



Terms of Reference

Clean Energy Communities in MED Port Hinterlands

Ver 1.0



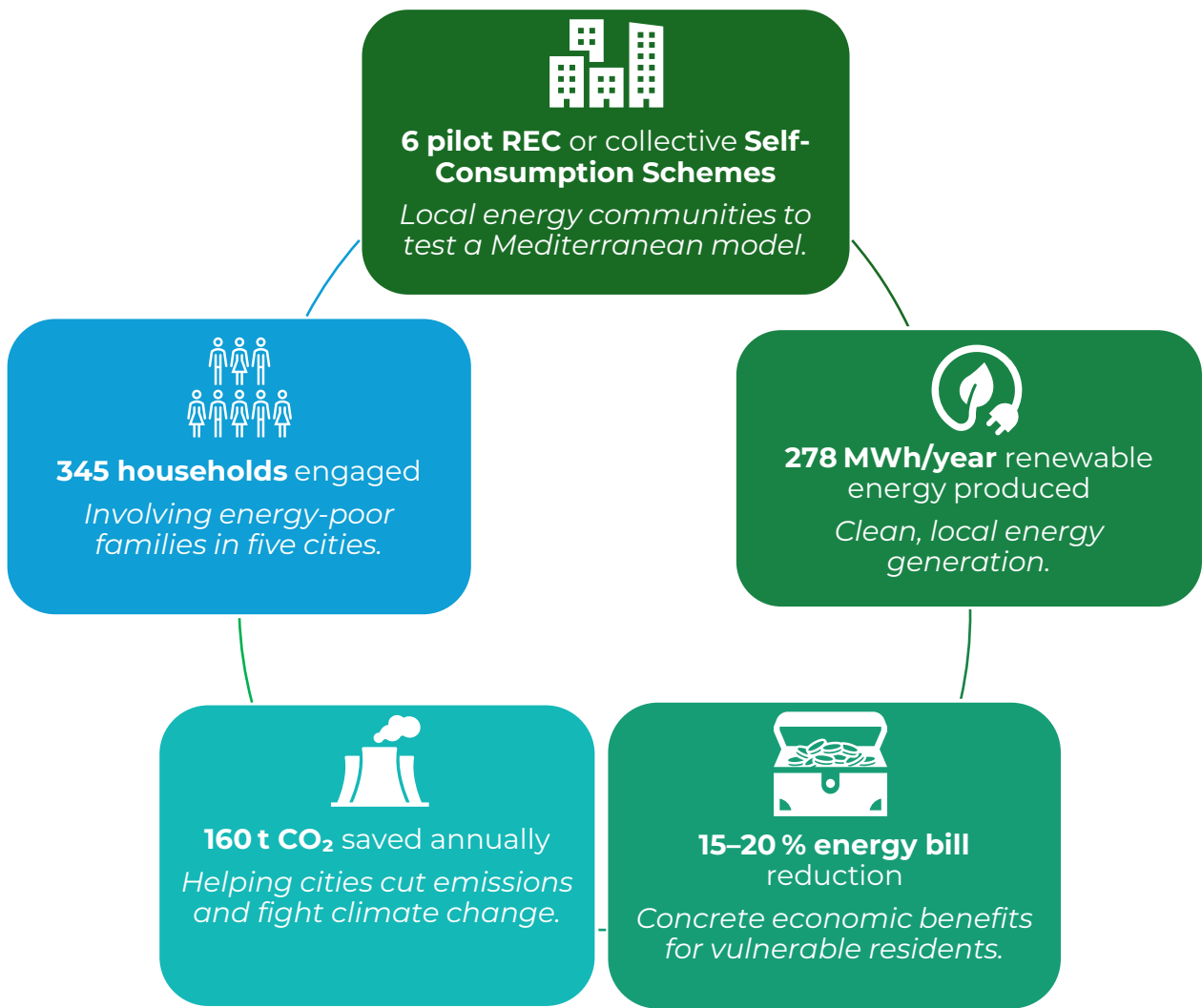
Project Overview

EnerCmed is a transnational project dedicated to promoting climate resilience and energy justice in the hinterlands of Mediterranean port cities, areas frequently characterized by social vulnerability, economic and environmental risk.

