

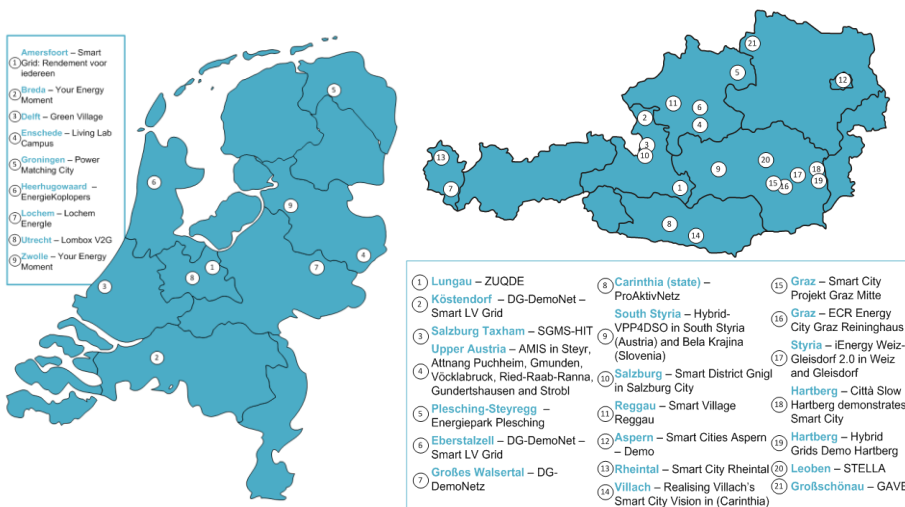
# CESEPS

## Co-Evolution of Smart Energy Products and Services

“ Our research is about how end users experience the design of energy systems and products in the real world. It turns out that a lot of energy research projects are limited by a technical scope. In the CESEPS project we take a look at user experiences, energy measurements, and new energy product and services. In the end we want to develop a framework for smart grids that better matches with human behaviour. ”

To develop a viable market for residential smart energy systems, the (re)design of innovative product-service combinations in smart grids must be more responsive to the demands of various stakeholders in terms of performance, costs, reliability, durability and comfort.

Therefore, our project focuses on interdisciplinary research on stakeholders practices, users energy behaviour, local trading of energy, customer driven products, demand side management, local production of sustainable electricity, e-mobility and forecasting techniques in the Netherlands and Austria. We will look into existing and new smart grid pilots in these two countries. The existing pilots, more than ten, are typically residential smart grid pilots with novel electricity systems. These demonstration projects happen to be in the field of e-vehicles and their charging by solar power, fuel cells, and existing means from the grid. The findings from the evaluations of the smart grid pilots will be compared at a transnational level to boost the innovation process across national boundaries.



Smart grid pilot locations in The Netherlands (left) and Austria (right) to be evaluated in the framework of CESEPS.

ERA-Net Smart Grids Plus | From local trials towards a European Knowledge Community



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### Project Duration

01.02.2016 - 31.03.2019

### Project Budget

Total Budget: € 1,963,305

Funding: € 1,737,558

### Project Coordinator

University of Twente (NL)

### Project Partners

- Delft University of Technology (NL)
- Utrecht University (NL)
- Wageningen University (NL)
- DNV GL (NL)
- Graz University of Technology (AT)
- eseia (AT)
- Austrian Institute of Technology (AT)

### Project Website

[www.ceseps.eu](http://www.ceseps.eu)

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## Main Objectives

- Development of knowledge about the role of stakeholders and end users in residential smart grid development and its contribution to the transition to more sustainable energy systems. Gaining insights in end users' needs and wishes for smart energy products and services, and their experiences with these products in pilot projects. Insights in required changes in energy practices and the contextual barriers encountered therein.
- Quantifying the actual energy performance of residential smart grid pilots given the smart energy products and services applied in these pilots, with a focus on sustainability and energy-efficiency.
- On the basis of these insights a set of specifications, designs, and implementation guidelines for the development of smart energy products and services for residential smart grids will be constructed that will enable the establishment of fully functional solutions allowing large-scale transnational deployment of more sustainable energy systems.
- Insights will be fed back to the stakeholders at intermediate points through the project to enhance, inform, and accelerate the innovation process.
- Validation and scaling of smart energy products under various conditions using a co-simulation framework which combines real and simulated components for replication.

## Main Results

We are expecting to achieve the following results:

- Information about the actual performance of various smart grid pilots in the Netherlands and Austria that will give insight in their relative energy-efficiency and sustainability given the energy products applied.
- Flexible design guidelines for smart energy products and services that can be customized for individual households as well as communities, which integrate the knowledge, organizational preferences and energy needs of end users and communities.
- Novel local network modelling for both AC and DC with and without storage with a focus on e-vehicles, demand side management, increased hosting capacity, and customer safety.
- Scenarios for medium and long term future visions of local smart grids in the Netherlands, Austria, and Europe on the basis of the theoretical framework for co-evolution of smart energy products and services.

From Local Trials towards a  
European Knowledge Community

<http://www.eranet-smartgridsplus.eu>

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This project is part of the 1st Joint Call for transnational RDD projects of the ERA-Net Smart Grids Plus initiative. More than EUR 31 million of funding have been made available to 21 projects from 19 regions/countries.

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