SPURUP

Sustainable Peri-Urban framework
for Climate Neutral development



LIVING LABS

Aalborg, Denmark

Industrial micro-grid for sustainable and climate-neutral energy community in peri-urban areas

Funded by the European Union

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General Information

LIVING LAB
Aalborg, Denmark

The Mission

The Municipality of Aalborg has a climate goal of a 70% GHG reduction in 2030, compared to 1990-level and a long-term goal of fossil free/zero-emission in 2050.

Target stakeholders

Stakeholder groups:

- Municipality
- Local companies
- NGOs
- Consultancy companies
- Technology providers
- Grid operators

Key Partners

Aalborg Kommune · Port of Aalborg · Port of Aalborg Logistics · ULTRAQUA UV Disinfection Systems · Aalborg University Denmark

Local challenge

Current Situation

Despite its economic growth, Aalborg faces many challenges including 1) Inefficiencies in energy use due to reliability on outdated energy technologies that contribute to high energy consumption and losses, 2) High carbon emissions due to industrial activities, specifically manufacturing, chemical production and metal processing.

Peri-Urban Context

Within SpurUP, the municipality has constructed a working definition of peri-urban areas, identifying the districts on the outskirts of the city centre where land use transitions from predominantly residential to a mix of fields, industry, energy production and other non-residential functions.

The Living Lab is located predominantly in an industrial area outside of the city, but within the peri-urban zone around Aalborg. There is little connection to recidential areas.

SpurUP Innovation applied

Technical Solutions

- Energy Community with a virtual microgrid.
- A Treatment Technology Train to Produce Ultrapure Water from Treated Municipal Wastewater for Power-to-X Application
- Optimized Treatment and Reuse of Membrane Reject Streams from Ultrapure Water Production System for Potential Use in Sustainable Crop Irrigation.

Local Green Deal (LGD)

Aalborg utilizes LGDs as an operational framework to translate the EU Green Deal into local action. This approach is rooted in the Aalborg Conditions (2024), ensuring political commitment to systemic green transition through multi-stakeholder partnerships.

KEY INITIATIVES

- Collaborative Model: Focus on "co-creation" between the municipality, SMEs, and knowledge institutions to develop circular business models.
- Climate Partnerships: Mobilizing the private sector through binding agreements on energy optimization and carbon reduction.
- Financial Facilitation: Utilizing the "Green Fund" (Grøn Pulje) - funded by renewable energy installations - to support local, community-driven sustainability projects.
- International Alignment: Developing governance tools through EU projects (e.g., CLIMAA) in close collaboration with peer cities like Amsterdam.



SpurUP Target Impacts (KPIs)

GHG TARGET

5%

Reduce industrial GHG emissions by at least 5%

ENERGY EFFICIENCY

25%

Reduction

COMMUNITY IMPACT

> 800

Number of stakeholders to be engaged

Policy Context

Policy and Regulatory documents

The regulatory framework for energy communities in Denmark is defined by two legislative instruments:

- Elforsyningsloven (Electricity Supply Act) (LBK nr 1248 af 24/10/2023 – link: **https://www.retsinformation.dk/eli/lta/2023/1248)**

- Bekendtgørelse om VE-fællesskaber og borgerenergifællesskaber og forholdet mellem VE-fællesskaber og elhandelsvirksomheder og kollektive elforsyningsvirksomheder (the Order on renewable energy communities and citizen energy communities, and the relationship between renewable energy communities and citizen energy communities on the one hand, and electricity trading companies and collective electricity supply companies on the other) (BEK nr 1069 af 30/05/2021 – Link: **https://www.retsinformation.dk/eli/lta/2021/1069**.

Municipal Plans:

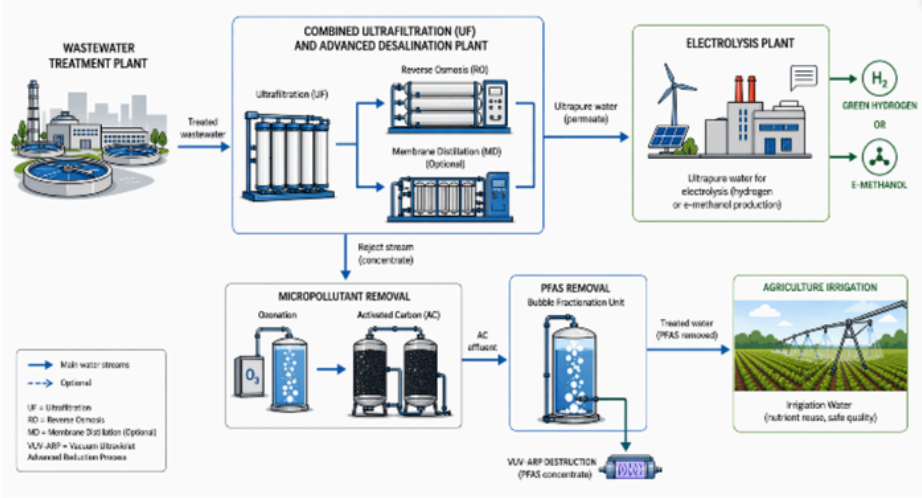
- Climate Plan for Aalborg Municipality (**https://www.aalborg.dk/om-kommunen/politikker-strategier-og-planer/introduktion-til-klimaplan/**)

Water solutions:

- **https://eur-lex.europa.eu/eli/reg/2020/741**
- **https://eur-lex.europa.eu/eli/dir/2024/3019/oj/eng**



WATER CASE





Overview of Port of Alborg – Living Lab site

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