The project aims to co-develop and implement a scalable, community-centered model that integrates:

- Renewable Energy Communities (RECs) to enable collective ownership and governance of clean, locally generated energy;
- Nature-Based Solutions (NBS) to harness ecological systems for climate adaptation and urban regeneration;
- Social Inclusion Strategies to ensure equitable participation, particularly among marginalized and vulnerable populations.

Through this integrated approach, EnerCmed promotes and fosters an equitable and inclusive transition that links environmental and economic sustainability with social empowerment. The project directly contributes to EU policy priorities while offering a replicable Guideline (ToR) for sustainable urban development across the Mediterranean Basin.



The 4 Pillars of the Terms of Reference (ToR)

The Terms of Reference (ToR) aim to conceptualize a transnational Hinterland Renewables Communities Action Plan for marginalized neighborhoods. That is meant to be an innovative multicriteria decision-making protocol based on four pillars, such as the social engagement, the energy dimension (tech aspects) and the economic/financial/governance dimension enhanced with the principles related to microclimate actions and deliver an efficient energy-positive & climate resilient planning paradigm around the concept of Renewable Energy Communities or Self-Consumption schemes.

This will be used as a common diagnosis and feasibility framework to develop the pilots (WP2) under a common transnational approach and as a guideline for further replication cities.

Social Engagement

Fostering inclusive participation by actively involving vulnerable groups, such as low-income households, the elderly, and migrants in every stage of the energy transition. This pillar ensures that communities are not just beneficiaries, but co-designers and co-owners of local energy systems.

Technical Design & Digitalization

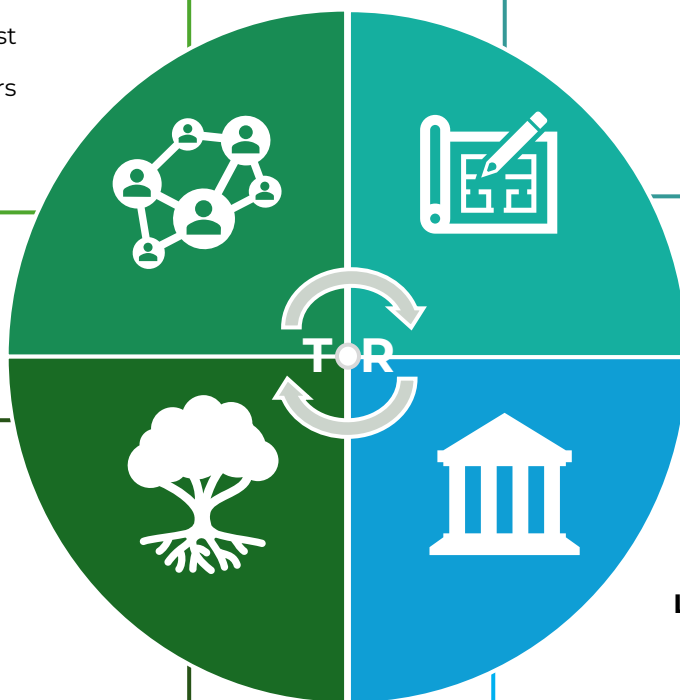
Developing efficient, site-specific photovoltaic systems integrated with smart meters and real-time monitoring platforms. This pillar ensures reliability, scalability, and digital transparency to support both energy efficiency and user empowerment.

Nature-Based Solutions (NBS)

Implementing green infrastructure, such as green roofs, shading trees, and climate-adaptive landscaping to counteract the urban heat island effect and support healthier, more resilient neighborhoods. This pillar aligns environmental and social goals within energy planning.

Legal & Governance Framework

Developing and adaptable legal, administrative, and managerial structures for RECs and self-consumption schemes. This pillar supports standardized business models for investment planning, fair pricing, effective governance, and compliance with national and regional regulations.



I. Social Engagement of Vulnerable Populations – Putting People First

In urban neighborhoods near Mediterranean ports, vulnerable populations such as low-income families, older residents, migrants, and marginalized groups face significant energy poverty and climate challenges. They often lack access to reliable, affordable energy and have little influence over decisions that affect their lives. The EnerCmed initiative begins with context-sensitive assessments that map demographic, cultural, and socioeconomic profiles to identify energy-related vulnerabilities. This approach ensures that project strategies are grounded in real lived experiences rather than assumptions.

