



# Renewable Energy Regions

3<sup>rd</sup> Newsletter



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4<sup>th</sup> RegEnergy Project Meeting

## Matching Demand and Supply The Potential of Microgrids & Energy Communities

From 28 – 30 April over 40 RegEnergy partners and interested parties met online to discuss the management of microgrids, the role of local energy communities as well as the RED II and many more.

Planair's study on the role of (mobile) storage in integrating high PV shares in a microgrid to balance supply and demand was a key focus of the three-day conference. It has shown, amongst other things that even the highest possible PV potential on an industrial zone does not represent a problem to the grid of Y-PARC, and the introduction of mobile or stationary batteries reduces the risk even more.



The different aspects of the planned microgrid were then examined in more detail. A software tool, which manages the energy provided, needed and used in real-time was presented and a presentation about the role of electrical vehicles in microgrid architectures illustrated that fast charging is difficult to implement during power changes, while slow charging offers more flexibility for the grid.

Self-consumption was also discussed intensively. The possibility to facilitate it with the prediction and optimization of systems was presented as well as how to make this a central pillar of local energy communities. The session was supplemented by insights into the Swiss model of self-consumption consortiums (SCC). SCCs allow connecting several separate customers (often tenants) under one or more power plants of RE production. These have been introduced as there is almost no ground for PV in Switzerland and their potential is mainly situated on roofs of apartment blocks.

An open session about RED II and energy communities rounded up the meeting. Leen Peters from Think-E, a Belgian SME operating



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on a European scale, explained intriguingly what can be done to integrate as many actors as possible in an energy system and how to strengthen the place of the consumer. In addition to insights into the two directives for Citizen Energy Communities (CEC) and Renewable Energy Communities (REC), Leen Peters discussed important success factors to set-up a Local Energy Community, like to consider the value of CEC and REC to the community, support the set-up of CEC or REC and put in place participation mechanisms for energy poor and vulnerable households.

Web meeting

## Microgrids | The role of storage with high shares of renewable electricity

During the web meeting Laure Deschaintre from Planair presented the results of their study on the role of storage in a microgrid with high shares of renewable energy (RE). The subject of the study is the Y-PARC, located in Yverdon-les-Bains (Switzerland).



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**Y-PARC: 170 companies with 1.500 employees on 70.000 m<sup>2</sup> of office space are currently established at this industrial park. Until 2025, it is planned to increase the office space to 125.000 m<sup>2</sup> and the number of employees will grow to 3.000.**

### Mobile or stationary storage

Planair applied the following procedure to decide about mobile or stationary storage to support the RE integration:

1. Evaluation of the **electric consumption of the industrial park.**
2. Calculation of the **PV potential in the area**, differentiating



between existing PV plants, current roof and parking lot potential and future roof potential.

**3.** Evaluation of **technical potential**: simulation of different solar scenarios (0%, 100%, 200%) with different storage possibilities (battery, mobility, battery and mobility) including the grid impact (amount and strength of peaks).

**4.** Evaluation of the **economic potential** of each storage possibility. Therefore possibilities to save / make money with batteries were identified:

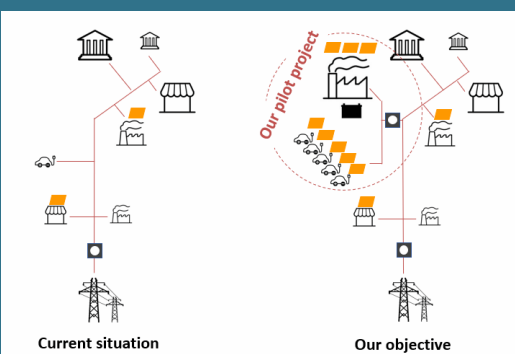
- Increasing self-consumption
- Peak shaving
- Offering ancillary services
- Increasing grid security

**5.** Analysis of the **economic value of storage and e-mobility** based on four different cases (unique vehicle, self-consumption group, Y-Parc 100% solar and Y-Parc 200% solar) both with and without V2G: Buying energy from a car battery instead of the grid is only interesting if two conditions are fulfilled:

- ⇒ It must be a self-produced solar kWh
- ⇒ The microgrid operator must be able to return the kWh back to the grid at a later time and not to have to replace the kWh by buying from the grid.

Would you like to learn more about mobile storage?

Laure Deschaintre  
**Planair**  
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All calculations are heavily influenced by two variables. First, if the price of selling electricity back to the grid drops, the value of storage is increasing. Second, as soon as a self-consumption group reaches a certain size and is eligible to buy electricity at a reduced rate, the value of storage is reduced.

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With the study, Planair demonstrated, that

- even the highest possible PV potential on an industrial zone still does not represent a problem to the grid of Y-PARC, and the introduction of mobile or stationary batteries reduces the risk even more.
- mobility increases the consumption, but without power peaks.
- the combination of solar energy and storage increases self-consumption and represents savings of 145.000CHF per year at the Y-PARC scale.
- V2G allows to reduce peaks and to participate in ancillary services.



As battery storage forms an integral part of smart grids, helping to balance the supply and demand profiles the Waterford Institute of Technology from Ireland developed the following selection criteria:

- **Location, Environment, Size and Safety**  
For implementation in an office environment, safety is a key issue. Potential hazards from spillage, fire, etc. have to be minimal. Also, size is a factor as space is at a premium whether it's located within the office walls or in plant rooms.
- **Tech Type, Capacity, Response, Control and Cycle**  
The system needs to meet capacity requirements, charge/discharge cycles, ability to communicate with control system, adequate life cycles, etc.
- **CSR and Carbon Reduction**  
Corporate and Social Responsibility (CSR) is now a key metric and sustainability is a key factor for global business as well as small companies. Stakeholders are obliged to ensure their operations are as carbon neutral as possible.

