

Local Inclusive Future Energy (LIFE) City Platform

Publieke samenvatting / Public summary

Aanleiding

The Dutch transition towards carbon-neutral cities is in full swing and the share of local solar and wind energy is growing rapidly. Volatile renewable energy supply, higher peaks in demand, and the dynamic interactions between increasingly interconnected electricity, heat, and transport networks introduce significant complexity for future grid planning - particularly in the built environment. This challenge is further compounded by the emergence of new technologies, market mechanisms, and distributed flexibility services, which make it even more difficult to grasp the impacts of future energy scenarios. DSO Liander has forecasted that 17 out of 25 substations in Amsterdam will reach peak overloads by 2030 - hence the urgency to find alternatives to infrastructure upgrades. In other areas, limited grid capacity has put a halt to new solar/wind projects, demanding solutions for better integration of renewables into the built environment. Therefore, smart energy solutions which unlock the full potential of flexibility from buildings and assets such as batteries, EVchargers, and heat pumps, or multiple stakeholders, are essential for enabling the evolution of our energy system.

Doelstelling

The LIFE project aims to develop a district-scale energy management platform to resolve grid problems while integrating local stakeholder interests in its design and implementation. This innovation and experimentation will take place in an iconic area with existing grid issues (ArenApoort, including Venserpolder and the Urban Interactive District) as part of the wider sustainable urban

Projectinformatie / Project information

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MOOI32019

Subsidiebedrag / Grant amount

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Algemene informatie / General information

Penvoerder / Secretariat

Stadion Amsterdam N.V.

Publicaties en materialen / Publications and attachments

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Voortgangsrapportage 1

- 26.07.2023

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Voortgangsrapportage 2

- 21.05.2024

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Voortgangsrapportage 3

- 10.04.2026

Eindrapport MOOI32019

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development. The project will realise a replicable, innovative, integrated and future-proof energy system for similar mixed-use districts in The Netherlands and abroad. LIFE will accelerate the energy transition by: 1. simplifying the integration of different types of sustainable generation into local energy systems; 2. improving the business case of sustainable development by adding value to flexibility and system performance; 3. optimising (multi-)energy infrastructure, improving security of supply and avoiding grid reinforcement; 4. making better use of local sustainable energy (heat and electricity) via smart distribution to the surrounding neighbourhood, and 5. working on inclusiveness to enable all stakeholders access to the benefits.

Korte omschrijving

This project involves applied innovation that will achieve the results through: ? Development of the LIFE Platform with input from all partners and co-designing with stakeholders. ? A Digital Twin is utilised for energy-services design, enabling simulation and scenario analysis. An integrated data hub and inventory of the area's devices is set up. ? Sensors /data connections will be implemented for the various energy devices to collect real-time data and establish a control process within LIFE. ? A MultiMarketModel optimisation algorithm is developed to make decisions considering all the integrated assets, grid limits, markets and various objectives, and will decide on how best to utilise the flexibility within the system. ? Inclusive governance and organisation requires mapping of stakeholders with a focus on vulnerable consumers. Human-centered energy services are developed with community engagement designed with local socio-economic demographics in mind. The replicability of LIFE will be ensured through evaluation and assessment of the project and translating lessons learned into improving the LIFE platform and process as part of the urban energy transition toolkit.

Resultaat

The key result of this project is a district-scale ICT smart energy management platform (LIFE)

connected to a wide variety of energy devices/assets. This platform will strive for maximum societal acceptability by developing a technical and legal framework for local communities and stakeholders to access the benefits of flexibility. The platform will monitor and control multiple devices, simulate the effects of control measures using a Digital Twin and optimise flexibility with an intelligent algorithm while integrating with various energy markets. The platform will improve self-reliance on local clean energy, create financial value for flexibility and engage locals in the process. This will be adaptable to many districts where grid congestion occurs, areas with a significant amount of flexible power available that can be used to provide energy services at a local level, and/or areas with identified opportunities for the exchange of energy between local producers and users. This project will also identify the conditions that such an area must meet in order to unlock and deploy flexibility, and reach out to these areas and the wider public to foster replication and upscaling.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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