

# POSITIVE ENERGY DISTRICTS

## IN BRIEF

- European cities need to be fundamentally modernised to meet climate and energy policy requirements.
- The goal is to have 100 Positive Energy Districts (PEDs) in Europe by 2025.
- The implementation of PEDs poses major technical, social, organisational, and economic challenges.
- The aim of this analysis is to strengthen strategic urban planning to enable more sustainable construction.

## WHAT IS IT ABOUT?

Europe has set itself the goal of becoming a global model for energy transition and climate protection. Cities and the construction sector play a decisive role in this. For instance, in Austria, buildings account for almost 40 percent of energy consumption and the share of oil and gas heating systems is still high. To meet the climate protection targets, the building stock must be comprehensively renovated and new buildings must be consistently constructed in accordance with ecological criteria.

Positive Energy Districts (PEDs) are considered an important component of sustainable urban development. The concept requires the interaction and integration of buildings, users, and regional energy, mobility and ICT systems. A Positive Energy District (PED) is integrated into the existing urban or regional energy system. A surplus of renewable energy production and net-zero energy imports are to ensure climate neutrality. The European Commission has set a target of 100 PEDs in Europe by 2025.

There are many initiatives at district level that are tackling the challenges of comprehensive environmental regeneration, but genuine PEDs are still rare. This is partly due to the high population and building density in cities and the associated high energy consumption, but also because of the lack of space in urban areas to generate sufficient renewable energy.



Credits: Positive Energy Districts and Neighbourhoods

PEDs are considered an important component of comprehensive concepts for sustainable urban development.

PEDs are therefore currently an important topic for innovation policy. A number of national and transnational research programmes support the development of technical, social, and organisational solutions.

These programmes focus on resource-saving materials and energy-efficient components to increase energy efficiency. However, funding is also provided to support approaches that combine several sectors (e.g. heat and electricity) to create highly efficient, flexible solutions. The programmes also focus on the development of improved regulatory frameworks and new business models.

## BASIC DATA

<b>Project title:</b>	Transforming Cities through Positive Energy Districts (TRANS-PED)
<b>Project team:</b>	Ornetzeder, M.; Saringer-Bory, B.; Regen, L. Rose, G.; Capari, L. (in an internat. consortium)
<b>Duration:</b>	04/2021 – 06/2023
<b>Funded by:</b>	FFG-Urban Europe
<b>Website:</b>	<a href="http://trans-ped.eu">trans-ped.eu</a>

## KEY RESULTS

One of the biggest challenges to the successful implementation of PEDs in the coming years is the development of effective governance approaches. PEDs are often celebrated for their achievements as demonstration projects. However, in practice, it is often not possible to translate the results into comprehensive and widespread sustainable change. PEDs require site-specific strategies to successfully address local institutional, spatial, regulatory, and cultural conditions. Their evaluation is also often limited to a narrow set of energy parameters, neglecting characteristics related to the provision of neighbourhood services, economic productivity, and societal benefits.



Multi-energy system, Geblergasse, 1170 Vienna

Finally, PEDs face significant challenges in scaling up their services to influence broader processes of sustainable urban transformation. To meet these challenges, PEDs require governance approaches based on strategic and effective collaboration between technical, economic, regulatory, and civil society actors. One way to address these challenges for PED governance is to strengthen urban transformation capacity. This refers to the collective ability of stakeholders involved in urban development to design, prepare, initiate, and implement a fundamental shift towards sustainability within and across multiple subsystems.

## WHAT TO DO?

**The central idea of the PED model is already providing a strong impetus for the planning and implementation of energy-efficient and climate-friendly neighbourhoods. This positive effect could be strengthened in the following ways:**

- *PEDs as a process:* In many cases it is difficult to achieve a positive energy balance. However, when understood as a process, the concept can help to find locally optimised solutions and get as close as possible to the targets.
- *Establish monitoring and indicator systems:* Many ambitious urban development projects lack sufficient knowledge about their progress. Ongoing monitoring and review of key objectives, by using appropriate indicators, contributes to greater transparency and improved management of processes.
- *Enable reflective learning and transfer of experience to other cities:* It is also of great importance that local experiences are critically reflected upon and that findings are shared with other urban development projects in an appropriate way.
- *Rethinking upscaling and dissemination:* This is not only about spatial and social expansion, but also about involving new actors/stakeholders, creating new business models, services, and infrastructures.

## FURTHER READING

Regen, L., & Ornetzeder, M. (2023). Fostering Urban Transformative Capacity in Positive Energy Districts (PEDs): RRI, Moments of Reflection, and the Importance of Second-Order Learning, Project Report T4.1a (p. 43).

[trans-ped.eu/wp-content/uploads/2023/05/Report\\_on\\_Responsible\\_Innovation\\_in\\_PED.pdf](https://trans-ped.eu/wp-content/uploads/2023/05/Report_on_Responsible_Innovation_in_PED.pdf)

## CONTACT

Michael Ornetzeder

Email: [tamail@oeaw.ac.at](mailto:tamail@oeaw.ac.at)

Phone: +43 1 51581-6582

