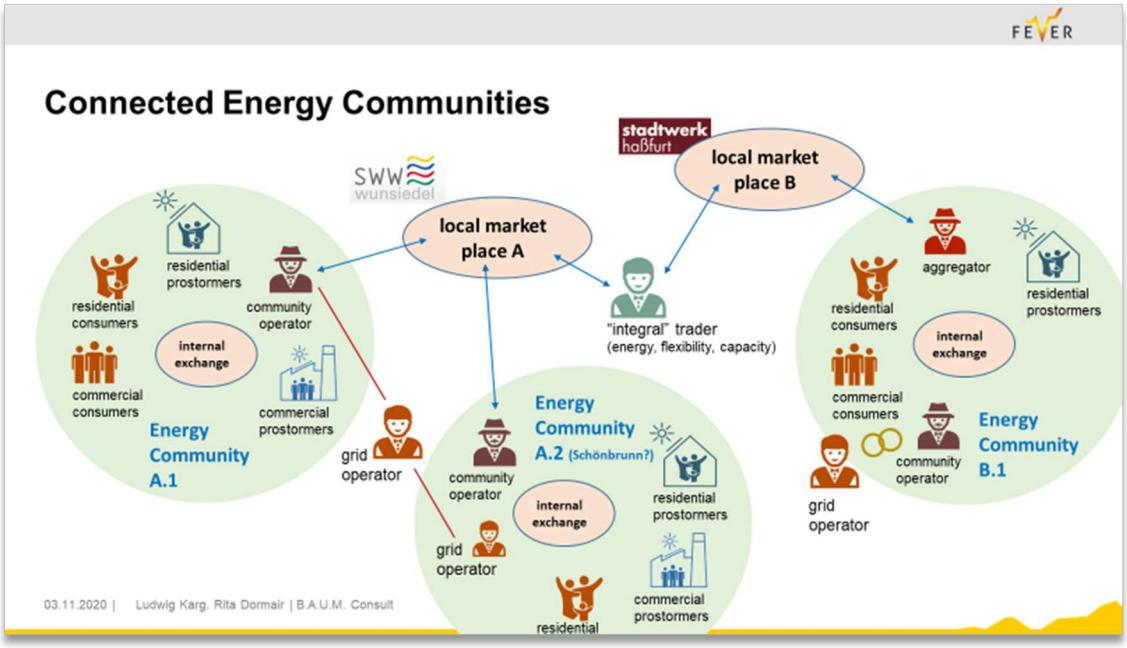

Figure 1 – Presentation slide on connected energy communities used in the workshop

The workshop was organised and moderated by B.A.U.M. Consult, participants were employees of the project partners SWW, SWH and Es-geht! who in many cases also are residents in the trial sites and potential participants in the planned energy communities. The workshop took place at the beginning of November 2020 and was carried out virtually.

Among others, the following main insights and statements were drawn from the workshop:

- The effort for individual consumer/prosumer to participate in an energy community should be kept on a low level, otherwise they might not want to be part of it. In the same time, the more interested persons should have the option to get more involved in setting up and managing the energy community.
- Utilities could provide services to energy communities or even "Energy community as a service!" to the relevant parties who want to establish an energy community.
- When forming an energy community, it is important to involve the relevant DSO in the process from an early stage on, as he brings in the view and knowledge about grid and its management.

- Peer-to-peer trading within the energy community might rather be delayed or stopped due to missing regulatory changes rather than development of technical solutions or willingness to participate.
- Apart from the peer-to-peer (p2p) trading solutions, other FEVER services were seen relevant for DSOs, such as the DSO toolbox, which supports the digitalisation of the electricity grid and its management.

The findings will be used by the partners in the demo region to prepare for the changing framework conditions and responsibilities for the actors in the energy system and, if necessary, to make early use of the design opportunities through participation in H2020 projects by providing feedback to the FEVER project. In particular, the workshop provided valuable input for the formation and foundation of the energy communities planned in the German trial site network.

2.2 Planned workshop SWW

In the FEVER project a tool is being developed which should ultimately enable peer-to-peer flexibility trading between the participants (peers) of energy communities. This tool will be used and tested in the planned Local Energy Communities (LECs) in Wunsiedel and Haßfurt.

The active participation and feedback of the Energy Community members is of vital importance for the development of a tool which eventually will be embraced by users. Therefore, two workshops are planned in the first two quarters of year 2022 to introduce the participants of the trial to the first prototype version of the peer-to-peer flexibility trading tool and get their feedback on it. The events are foreseen to be face to face (f2f) if the development of the pandemic allows for it.

