Transformational Change:

Building a Collaborative Future

Global Forum
Shaping the future
2025

TECHNOLOGY, SUSTAINABILITY & HUMANITY

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EUROSTARS TOWER
MADRID, SPAIN

Building climate neutral cities

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BUILDING CLIMATE NEUTRAL CITIES

One District at a Time

EU HORIZON project

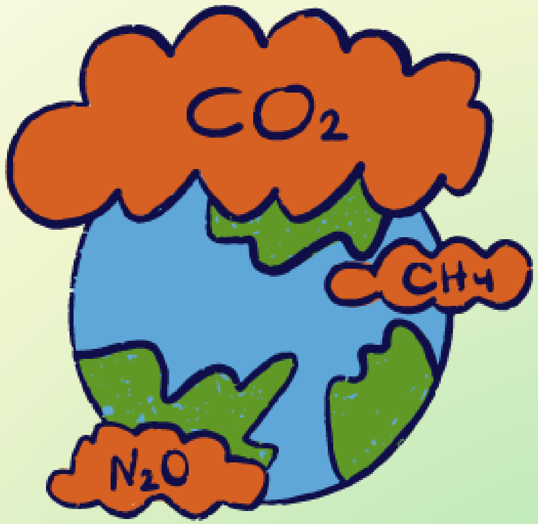
2024-2023 13 consortium partners
Coordinator: Danish Technical University
Pilot city: Aarhus


DTU
Danmarks Tekniske Universitet
AARHUS KOMMUNE
centerdenmark
intelligent energy
KPMG
DKSR
Daten-Kompetenz für Städte & Regionen
virtual city systems
OPEN & AGILE SMART CITIES & COMMUNITIES
DIGITAL RESILIENCE INSTITUTE
RoadTwin
InnoConnect
UNIVERSITY OF WEST BOHEMIA
UTRIUSQUE
AIT
AUSTRIAN INSTITUTE OF TECHNOLOGY

Cities are at an Energy Inflection Point

Cities cover only **3%** of the planet but **2/3** of the world's population to live in cities by 2050

Already Cities consume **75%** of global primary energy (UN)