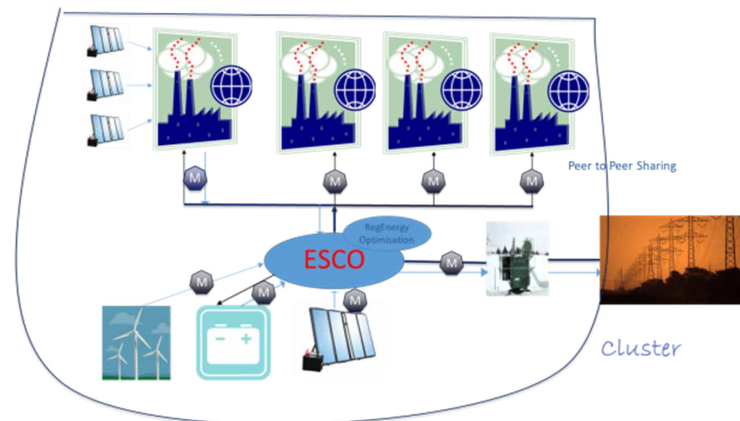


Web meeting

## Self-consumption in energy clusters

Sean Lyons from the Waterford Institute of Technology (WIT) presented how prediction and optimisation in systems facilitate self-consumption of renewable energy (RE) and how this can be a central pillar of local energy communities. By predicting the load, optimisation can be achieved by ramping up and down of the flexible load to best suit the tariff and the available RE.

WIT studied the regulatory frameworks (RED II, EMD II) with view to energy clusters and how these could influence Renewable Energy Communities (REC) and Citizen Energy Communities (CEC). In addition, they investigated about trading mechanisms (e.g. P2P energy trading, net metering, etc.) and identified stakeholder interaction as a significant factor of self-consumption clusters.



Companies can for example lower the temperature of a cold storage when prices are cheap and maintain or reduce energy usage for cooling when prices are higher. Savings of up to 18 – 20% can be achieved.



Would you like to learn more about energy clusters?

Sean Lyons  
Waterford Institute of Technology  
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In the current regulatory landscape, surplus RE can be spilled into the grid, however, the monetary compensation for this remains very low. This is where WIT's optimisation platform comes into play. Flexible loads are to be achieved by analysing the data, predicting the load and building models. This allows companies to capitalise them by managing their systems according to energy prices.

What is more, in an energy cluster with a certain number of members, a member with RE can share surplus energy to other members of the cluster (P2P sharing mechanism) instead of spilling it to the grid for little or no money. And diverse RE can be added to suit the demand of the cluster and to render it almost self-sufficient.





## Events

Online | 18 June 2020

### RegEnergy Talks

In our webinar Anne-Marie Cabon from Brest métropole and Frederik Loeckx from Flux50 shared interesting findings from their daily business routine. They provided insights into the challenges and opportunities of local energy communities and presented institutional partnerships with backcountry communities and the cooperational work within these regions.

#### **Frederik Loeckx** | Flux50

Challenges and opportunities of local energy communities with special focus on regional storage mechanisms coping with intermittent renewable energy supply

#### **Anne-Marie Cabon** | Brest métropole

Renewable energies development: towards a close cooperation between urban and rural territories  
(Focus on Brest and Centre Ouest Bretagne innovative actions)

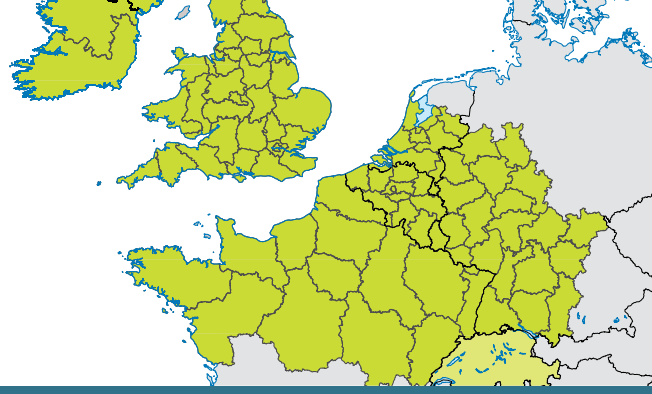
Would you like to know when the next RegEnergy Talk takes place?

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# Facts & Figures

## The Partnership

- Climate Alliance (Lead Partner, DE)
- Brest metropole (FR)
- Flux 50 (BE)
- Plymouth City Council (UK)
- Waterstromen (NL)
- 3 Counties Energy Agency (IE)
- Planair (CH)
- Waterford Institute of Technology (IE)
- Ormonde Upgrading Limited (IE)

## Upcoming Events

### 5<sup>TH</sup> WORKING GROUP MEETING

15 – 17 September 2020  
Plymouth City Council  
Plymouth, United Kingdom

### MIDTERM CONFERENCE

Spring 2021  
Brest métropole  
Brest, France

## Project Facts

Duration:  
October 2018 – September 2022

Funding:  
€11.08 million total project funding  
€6.1 million funded via ERDF

## Contact

### Climate Alliance

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