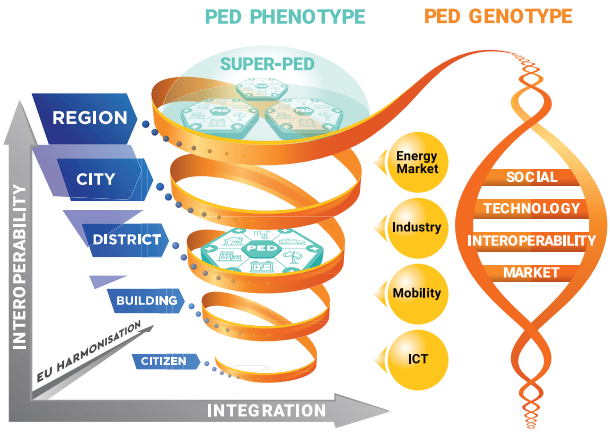


PEDvolution

Interoperable solutions to streamline Positive Energy District evolution and cross-sectoral integration

Matthias Haase[1], Alexander Deliyannis[2]
[1] Zurich University of Applied Sciences, Switzerland
[2]Sympraxis, Greece

ACCOMMODATING THE CONSTANT EVOLUTION OF PEDs

CONTEXT

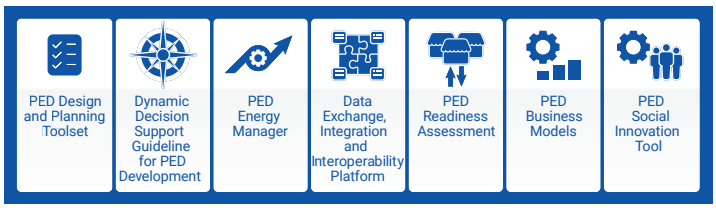
- **Positive Energy Districts (PEDs)** are the pinnacle of urban energy ecosystems.
- They can improve energy efficiency, integrate local renewable energy sources & excess heat more effectively and enable interaction with the **energy & non-energy sectors, like mobility & ICT.**
- A crucial, often neglected, fact is that PEDs are in constant **evolution**,

due to ever-evolving changes in their environment, including **social context, legislation, energy market, technologies and energy prices.**

- Still the **DNA** of PEDs varies and the implementation & evolution of different PEDs, as well as their probability of success in the urban energy transition, is determined by the **environment.**

7 SOLUTIONS

PEDvolution paves the way for cross-sectoral integration of ever-evolving PEDs, through the co-development and implementation of 7 interoperable solutions.



OBJECTIVES – SPECIFIC NEEDS

- **Improve energy efficiency** coupled with a better integration of local renewables and local excess heat sources within the districts.
- **Increase citizen participation** and integration of consumers and energy communities in the value chain of the energy system.
- **Improve cross-sectorial integration** on energy and non-energy sectors within PEDs (between buildings, the users and the regional energy, mobility & ICT systems).
- Demonstrate **fully interoperable solutions** for planning, design, development and management of **PEDs.**

EXPECTED OUTCOMES

The **PED design and planning tool** will leverage a Digital Twin (DT) to represent the PED's energy systems at building and district level and provide technoeconomic analysis to facilitate informed decision-making. The models will be further finetuned and calibrated iteratively via data-driven techniques by leveraging pilot sites' measurements to close the performance gap for reliable predictions of future energy modelling for PED planning or development stages.

The E-LAND Common Impact Model, to be used as a starting point for the development of the **"social innovation and engagement tool for PEDs"** is a methodology based on research on community engagement and social acceptance that will help to bring local stakeholder needs at the heart of the transition. While many projects involve local community actors, there is still need for tools that offer strategic approach to engagement allowing simultaneously flexibility of implementation at the local level. The finalized PED social innovation and engagement tool will offer a structured approach to local stakeholder engagement as PEDs evolve, to ensure that stakeholder needs, priorities and concerns are properly assessed as an integral part of the PED evolution, to support inclusive local transformation.

PEDvolution project builds upon existing developed tools, methodologies and standards adoption for interoperable data exchanges. For enabling cross-platform integration the open-source middleware symbIoTe will be utilised and further extended following the project's requirements. The platform will facilitate **market participation,** through a set of mechanisms that enable market access whilst facilitating the parameterization of interfaces on the basis of existing protocols. It will also enable deployment of smart contracts making use of blockchain technology for innovative business models, enabling service provision in the energy market but also P2P trading. Going beyond the project ecosystem, the adoption of European Data Spaces (EDS) framework, shall improve the availability and accessibility of data and ensure a secure (fully GDPR compliant) and trusted environment that enables the exchange, sharing, and re-use of data.

PEDvolution project will advance technical, syntactic and semantic **interoperability solutions** by integrating them in the data publication, access and analysis processes. The interoperable data ecosystem within EDS facilitates market integration and allows the creation of large-scale open data marketplaces. Open-source components from EU initiatives (e.g. GAIA-x, IDSA) will be extended and integrated in the overall solution of the project.

Project start date: 01/01/2024
Duration: 36 months

7 countries

15 organisations

Total EU Budget: 4,3 million €

PED CO-DEVELOPER DEMONSTRATORS

Schönbrunn village Wunsiedel, **Germany**

Gemeinschaft Hard, Winterthur, **Switzerland**

Residential neighbourhood Planina, Kranj, **Slovenia**

PARTNERS

ASSOCIATED ENTITIES

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@PEDvolutionEU
www.pedvolution.eu