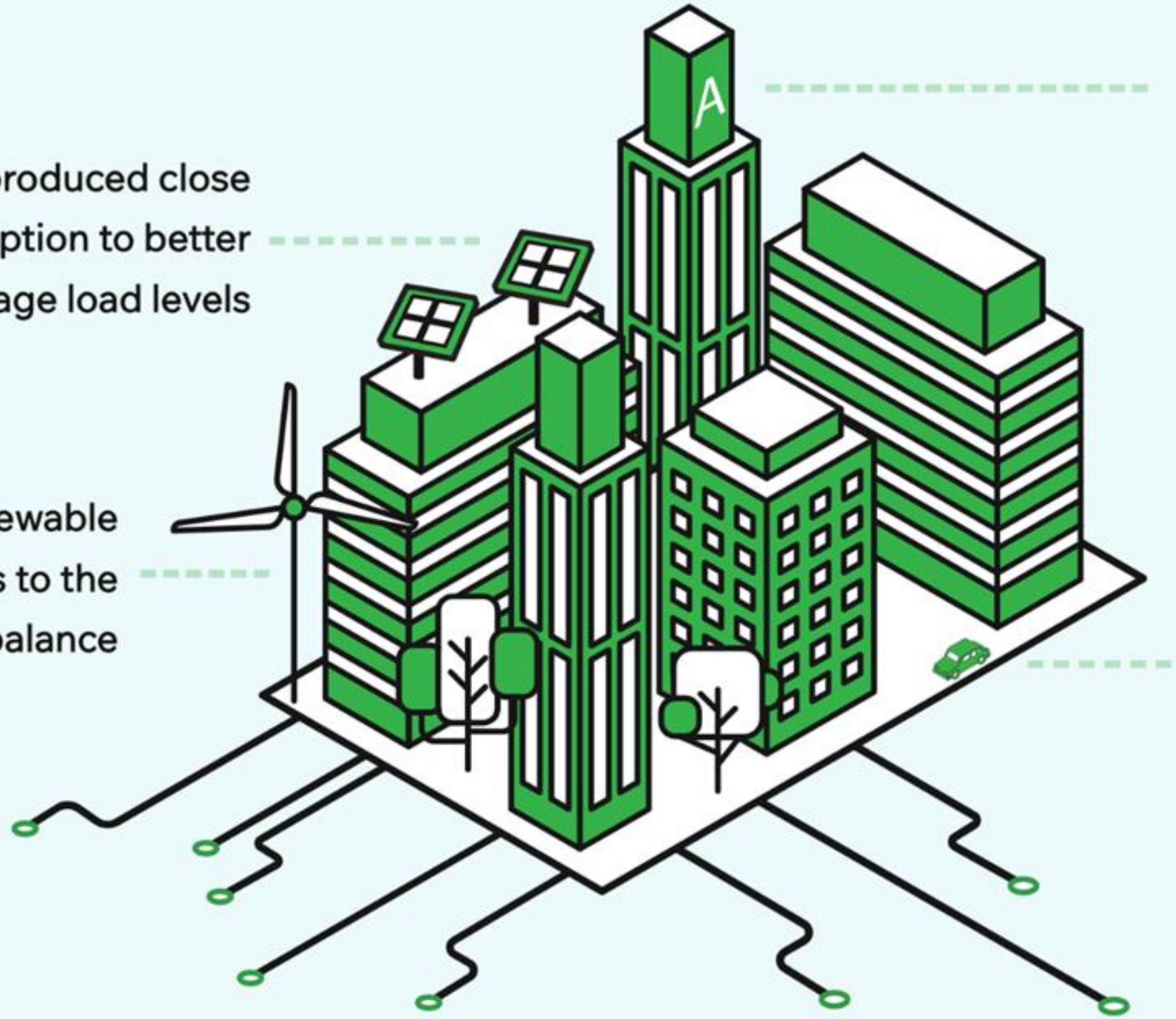


And Cities omit **80%** of harmful GHG emissions through direct and indirect sources (UN)

PEDs are a Key Building Block in the Future Energy Paradigm: Help Cities Balance Production and Consumption

Energy is produced close to consumption to better manage load levels

