Fossil-free energy district

GOTHENBURG, SWEDEN

KEYWORDS: DIGITAL MARKETPLACE; ENERGY TRADING

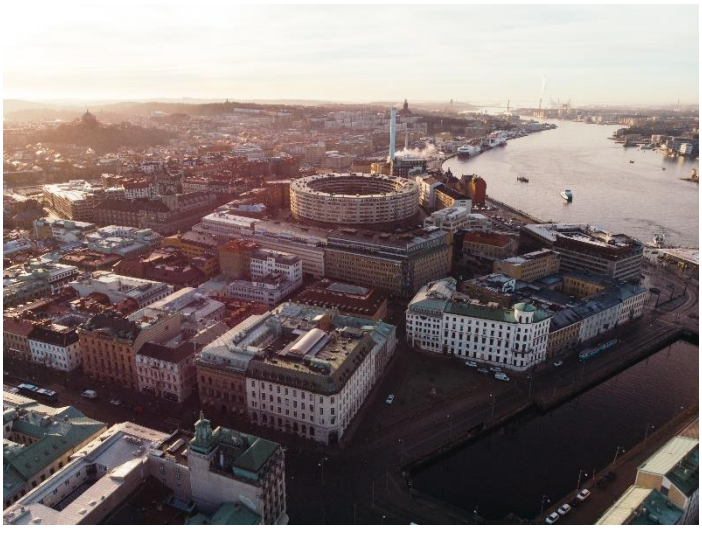
DURATION: From 2017 to October 2019
WHO: Municipality, energy companies, universities and research centres.
BUDGET: 5.8 million Euro (co-financed by the European Regional and Development Fund - Urban Innovative Actions Initiative)

SUMMARY

The Fossil-free Energy District (FED) project has been developed between 2017 and 2019 by nine local partners in Gothenburg representing academia, industry and municipality (e.g. property owners, global ICT provider Ericsson and Gothenburg's municipal energy company, Göteborg Energi). The FED project has tested a local digital marketplace at Johanneberg Science Park as part of Chalmers University of Technology that integrates district cooling, district heating and electricity into a single system.

GOALS

- Reduce the use of energy and the dependence on fossil fuel in the built environment;
- Support the energy transition in urban areas by developing, demonstrating and replicating a novel district level energy system, integrating electric power, heating and cooling;



Funded by the H2020 programme of the European Union

TOMORROW

- Establish a digital marketplace that allows buildings to automatically trade energy among themselves;

- Foster the energy transition in other areas by serving as an example for other cities.

HOW IT WORKS

- Setting up the FED demonstrator area was the first step. It provided the opportunity to test and validate a local energy market. The area is located at a campus (Johanneberg Science Park as part of Chalmers University of Technology) with around 15000 end-users including energy infrastructure, property owners and users, prosumers, and buildings with different needs and usage profiles. The existing energy system in the campus was equipped with heat pumps, additional solar PVs and energy storages.

> *"The FED project confirms Gothenburg as a frontrunner in developing the energy solutions of a fossil-free society (...) Hopefully, this model will prove capable of speeding up the energy transition across Europe"*
>
> → Ann-Sofie Hermansson, Mayor of Gothenburg

- The second phase consisted in the development of the FED System solution, providing a connection between the energy system and the local energy market: it consisted in an automated ICT solution developed by Ericsson company where AI-agents trade energy on behalf of the different market actors, like buildings consuming and/or generating energy.

- In parallel, the project set up a FED Business solution to create new sustainable markets by involving local stakeholders to use FED as a testbed. Five companies have already tested their products in the FED-system.

The project has developed a replication strategy offering insights on drivers, barriers and policy recommendations for the local, national and EU levels. The feasibility of scaling the FED solution in other contexts depends on the presence of existing energy infrastructures and on political, regulatory and societal aspects. Twelve new projects based on the FED-testbed have started. Six of these projects are EU-funded projects that will use the FED outcomes in different ways. Another plan for the future consists in making the campus of Johanneberg together with nearby buildings to become a testbed for local sustainable energy systems.

TRANSFORMATIVE POTENTIAL

The FED project represents an innovation fostering urban energy transitions by piloting a scalable and replicable solution for energy efficiency and smart energy management in the housing sector and in public infrastructures. Its transformative potential is demonstrated by the replication activities that have been already carried out by other projects. FED provided insightful recommendations on how to facilitate its replication in other cities such as on how to engage the different local stakeholders or on how to increase the flexibility of local energy systems for providing the conditions for new business models.

MORE INFORMATION

Project's website

Urban Innovative Actions

FED book

FED Policy Recommendations