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## PROJECT

### EU Programme:

Horizon 2020 Innovation Action

### Coordination:

City of Amsterdam

### Partners:

29 partners, 10 countries

### European grant:

19.6 M€

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## PED concept replication strategy

### Result in a nutshell

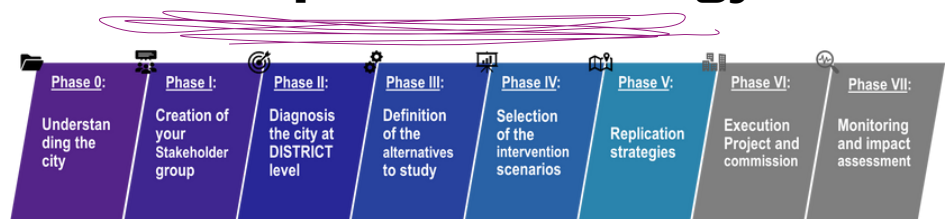
The replication strategy supports cities in achieving their long-term urban goals by helping them implement Positive Energy Districts (PEDs) more efficiently.

Designed as a handbook for municipalities and their stakeholders, the strategy guides the identification of high-potential areas or districts for PED replication, ensuring alignment with the city's overall vision. It follows a holistic approach by viewing the district as an integrated urban system, considering residents' needs, matching energy demand with production, and promoting renewable energy sources (RES).

To achieve this, the replication process begins with aligning the city's long-term goals with the potential for PED implementation. This is done by identifying key metrics that the PED could contribute to cities' goals.

Key districts are selected by analyzing current energy systems and socio-economic factors. A multi-criteria analysis is performed to evaluate the different factors and prioritise one. Stakeholder groups are formed to ensure collaboration, and both technological and non-technological barriers, such as regulatory challenges and community needs, are addressed. Following the initial diagnosis, alternative deployment scenarios are developed using the PED tool developed by CARTIF. These scenarios are evaluated techno-economically in different software so that the cities can select the most appropriate one.

### Replication strategy



Once these evaluations are performed at district level, the city can replicate the steps at city level to evaluate which areas have more potential to become PED. Different strategies (e.g. creation of incentives, a capacity building programme, etc.) can be defined to overcome challenges and boost PED replication.

Although it is out of the scope, two more phases are defined in the strategy. Continuous monitoring and impact assessment are proposed to ensure the replication plan meets its goals, while reviewing business models and financial instruments ensures long-term sustainability and scalability.

# Detail on methodology

## Technical aspects:

- **Phase 0:** Understanding the City Vision: Align the PED replication process with the city's long-term sustainability goals and identify key urban districts for potential implementation, considering both technological and socio-economic factors.
- **Phase I:** Creation of your stakeholder group: Establish a stakeholder group, including municipalities and residents, to ensure collaboration. This group shapes the PED replication plan by addressing energy demands and non-technological barriers early on.
- **Phase II:** City diagnosis at District Level: Conduct a detailed analysis of energy demand, production, and integration with smart grids, using quantitative models to map the district's energy profile and qualitative assessments to address social and regulatory challenges.
- **Phase III:** Definition of alternatives to study: Identify alternatives for matching energy demand with production, focusing on renewable energy over-production to achieve a sustainable energy balance.
- **Phase IV:** Selection of intervention scenarios: Select intervention scenarios based on both technological solutions (e.g., retrofitting) and non-technological factors, such as regulatory and community challenges.
- **Phase V:** Replication strategies: Develop scalable and adaptable PED replication plans based on the city's diagnosis and stakeholder input.

## Out of the scope of the project:

- **Phase VI:** Execution project and commissioning: Implement selected interventions, focusing on energy retrofitting and smart grid integration, ensuring alignment with sustainability goals.
- **Phase VII:** Monitoring and Impact Assessment: Continuously monitor technical performance and social impact, assessing business models to ensure long-term project sustainability.

# Further development

## Potential for further development:

- **Regulatory Barriers:** Current legislation, particularly regarding peer-to-peer energy trading and energy communities, poses challenges in several cities. Legal frameworks need to evolve to promote energy communities and incentivize stakeholders, as demonstrated by ongoing developments in countries like Portugal and Latvia.
- **Hydrogen Development:** While hydrogen is gaining attention, it remains underutilized and unregulated in most cities. Expanding support for hydrogen integration, both at national and municipal levels, could strengthen PED strategies.
- **Scalability and Bureaucracy:** Large-scale energy producers face significant bureaucratic hurdles, especially regarding feed-in-tariffs. Streamlining processes for smaller producers could enhance PED implementation.
- **Energy Communities:** Although progress has been made (e.g., stakeholder workshops in Krakow), many cities still lack strong frameworks for energy communities. Further development in this area could foster greater engagement and local energy autonomy.

## Potential areas of applicability:

- **Cities with Supportive Regulations:** Municipalities with evolving legal frameworks, such as Portugal and Latvia, are well-positioned to implement PEDs due to favourable policies for energy communities and renewable energy incentives.
- **Urban Areas with Pre-existing Plans:** Cities with existing sustainability or smart city initiatives, particularly those with advanced energy infrastructure, are prime candidates for PED development.
- **Cities Facing High Bureaucratic Hurdles:** Locations with significant regulatory challenges but committed to renewable energy transitions may also benefit, although they would require dedicated efforts to overcome legislative barriers.