Locally produced renewable energy contributes to the positive energy balance



Renovation measures ensure high level of energy efficiency in the building stock

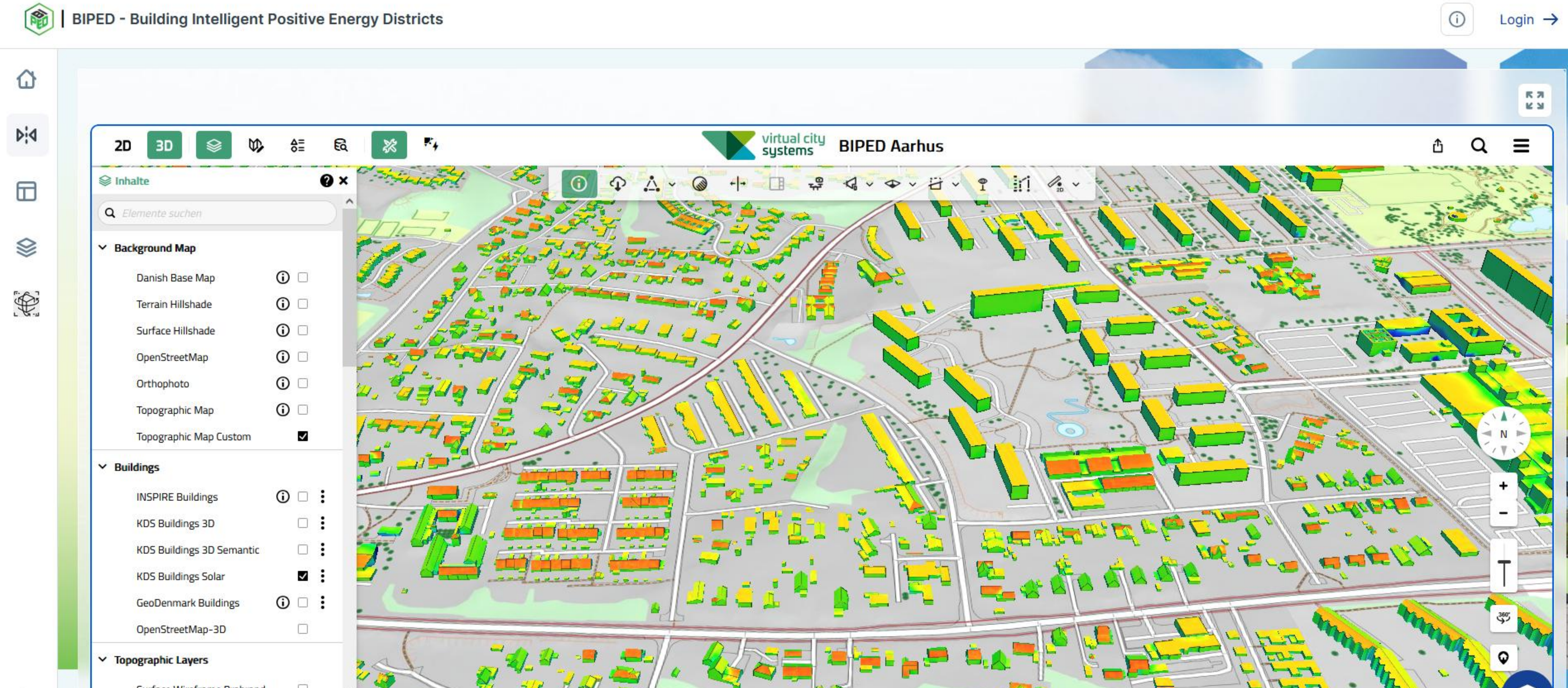
E-vehicles can adjust charging or return energy to the grid to optimise the supply of local renewable energy

