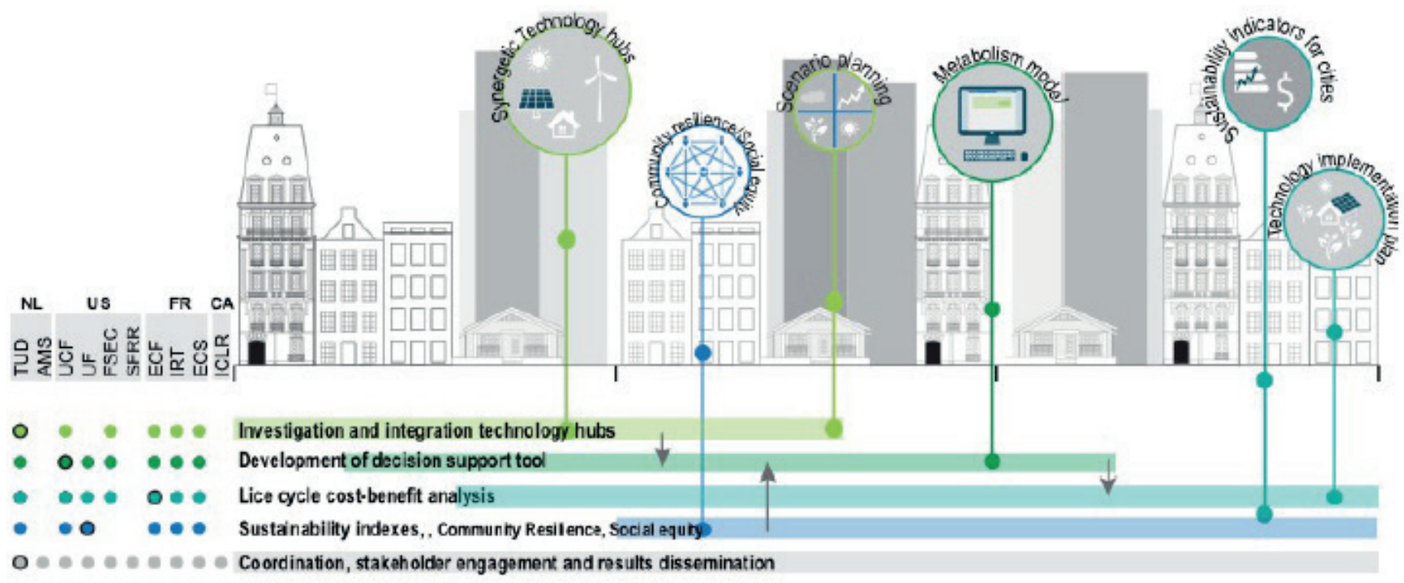
ENLARGE

Developing sustainable future cities depends on the opportunities to optimally integrate and mobilize food, water and energy (FWE) resources in a synergistic way to reduce water, carbon, and ecological footprints, and increase the community resilience against challenges exacerbated by climate change, population growth, and resources depletion. Through modelling of urban development scenarios and the use of decision support tools, we can better understand how community resilience in relation to natural and anthropogenic stresses can be strengthened by the optimal integration of FWE technology hubs at varying scales.



Aim/objective

This project aims to generate actionable information by analysing the distributed production and storage of materials and energy flows into, out of, and within a community/city given their consumption patterns and supply chains associated with various food-water-energy (FWE) nexuses.

Approaches/methods

- Build distributed decision support systems that can simulate and test various planning scenarios in the urban FWE nexus.
- Developing a multi-scale urban metabolism modelling frame work with multi-agent modelling tools for improved simulation and optimisation of various urban FWE nexuses, and selected FWE technologies in major planning scenarios with varying scales.
- Producing a suite of water, carbon and ecosystem services indicators relevant to different urbanisation contexts for environmentalsustainability assessment.

Expected results and impacts

- ENLARGE aims to produce sustainable action plans to minimize water, carbon and ecological footprints of communi ties/cities, seeking to increase community resilience and reduce operational risk under climate change impact.
- ENLARGE seeks for a holistic assessment of how different technologies can be synergistically integrated with respect to cost-benefit and social-equity factors.

ENLARGE – Enabling large-scale adaptive integration of technology hubs to enhance community resilience through decentralized urban FWE nexus decision support
Duration: 2018–2021
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Involved cities

- Amsterdam (The Netherlands)
- Miami (USA)
- Marseille (France)

Sustainable Urbanisation Global Initiative (SUGI)/Food-Water-Energy Nexus

The Sustainable Urbanisation Global Initiative (SUGI)/Food-Water-Energy Nexus is a call jointly established by the Belmont Forum and the Joint Programming Initiative Urban Europe.
The cooperation was established in order to bring together research and expertise across the globe to find innovative new solutions to the Food-Water-Energy Nexus challenge.

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