



For a Greener Future: WeForming unleashes the potential of buildings as strategic players in the energy revolution

December 2023 - Buildings account for 40% of energy consumption and 36% of greenhouse gas emissions in Europe. Recognizing their critical role in achieving the EU's ambitious environmental and energy efficiency targets, WeForming, a new EU-funded project, aims to pave the way for buildings as dynamic energy contributors, putting them at the forefront of Europe's decarbonization journey.

Although the share of renewable energy sources (RES) in the EU doubled between 2005 and 2021, it only made up for 22% of the total energy consumption in 2021, according to the European Environment Agency. Given the Green Deal's commitment to a climate neutral Europe by 2050, it is imperative to take action now and accelerate the energy transition, with buildings as a primary focus.

Transforming energy management in buildings

WeForming, an acronym for Buildings as Efficient Interoperable Formers of Clean Energy Ecosystems, envisions a revolutionary approach to managing energy, one in which buildings are strategic players in supporting and forming the energy networks of the future. At the heart of WeForming's value proposition are Intelligent Grid-Forming Buildings (iGFBs), actively participating in an interoperable energy ecosystem, including both energy networks and markets. These innovative buildings are designed to seamlessly integrate various energy sources, such as electrical, thermal, mechanical, and chemical energy. Their main goal is to optimize efficiency and self-sufficiency while prioritizing occupants' well-being, enhancing comfort, convenience and safety.

The ultimate mission of WeForming is to establish iGFBs as integral elements in shaping a secure, resilient, and carbon-free energy ecosystem. Over the next three years, the EU-funded project will develop and demonstrate a new generation of iGFBs that leverage advanced technologies and smart energy processing to innovate building energy operations, involving all the participants and stakeholders in the energy-building value chain through co-creation activities (consumers, aggregators, grid operators, etc.) in a common digital space. This approach will lead to increased multidirectional data flows, with the creation of new digital platforms and operational strategies. Artificial intelligence and machine learning will be key to WeForming's framework, ensuring automation and interactivity.

"We believe that, in the future, energy grids will be 3D-grids – digitized, decarbonised, and distributed grids. WeForming represents a monumental step towards a more sustainable and intelligent energy management paradigm, placing buildings at its epicenter", states

Konstantinos Kotsalos, WeForming's project coordinator. *"Our pioneering approach will empower iGFBs to operate efficiently and interactively across multiple dimensions (multi-energy, multi-user, multi-sector, multi-market, and multi-objective), transforming them into active formers of a greener energy ecosystem."*

A multidisciplinary approach

WeForming's methodology and digital solutions will be implemented and validated in six real-life demos across six countries. These use cases will target different systems, building types, consumer needs, economic conditions and climates, providing a comprehensive assessment and adaptability across different scenarios:

- Luxembourg - Demo 1: A Multi-energy Grid-Interactive District with a Large Fleet of Electric Vehicles.
- Portugal - Demo 2: A Large Commercial Shopping Mall with Internal Power Generation, and Energy Storage Systems.
- Croatia - Demo 3: Grid-Supporting Renewable Districts on a Holiday Island with Large Seasonal Demand Variation.
- Belgium - Demo 4: An Interactive Residential District with Bidirectional Power-to-Heat and Thermal Storage Capabilities.
- Spain - Demo 5: Grid Supporting Rural Renewable Energy Community.
- Germany - Demo 6: Energy Market-Driven Multi-Sector Smart District.

Comprising 30 partner entities from 10 countries, the WeForming consortium gathered last October in Athens for the project's kick-off meeting. The inaugural session was centered on discussing challenges that must be addressed throughout the project's lifespan, namely improving the interoperability between energy carriers, creating new roles and business models for buildings in energy markets, boosting buildings' physical interaction with energy networks, and fostering awareness and acceptance of iGFBs.



About WeForming

WeForming is at the forefront of transforming energy management in buildings, focusing on seamless integration with the energy ecosystem. Through groundbreaking solutions, this EU project addresses digital operation, management, and maintenance, along with efficient and interactive energy processing for Intelligent Grid-Forming Buildings (iGFBs). The WeForming project (full name: Buildings as Efficient Interoperable Formers of Clean Energy Ecosystems) is an innovation action funded by the European Union through the Horizon Europe Programme under the Grant Agreement No. 101123556 that started in October 2023 and will last for 36 months.

Partners who will participate and are in charge of the successful implementation of WeForming: [European Dynamics](#), [Luxembourg Institute of Science and Technology](#), [Regulatory Assistance Project](#), [F6S Innovation, Hardware and Software Engineering](#), [Holistic](#), [Iko Real Estate](#), [Sudstrom](#), [Circu Li-ion](#), [GenCell](#), [Builtrix](#), [MOVIDA](#), [R&D Nester](#), [Grid One](#), [Smart Island Krk](#), [University Of Zagreb - Faculty of Electrical Engineering and Computing](#), [Wingest](#), [Flexide Energy](#), [University of Liège](#), [Cuerva](#), [Schneider Electric España](#), [Aggregering](#), [Vergy Community](#), [AIR Institute](#), [University of Málaga](#), [Karlsruhe Institute of Technology \(KIT\)](#), [FZI Research Center for Information Technology](#), [Stadtwerke Karlsruhe](#), [BES - Badische Energie-Servicegesellschaft](#), [Obots Energy](#)

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