Local Digital Twins (LDTs) can Improve PED Development and Scaling

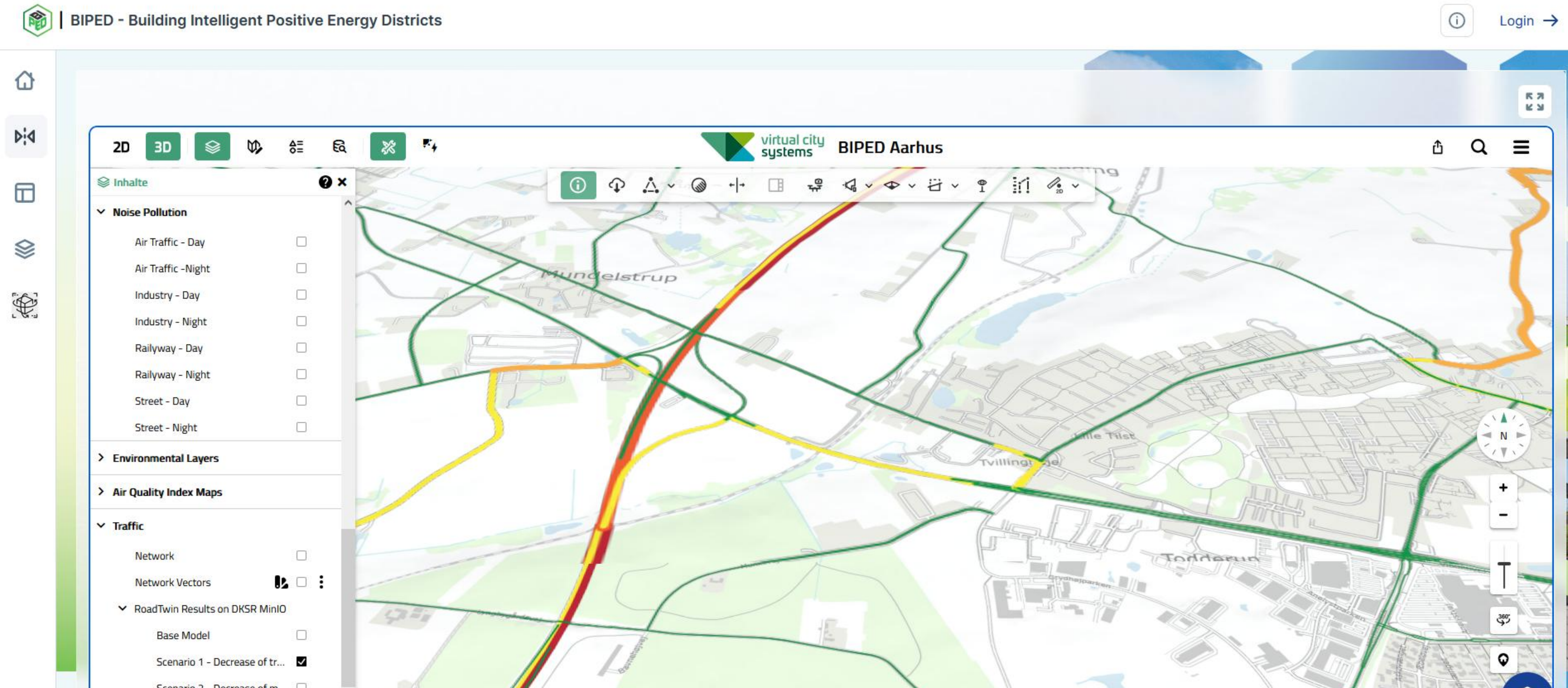
LDTs - real-time virtual city replicas - can simulate scenarios and predict impacts to inform decision making. However limiting factors hinder effectiveness:

