

OWGRE

Optimized weather-related green energy production and consumption

> *We will empower companies from any part of the energy value chain that rely on weather information and aim to integrate renewables in their respective business*

As the energy system is becoming more complex and weather dependent, weather forecasts are of essential importance for transforming the energy landscape towards decarbonization. In this project, we combine probabilistic numerical weather prediction with machine learning algorithms in order to provide optimized decision support for green energy production and consumption.

Probabilistic forecasts have been underused in this context due to complexity related to their interpretation and data volume. To solve this we will create a machine-readable data portal coupled to machine learning algorithms. We will tailor improved weather forecasts to better support the needs of green energy applications. Our smart solutions optimize specific energy systems based on the latest weather forecast, local observations, and real-time production data from renewable energy. Targeted applications are heating, ventilation and air-conditioning in buildings, battery charging, and solar and wind power applications.

Project Duration

01.12.2022- 15.06.2025

Project Budget

Total Budget: € 2,668,623.-

Funding: € 1,973,687.-

Project Coordinator

Swedish Meteorological and Hydrological Institute (Sweden)

Project Partners

- Algorithm Energy AB (Sweden)
- Rebasian Technologies AB (Sweden)
- Finnish Meteorological Institute (Finland)
- Nuuka Solutions Oy (Finland)
- Estonian Environmental Agency (Estonia)

Project Website

www.owgre.eu

ERA-Net Smart Energy Systems Joint Call 2020 (MICall20)

This project has been awarded funding within the ERA-Net SES Joint Call 2020 for transnational research, development and demonstration projects. 22 Mio EUR of funding have been granted to 21 projects active in 17 regions and countries.

ERA-Net Smart Energy Systems

This project has been funded by partners of the ERA-Net Smart Energy Systems (www.eranet-smartenergysystems.eu) and Mission Innovation (mission-innovation.net) through the Joint Call 2020. As such, this project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 883973.



Main Objectives

We utilize current knowledge in numerical modelling, data analysis and digitalization to provide optimized decision support for green energy production and consumption by:

- Improving probabilistic short-range weather forecasts.
- Increase energy efficiency with data-driven machine-learning.
- Creating standardized data format and tools for data exchange.
- Exploiting the energy value chain in a transnational market.

Main Results

- First machine-learning limited-area weather prediction model developed, now the basis for work on probabilistic machine-learning weather prediction.
- Global machine-learning numerical weather prediction system implemented in operations at a small and medium-sized enterprise partner.
- Machine-learning algorithms released for downscaling numerical weather prediction data and forecasting solar and wind power.
- Open, machine-learning-ready datasets and tools published (zarr format), aligned with the European Centre for Medium-Range Weather Forecasts' Anemoi effort.

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