Objectives of the first workshop (planned for quarter one 2022) are the following:

- Inform trial participants about the solutions developed in FEVER and put it into the bigger context of the changing energy system and environmental goals.
- Interactive introduction to the p2p trading tool with members of energy community.
- Questions & answers regarding all discussed topics and discussion of planned feedback timeline.

After this workshop, the trial site participants will be given time to test the tool. Since feedback from pilot users of new applications and tools is essential for further development steps, their feedback will be gathered in a subsequent workshop.

The main objectives of the second workshop (planned for quarter two 2022) are the following:

- Gather feedback on the p2p flexibility trading solution.
- Joint development of ideas for further improvement of solutions in a co-creation process using Design Thinking methods.

The workshop and its results will foster an even more user-oriented design of the developed solution done by the partners especially from WP5 to potentially enable the upscaling of it to introduce it to more (future) energy communities.

3 Activities at Spanish pilot

The Spanish pilot site is located in the northern region of Catalonia. The aim of the Spanish pilot is to demonstrate how activating aggregated local flexibility provided by industrial customers can be used in ancillary services to the DSOs. The responsible project partners are the local DSO Estabanell Pahisa and its affiliate company, the energy retailer Estabanell Mercator.

The purpose of the innovation event was to get to know and incorporate the needs and worries of the industrial clients in the progress of the trial site on the one hand, and possibly win new participants for it on the other hand. Since it was not a given that all clients would speak English fluently enough to participate in an interactive session, the workshop was entirely organized in Spanish with the invitation by Estabanell being in Catalan. The title of the workshop translated to *Virtual session: Catalonia in transition towards a renewable energy supply* with the claim being "Your company has a lot to say in the energy transition process. We invite you to a virtual session focused on your doubts and needs. To promote a 100% renewable future."

Figure 2 – Registration page for the workshop with Estabanell

To get a first impression of the needs and worries of the industrial clients, a survey with the following questions was sent out before the workshop took place:

What aspects do you consider most important for your company in terms of supply? [multiple possible answers]

- *That energy is renewable*
- *Keep the cost of energy as low as possible*
- *That the energy is local*

- *That the signal quality is always high*

How much importance is given in your company to renewable energy?

- *Much importance*
- *Medium importance*
- *Little importance*
- *No importance*

How important is the energy expenditure compared to the other expenses of your company?

- *Very important*
- *Important*
- *Less important*
- *Not important*

What worries you most about how the world of energy supply is changing?

[free text]

Figure 3 – Survey on FEVER website

The workshop took place on 6 July 2021. It was moderated by Joana Alsina from Estabanell and Anna Maass from B.A.U.M. Consult.

In the beginning, Joana Alsina presented the general challenges of an increasing decentralised and renewable energy production and the different existing solutions (extension of the grid, storage, dispatchable RES and flexibilization of the grid) and their advantages and disadvantages.

The main part of the session was moderated by Anna Maass and consisted in discussing in an interactive way the needs and worries of the industrial consumers regarding a transition towards a renewable energy supply. A series of interesting insights were gained:

- All participants confirmed the importance of a renewable energy supply for their companies. Several of them are in the process of installing PV cells on their roof surface or even a micro-park with solar cells. The produced energy is foreseen to be used for self-consumption in order to reduce cost, there were no plans to connect the installations to the local grid. As the main reason, participants indicated the high administrative burden it would bring along. Even installing PV cells for self-consumption implies a lot of paperwork.
- In this context, the participating industrial consumers also mentioned that their main worry regarding the energy transition was the unpredictable legislation in Spain. Energy prices in Spain are among the most expensive ones in Europe and legislation has changed a lot in a very short timeframe.
- It was also emphasized that having a local provider was important for a more personal treatment and a quicker reaction when it comes to problems. The quality of the energy supply was stressed to be crucial for some of the industrial clients, even micro-outages of merely seconds mean that they have to throw away what was in production at that time. This implies a loss of money and operational time.
- Expectations towards their DSO comprised a renewable energy supply as well as help with the bureaucratic part of the installation of solar cells (information about legislation and paperwork to do).

In the last part of the session, Joana Alsina presented the FEVER project, how the industrial consumers could participate and the advantages they would have. The insights gained during the session will be used to further improve the collaboration with the industrial customers within the Spanish trial site and to gain new participants. Two of the participants of the session already expressed interest to join the project and will be contacted by Estabanell.