- Connection with the local community, the citizens
- Limited data access and availability

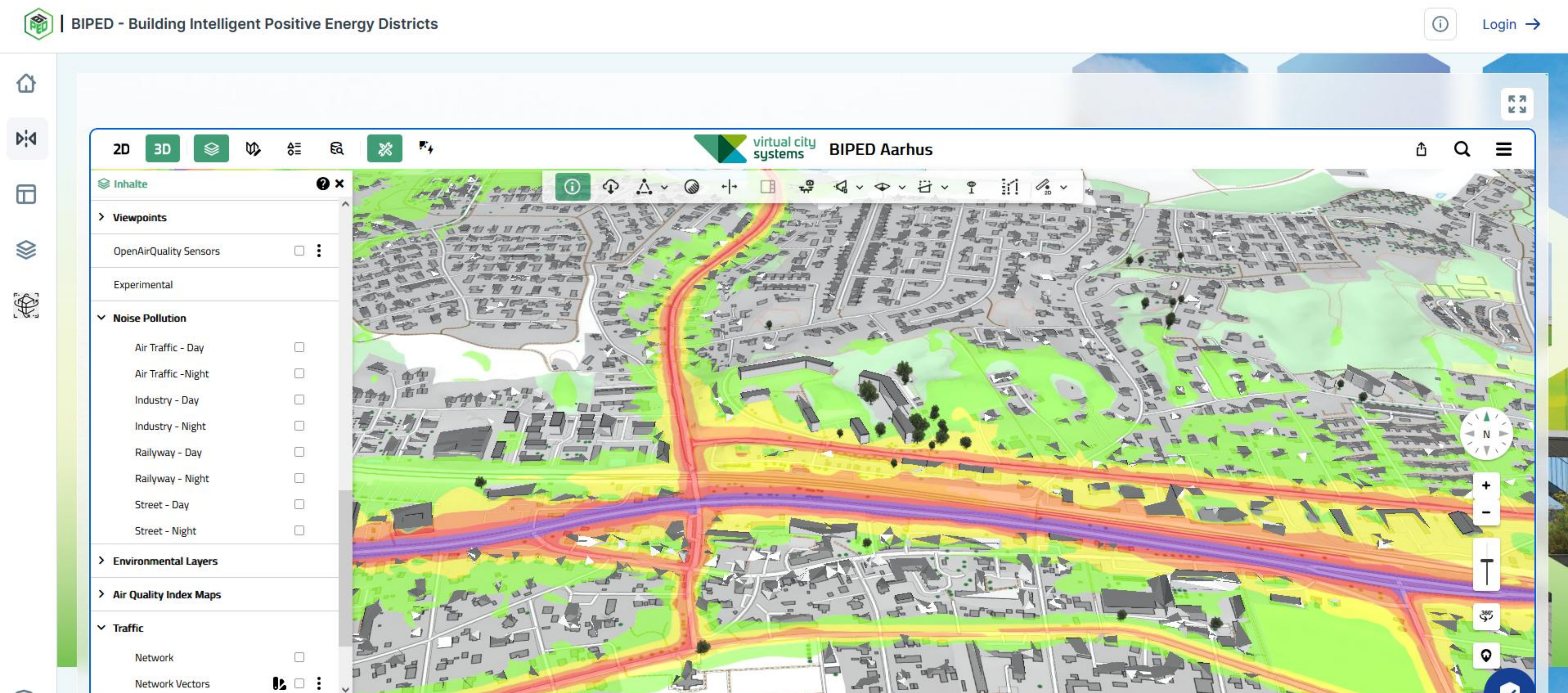
Energy – Solar Planner



Mobility – Traffic Model



Cross-Sectorial models – Traffic Noise



Objectives

Extend digital twin capabilities to refine a district's profile representation, guiding PED design/delivery

Explore how quantitative **collection** of soft **data supports** the **advancement in digital twin** development

Boost scaling and **replication** potential of **PED solutions for climate neutral cities**

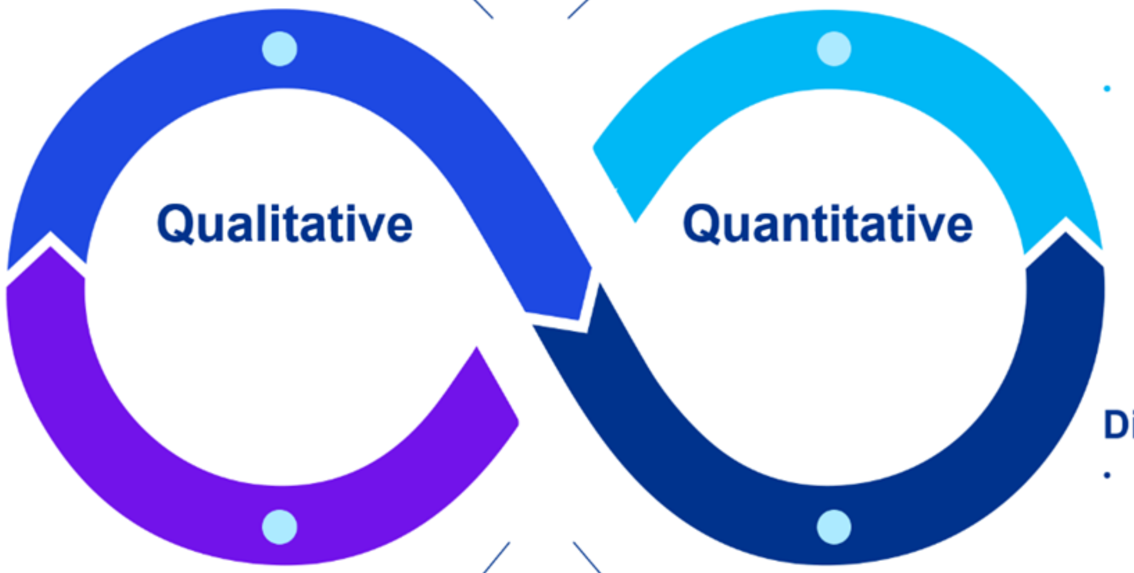
Creating an Integrated and Scalable Solution

Community Engagement

- Community engagement will utilise citizen feedback mechanisms and participatory platforms to foster a citizen-first approach.
- This approach, alongside data collection and evaluation meetings, will allow BIPED to tailor guidelines to be citizen-focused.

Policy Context

- As part of M&E, we will track local, national and EU level policy developments in collaboration with partners.
- BIPED will assess current and upcoming regulatory frameworks and evaluate their role in the development of smart cities.



Energy Consumption

- Monitor energy consumption, grid performance and adoption of green energy sources.
- Exploring community perceptions and behaviours on energy usage.

Digital Solutions

- Evaluating how Digital Solutions meet the evolving needs of the community.
- Ensure Digital Solutions will be user-centric and adaptable to different scenarios and settings.

