Enabling Community-Led Decarbonization

Best-Practices in Overcoming Organizational and Governance Challenges

Research in the PED StepWise project explores ways of overcoming organisational and governance barriers to decarbonising existing urban districts. The research was based on a structured literature review and analysis of practical examples and showed that effective collaboration across governance levels, co-creation, early and inclusive participation, and tailored communication are key to building trust and achieving long-term acceptance. Furthermore, continuous education, digital inclusion and empowering residents to become active energy prosumers are vital for ensuring sustainable, community-driven transitions.

MAIN TAKEAWAYS

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Introduction

Building on previous experiences with Positive Energy Districts (PEDs) in existing urban areas, the PED StepWise project aims to tackle the challenges of decarbonizing existing buildings at the district level. A critical step toward achieving this overarching goal is learning from current practices that offer solutions to these challenges, particularly within the project's living labs. This Research Brief presents the findings from a review of best practices with regards to overcoming organizational and governance challenges in the decarbonization of a community.

Methodology

The research was primarily based on a literature review which followed a structured methodology to ensure consistency and relevance. Searches were conducted across Scopus, Web of Science, and Google Scholar, with grey literature also considered when relevant. Publications were screened initially by title and abstract to remove irrelevant studies and those published before 2000. A full-text review followed, and up to 10 relevant articles per topic were selected for detailed analysis to maintain a focused and manageable dataset. Beyond academic sources, practical examples of Positive Energy Districts and decarbonization projects were identified through online research to enrich the review. The final step involved in-depth analysis and synthesis of the selected materials, emphasizing key findings, methodologies, and lessons learned..

Results

The successful implementation of Positive Energy Districts depends heavily on the ability to overcome organizational and governance challenges. A key success factor is ensuring a just and participatory energy transition. Top-down approaches often face resistance, especially when they overlook the needs of residents. Trust, participation, and transparency are critical for long-term acceptance, especially given that energy upgrades often involve deep interventions into residents' homes and routines.

Stakeholder Interaction

Effective stakeholder interaction requires structured collaboration among public authorities, civil society, research institutions, and industry. Vertical integration—cooperation across local, regional, and national levels—is essential to avoid conflicting regulations and ensure coordinated use of resources (Baer et al., 2021).

Co-creation plays a central role in stakeholder interaction. It works best when local contexts and power imbalances are acknowledged and addressed. Key success factors include transparent roles, iterative feedback processes, and shared visions. It is also vital to provide space for self-organization to mitigate power and knowledge disparities (Sherry-Brennan et al., 2022; Lucas et al., 2024).

Information sharing is another major enabler. Lack of access to project-related information often hampers progress. Projects such as PED-ID highlight the importance of continuous feedback loops and trusted intermediaries ("process leaders") who mediate interests and align objectives. This has also been confirmed in large-scale public development programs.

Participation

Participation is essential for gaining acceptance, improving decision-making, raising awareness, and fostering cultural shifts toward sustainability. Studies emphasize that participation must start early, be inclusive, and address typically underrepresented groups.

Effective strategies include local events, workshops, multilingual resources, low-barrier engagement formats, and even compensating vulnerable participants (Lucas et al., 2024; Ross & Day, 2022). Broad and representative participation is key to building trust and commitment.

A critical risk is tokenism when participation is superficial and lacks real influence. Such practices, aimed solely at securing formal approval, often backfire. Ryder et al. (2023) argue for an "ethics of care" approach to participation that emphasizes local knowledge, shared ownership, and genuine community engagement.

Participation should also empower residents to become prosumers and actively involved in producing and managing energy. Studies show that this shift enhances acceptance, reduces costs, and boosts agency. Cooperatives are particularly effective platforms for this, thanks to their participatory structures and shared ownership (Haug et al., 2020).

Successful participation requires a deep understanding of the local context: what are the priorities, needs, and attitudes of different groups? In socioeconomically disadvantaged communities, financial concerns often take precedence over climate issues. Tailored communication strategies are essential, using clear, relatable messages (Schleer et al., 2024; Ross & Day, 2022).

Diverse communication formats are equally important. Effective engagement combines digital and physical tools: brochures, websites, in-person meetings, home visits, and even walking tours. Repetition across multiple channels increases reach and effectiveness.

Infrastructure-related disruptions—such as those caused by construction work—must be communicated clearly. Transparency about timing and impact, as well as showcasing successful pilot projects, can help overcome skepticism and build trust.

Capacity Building

Capacity building is critical to enabling stakeholders to engage meaningfully and make informed decisions. This includes basic climate and technology education as well as training on specific devices, costs, benefits, and potential downsides.

Tools like Information-Choice Questionnaires provide participants with structured knowledge to make informed decisions. However, as Bouw et al. (2023) note, information alone is not enough—uncertainty about prices, technologies, and regulations remains a challenge. Continuous learning opportunities are needed, both during and after project implementation.

Digital inclusion is another key issue. Older residents or those with limited access to technology often struggle to participate. PED-ID and similar initiatives address this with digital and analog learning formats, ensuring everyone can benefit regardless of their technological proficiency.

Empowerment also means increasing agency. Stakeholders should be able to maintain and operate systems independently after project completion. This can be achieved by teaching residents how to use technologies and identifying responsible contact persons. Designing interfaces to match users' familiar habits—e.g., analog-like digital interfaces—also enhances usability (Morgan et al., 2024).

Literature

Baer, D., Loewen, B., Cheng, C., Thomsen, J., Wyckmans, A., Temeljotov-Salaj, A., & Ahlers, D. (2021). Approaches to Social Innovation in Positive Energy Districts (PEDs)—A Comparison of Norwegian Projects.

Bouw, K., Wiekens, C. J., Tigchelaar, C., & Faaij, A. (2023). Involving Citizens in Heat Planning: A Participatory Process Design for Informed Decision-Making.

Haug, S., Vetter, M., & Weber, K. (2020). Building restoration between energy efficiency and user acceptance Two empirical case studies.

Lucas, H., Berdahl, S., Chernyakhovskiy, I., Gokhale-Welch, C., Cox, S., & Hecht, A. (2024). Strategies and Good Practices to Support Robust Stakeholder Engagement in Multi-Sector Energy Transition Planning.

Morgan, D. J., Maddock, C. A., & Musselwhite, C. B. A. (2024). These are tenants not guinea pigs: Barriers and facilitators of retrofit in Wales, United Kingdom.

Ross, L., & Day, M. (2022). Community Energy Planning: Best Practices and Lessons Learned in NREL's Work with Communities.

Ryder, S., Walker, C., Batel, S., Devine-Wright, H., Devine-Wright, P., & Sherry-Brennan, F. (2023). Do the ends justify the means? Problematizing social acceptance and instrumentally-driven community engagement in proposed energy projects.

Schleer, C., Wisniewski, N., & Reusswig, F. A. (2024). Shaping the social-ecological transformation: How social barriers can be overcome and how resonance potentials can be utilised.

Sherry-Brennan, F., Devine-Wright, P., & Walker, C. (2022). Urban energy infrastructure transitions the participation of local citizens in the development of smart local energy systems and sustainable heating.