4 Activities at Cyprian pilot

The Cyprian pilot implements the FEVER solutions at the lower end of the energy value chain highlighting the importance of the aggregator role and the potential flexibility provision coming from the active prosumers serving the overall concept of the project and supporting the operators. As such, the active engagement of the consumers that are willing to embrace the FEVER solutions and contribute to the local energy ecosystem are of primary importance for the project's objectives.

Under this view, a workshop shall be organized in Cyprus within the first semester of the year 2022 having as a main objective the following:

- Inform and interact with consumers so that they embrace energy related technology innovation within their daily lives.
- Have FEVER solutions as the centre piece of the workshop but it will reach out to the general need for social acceptance of the emerging technologies and the innovative solutions serving the integrated grid of 2030+ capable of achieving the targeted energy transition.
- In this direction, 2 or 3 stories will be developed in the form of use cases that are real life needs through which emerging solutions and technologies will become more real as to how they will transform daily practices of citizens in directions that can substantially contribute to carbon neutrality. These use cases will have the flavour of FEVER to the highest degree possible, building on the already available solutions in the smart building of the municipality.

The workshop will be supported by the municipality of Aglantzia where the University of Cyprus and the FEVER Cypriot pilot belongs to, having as main target audience all the citizens of the municipality. For this purpose, a new smart building of the municipality will be employed as the venue of the event. This building is equipped with a smart energy management system, optimally managing PVs, heat pumps and other flexible assets that collectively achieve notable energy savings and have the potential of offering flexibility options to the local operator.

The workshop will use state-of-the art sound and vision means for interaction with the audience and where possible, hands-on experience that shall allow the optimal outcome for the FEVER project.

The main tangible benefit for the Cypriot demo is managing to get insightful feedback from the local community through the targeted social acceptance that can potentially lead to scaling up the FEVER solutions to include more end-users.

5 Conclusion

To support the development of the FEVER solutions and their implementation in the three European pilots in Germany, Spain and Cyprus as well as the use of flexibility provision in the integration of local renewable energy sources, innovation workshops are being organised and carried out by B.A.U.M. Consult and the respective trial site partners to get feedback from the relevant stakeholders. The target groups for the events are consumers, prosumers, local utilities, DSOs, energy communities and municipalities.

The original planning had to be abandoned due to the COVID-19 pandemic on the one hand and some delays in the involvement of prosumers in the pilots on the other. Two innovation workshops have been conducted at the FEVER trial sites so far, one at the German and one at the Spanish pilot, both of them virtually.

For the German trial site, a workshop with energy experts from the project partners SWW and SWH took place in November 2020 discussing the future role of municipal utilities and DSOs in the energy system with a special focus on their roles in relation to energy communities.

Several main insights were drawn from the discussion:

- The local DSO should be involved in the process of forming an energy community given their knowledge about the grid and its management.
- The local utility can provide different services to energy communities and vice versa.
- The degree of effort for private consumers to participate in an energy community should be kept at a minimum while giving more interested persons the possibility to get more involved.
- Regulatory changes are crucial for the success of peer-to-peer trading.
- Several FEVER services are relevant for DSOs to support the digitalisation of the electricity grid and its management.

For the Spanish trial site, a workshop was organised with local DSO and energy retailer Estabanell in July 2021. It focussed on industrial clients and getting their feedback in order to know how to better involve them in the future.

The following insights were gained:

- A renewable energy supply is important for the companies. Several have plans to install PV cells to produce energy for self-consumption, but none of them had the intention to connect the installations to the local grid due to high administrative burdens.
- The unpredictable and rapidly changing legislation was the main concern expressed with regard to the energy transition and an area they would like their DSO to help them with.
- The quality of the energy supply is crucial for some of the industrial clients due to the loss of money and operational time even micro-outages are causing by wrecking parts of the produced goods.

These insights will be used to further improve the collaboration with the industrial customers within the Spanish trial site and to gain new participants. Two of the participants of the session already expressed interest to join the project.

For the first two quarters of 2022, innovation workshops are planned for the German and the Cyprian pilots. At present, these events are foreseen to be conducted as on-site, face-to-face events.

In Wunsiedel, the prototype of the peer-to-peer tool that is currently developed to facilitate the trading of flexibilities within Local Energy Communities will be presented and discussed with the members of the LEC in a first workshop in quarter one. In a second step, their feedback will be gathered and ideas for further improvement of the solution will be developed in a co-creation process using Design Thinking methods.

In Cyprus, an interactive workshop with citizens is planned in a municipality building. The goal is to engage consumers and increase their acceptance for energy related technology innovation within their daily lives.

6 List of figures