Key Outcomes

1: Increase the number of city **planning** actions for PEDs

2: Enhance **data gathering** approaches representing multiple variables, drawing on the work of common European data spaces, including the smart communities data space and Destination Earth

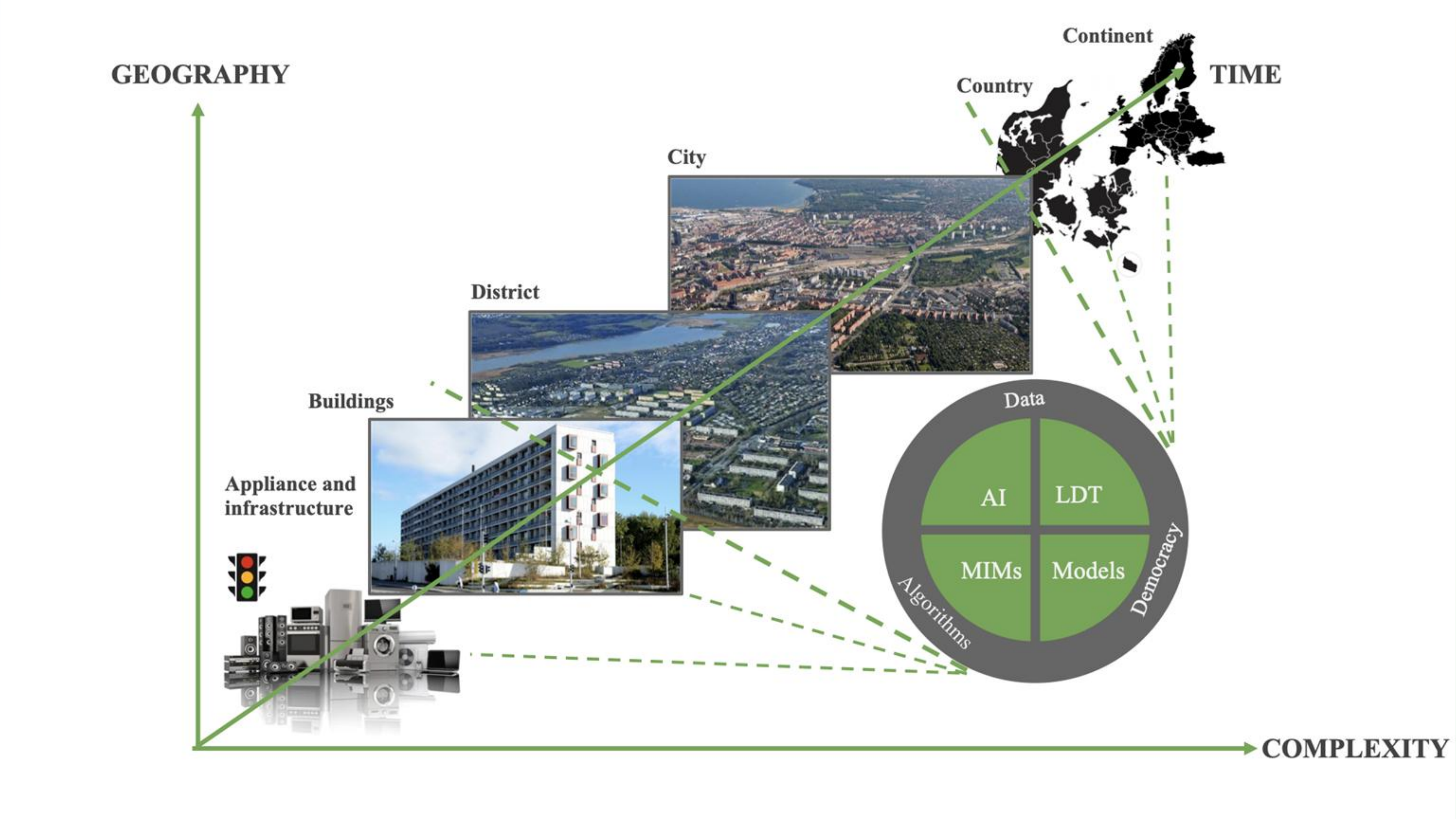
3: Introduce novel **quantitative data** gathering approaches to collect “soft data” that has been difficult to collect on a large scale

4: Include **data** from various urban scales and levels, such as from **building, district and city level**

5: Increase the number of city planning departments, among others, and approaches **using data-driven digital twins** by explaining methods, processes and results in workshops and drawing interpretations from them

6: Improve the performance of the **digital twin**, using **AI** and **ML** based methods

Creating an Integrated and Scalable Solution



Experience the Future: Smarter, Greener Living with BIPED

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Thank you!

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