Engaging vulnerable populations is a key pillar of the project, making it essential to raise awareness and provide knowledge about the energy transition and their vital role within it. Empowering these residents through accessible education is crucial for achieving transformation. Evidence shows that increasing awareness of energy issues, such as the benefits of renewable energy, individual rights, and efficient usage, can turn passive consumers into active energy citizens. When communities understand their role, they are more likely to engage meaningfully with Renewable Energy Communities (RECs).

Building on this foundation, the project extends into inclusive decision-making and co-design: early involvement through dialogue, consultations, and participatory workshops ensures that energy-sharing schemes and clean energy models reflect community priorities. Collaborative governance platforms, such as community-led committees or advisory bodies, give residents a sustained voice in strategic decisions, reflecting principles of procedural justice and energy democracy.

EnerCmed employs a clear monitoring and feedback framework focusing on KPIs such as participation, satisfaction, energy burden reduction, and behavioral shifts to ensure and adapt its social engagement strategy continually.

This robust engagement strategy is expected to broaden the energy transition by ensuring that community-led RECs evolve from initial involvement into lasting and ensuring **continuity and self-formation of new RECs** by empowering vulnerable communities.

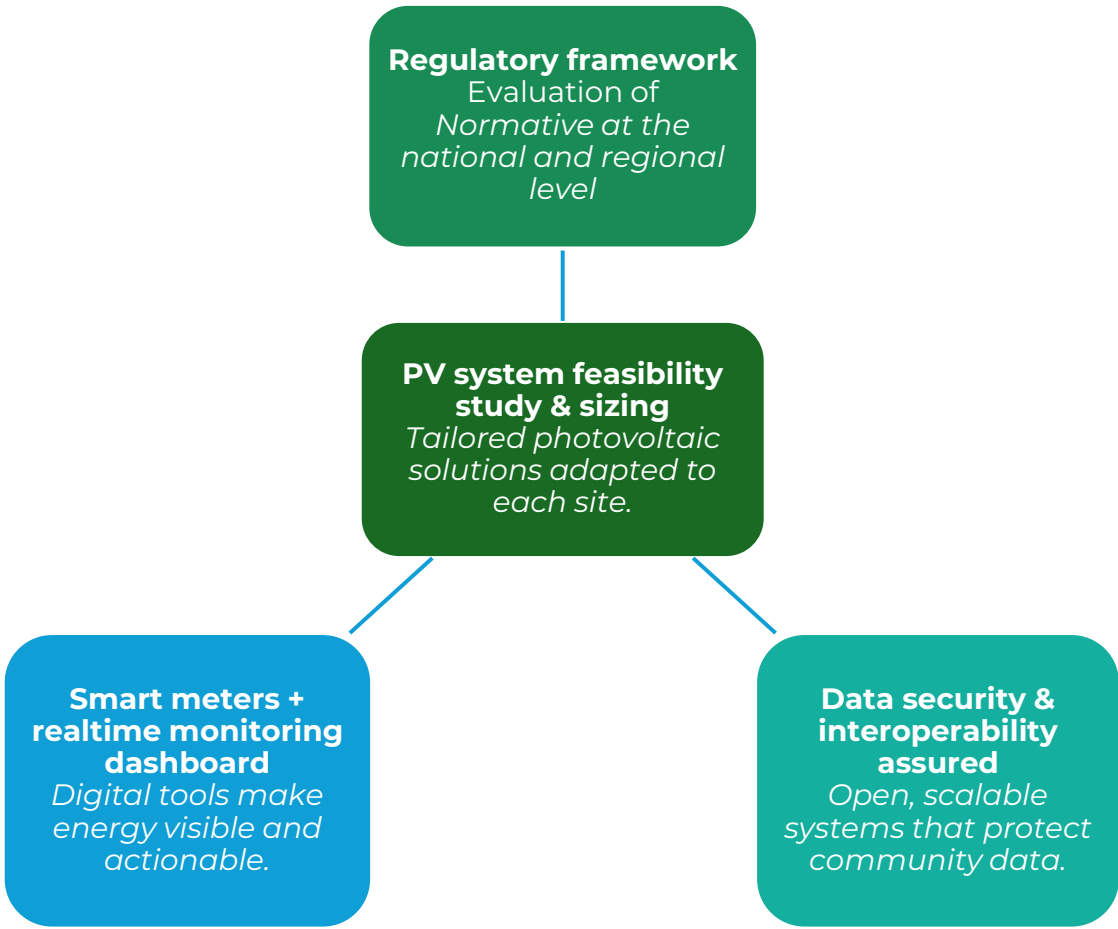


II. Technical Design & Digitalization – From solar panels to smart grids

Before designing photovoltaic (PV) installations and deploying digital monitoring infrastructure within Renewable Energy Communities (RECs) or self-consumption schemes, it is imperative to perform a comprehensive regulatory assessment, such as national and local building and grid codes, environmental and safety standards, as well as circular economy requirements governing PV waste and product lifecycle. Conducting this normative audit ensures that system sizing, smart-meter deployment, and energy management solutions fully comply with statutory frameworks, avoid legal or technical delays, and preserve eligibility for incentives and procurement schemes.

