



R2EC

Regional Renewable Energy Cells

“Renewable energies can be expanded significantly at the local & regional level through the interaction of generation, storage and consumption. Especially the optimized coordination of energy cells with one another, together with the active involvement of users, can provide a sustainable contribution to the overall system optimization.

The project R2EC aims at developing a scalable system for decentralized, interacting energy cells with a high concentration of local renewable energy generation such as from photovoltaic (PV) systems, storage element as well as high electric use like e-heating and e-vehicles. This system aims at maximizing the use of renewable generated energy at the local and regional level through intelligent interaction of generation, storage and consumption. Also, the system will optimize the interaction on the local level with other energy cells, and thus improve the local energy use.

Investigations are also to be made concerning the overall system optimization and resilience, as well as the market participation through aggregation and blockchain use. The main objectives of R2EC are (1) the creation of a simulation model / extensive implementation concept, (2) further development of hardware and software needed for the system and the (3) prototypical application of system components in laboratory environment and the observed test beds.

ERA-Net Smart Energy Systems



This project has received funding in the framework of the joint programming initiative ERA-Net Smart Energy Systems. The initiative has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements no. 646039 and no. 755970.

Project Duration

02.05.2019- 30.04.2022

Project Budget

Total Budget: € 1,483,795.-

Funding: € 1,047,048.-

Project Coordinator

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Project Partners

- KEM / WYNERGY e.U. (Austria)
- EffiCent GmbH (Austria)
- 4ward Energy Research GmbH (Austria)
- EVN AG (Austria)
- TPPV (Austria)
- NORCE (Norway)
- Z Energi AS (Norway)
- TRIPOD HOUSE AS (Norway)
- Becquerel Institute (Belgium)
- GreenWatch S.A. (Belgium)

Project Website

www.r2ec.eu

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ERA-Net Smart Energy Systems Joint Call 2018

This project has been awarded funding within the ERA-Net SES Joint Call 2018 for transnational research, development and demonstration projects. EUR 33.4 Mio of funding have been granted to 23 projects from 16 regions and countries.



Joint Programming for Flourishing Innovation from Local and Regional Trials towards a Transnational Knowledge Community

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Main Objectives

- Survey of the framework conditions for the observed energy cells and identification of additional energy cells.
- Evaluation of possible interaction with other potential businesses and sectors for improved business cases and utilization of otherwise unused by-products.
- Creation of a simulation model (optimization of the energy use, interaction of energy cells and evaluation of superordinate contribution), also aiding an economic analysis.
- Identification and/or (further) development of hardware and software needed for the system.
- Testing and implementation of the overall system in laboratory environment and testbeds
- Testing of a local energy market to ensure local optimization considering transregional, overall situation
- Integration of stakeholders and end users in the development process (co-creation)



Expected Main Results

The project aims to develop a system of decentralized energy cells with various renewable energy sources, storage and transport integration. This system maximizes the use of generated energy at the local and regional level through cross-generational and cross-sectoral, intelligent interaction of generation, storages and consumption (own energy consumption and cross-building supply of several local users). At the local level these cells interact with other energy cells, built up according to the same principles, and thus optimize the local energy fluxes on an interregional level, also aiding the system resilience and security. Expected main results are:

- Simulation and optimization model for regional renewable energy cells
- User / stakeholder integration process for regional renewable energy cells.
- Business models for regional renewable energy cells.
- Extensive implementation concept for regional renewable energy cells.

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