The technical design phase must ensure that the PV plant is carefully designed, tailored to local conditions, and supported by digital innovation. So the solution must be feasible, adaptable, and seamlessly integrated into the local energy infrastructure. It begins with a thorough feasibility study: assessing rooftop or ground-mounted potential, estimating solar radiation, and analyzing energy consumption patterns.

Smart metering technology and user-friendly dashboards are necessary to enable real-time monitoring of energy production and use, supporting transparency and local energy balancing. This digital infrastructure is key to allowing citizens, not just engineers, to understand and optimize their energy behavior. In addition, interoperability, cybersecurity, and data privacy are treated as essential design principles.



III. Legal, Administrative & Governance Structure – Making RECs Work for Everyone

To make Renewable Energy Communities (RECs) or self-consumption schemes truly sustainable and replicable, a solid legal and governance structure is essential. Technical innovation alone is not enough. What defines the long-term success of these communities is their ability to operate transparently, fairly, and in compliance with local, national, and European regulations.

EnerCmed addresses this challenge by providing a flexible but structured legal blueprint that supports diverse community needs while ensuring accountability. From choosing the most suitable legal entity (e.g., cooperative, association, foundation) to drafting statutes and internal rules, each REC must be shaped by clear principles of democratic participation, equity, and public benefit. These structures define how energy is shared, how revenues or incentives are distributed, and how decisions are made.

Moreover, digital management platforms play a crucial role in administering the community, tracking energy flows, allocating credits, processing payments, and supporting transparent financial oversight. Legal compliance with EU directives (RED II, RED III), national frameworks, and local regulations ensures each REC's legitimacy and access to incentives. By establishing replicable governance models and defining risk management protocols, this pillar ensures that communities are not only empowered to start but equipped to last.

RECs or Self Consumption schemes

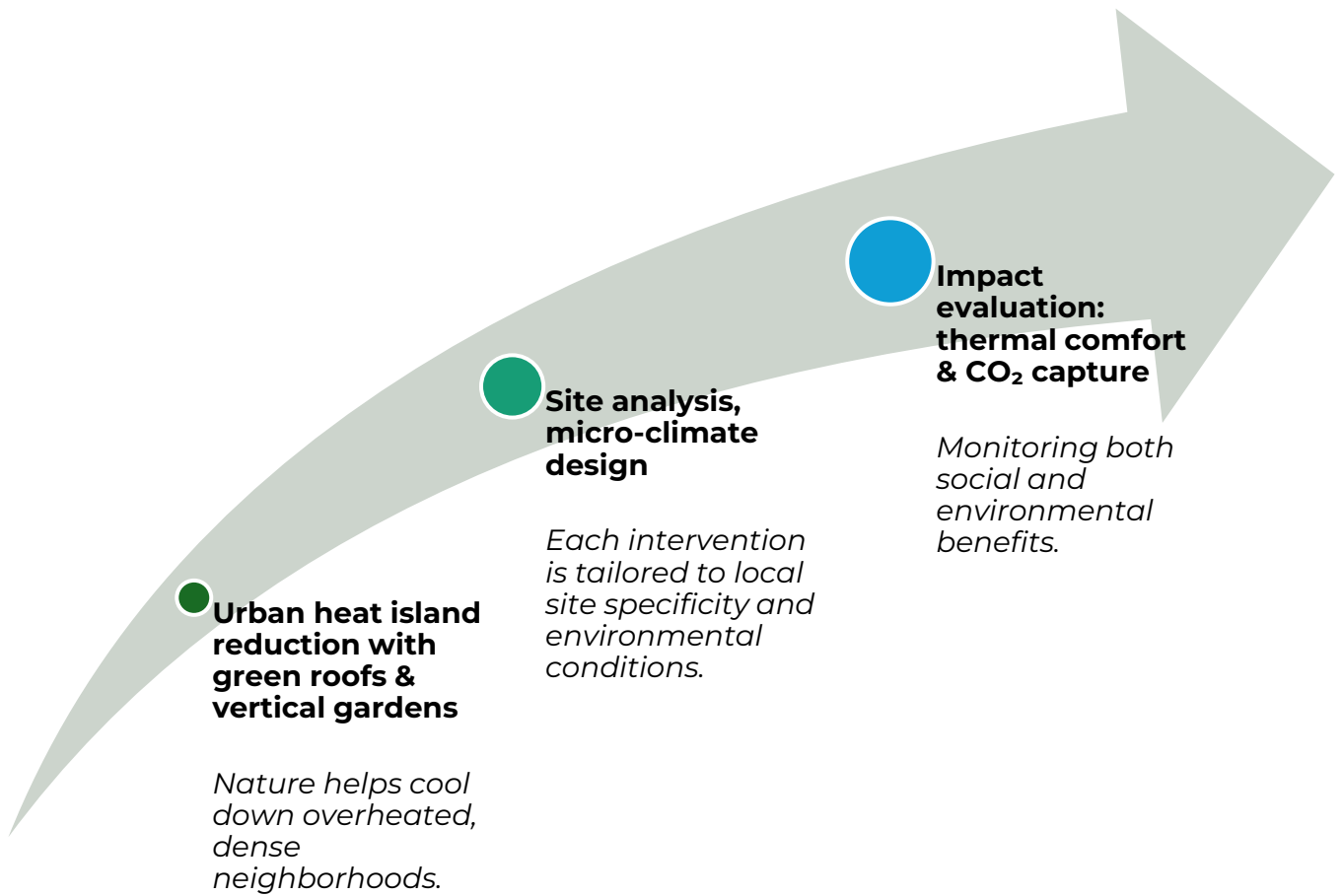


IV. Nature-Based Solutions (NBS) & Urban Heat Island (UHI) Mitigation

As cities become denser and hotter, climate resilience must go hand-in-hand with the energy transition. In many port-adjacent neighborhoods targeted by EnerCmed, the effects of the Urban Heat Island (UHI) phenomenon are especially severe, raising indoor temperatures, increasing cooling demand, and amplifying the vulnerability of already marginalized populations.

To address this, EnerCmed integrates Nature-Based Solutions (NBS) as a core design element of each Renewable Energy Community (REC) or self-consumption scheme. These interventions, such as green roofs, shading trees, permeable surfaces, and vertical gardens, not only help mitigate local heat but also improve air quality, reduce energy needs for cooling, and enhance urban biodiversity.

Each NBS is designed following a site-specific analysis of land use, thermal profiles, infrastructure, and regulatory conditions. The approach blends environmental science with participatory planning, involving residents and local stakeholders in choosing the most effective, feasible, and visible greening strategies. In this way, energy infrastructure is not just functional, but it becomes part of a broader urban regeneration effort that supports health, equity, and climate adaptation.



Expected Impacts: Road to a Triple Win

The EnerCmed model aims not only to produce clean energy but to generate lasting, measurable impacts across three essential dimensions: economic, social, and environmental. By integrating renewable energy systems with inclusive governance and climate-responsive design, the project delivers a “triple win” for marginalized urban neighborhoods.

Economically, participating families benefit from reduced energy bills and access to shared incentives. The return on investment (ROI) and payback period of photovoltaic systems are carefully calculated to ensure financial sustainability over the long term. **Socially**, EnerCmed strengthens community ties, increases participation, and empowers vulnerable groups through ownership and decision-making power within energy communities. **Environmentally**, the project supports climate action by cutting CO₂ emissions and applying Nature-Based Solutions (NBS) that cool urban spaces and improve local livability.

This integrated approach proves that energy transition can be equitable, practical, and scalable, offering a replicable blueprint for Mediterranean cities striving toward climate neutrality and social justice.

