Empowering Local Stakeholders: Comparing Stakeholder Mapping Approaches for Inclusive Energy Transitions in Positive Energy Districts

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Extended abstract

Introduction

The transition to climate-neutral cities necessitates inclusive urban strategies that prioritize sustainability, resilience, and social equity. Positive Energy Districts (PEDs) have emerged as a crucial mechanism in achieving these goals by fostering collaboration among diverse local stakeholders to create livable and energy-positive urban neighborhoods. One essential aspect of this process is the concept of "energy citizenship," which underscores the importance of active participation from individuals, communities, and organizations in shaping energy transitions.

To ensure effective stakeholder engagement, it is vital to understand the varying roles, needs, and capacities of local actors. Stakeholder mapping serves as a strategic tool to facilitate this understanding and promote collaborative efforts in energy-related activities. This paper explores different approaches to stakeholder mapping and assesses their impact on fostering co-creation processes and collective action in mitigating energy poverty. By applying these methodologies in six pilot sites across Europe, we provide insights into how local actors can work together to address energy vulnerabilities, challenges, and opportunities. Energy efficiency measures and coordinated urban retrofitting processes towards climate-neutrality in urban neighbourhoods are complex, time consuming and require intense cooperation between public authorities, the building sector, owners and tenants, investors and other stakeholders (Cheng et al. 2021). Thus, the participating sites address the complex and multistakeholder nature of energy efficiency measures by acting at the intersection with social innovation (Baer et al. 2021) for selecting, evaluating and implementing technological solutions for neighbourhood-oriented strategies for retrofitting and refurbishment of buildings. It aims to foster behavioural change and promote co-creation with the local residents and relevant stakeholder groups to enhance the implementation of PEDs in Europe and increase local resilience against energy crisis.

Positive Energy Districts and Inclusive Participation

PEDs rely on the cooperation of key stakeholders and problem owners. Their realization requires a long-term commitment, cross-sector collaboration, and governance at multiple levels. The PED framework, as defined by DUT, is impact-driven, emphasizing processes over static results. To maximize the potential of PEDs, local initiatives and energy communities must be empowered, ensuring that all voices, especially marginalized groups, are heard in decision-making processes.

Energy Vulnerability and Social Equity

Energy vulnerability is a complex issue shaped by infrastructural, environmental, economic, and social dynamics. It is not static; rather, it fluctuates over time and varies based on local conditions. Understanding energy vulnerability necessitates a place-based approach that considers access, affordability, flexibility, energy efficiency, and support mechanisms. Yet, energy vulnerability is a relational concept, being multifaceted and locally contingent, produced by configurations of infrastructural, environmental, economic, and social dynamics. It's also temporally variable, sometimes cyclical, sometimes enduring, and sometimes unpredictable. For literacy to reach energy vulnerable groups, it is important to focus on the specific place-based issues in the nexus of energy access, knowledge and power. Energy vulnerability means access, affordability, flexibility, poor energy efficiency and lack of support and problem recognition (Hearn, 2022*)*.

Several challenges hinder the participation of energy-vulnerable citizens in research and decision-making. These challenges include economic constraints, lack of awareness, policy barriers, and social stigmas. To counter these barriers, stakeholder mapping must account for the specificities of energy needs in different contexts—rural, urban, and peri-urban—and integrate historical and structural inequities, cultural influences, and governance models.

Stakeholder Mapping Approaches for Energy Transitions

Stakeholder mapping is a critical tool for structuring engagement and identifying key actors in energy transitions. Different methodologies can support co-creation processes by highlighting the roles, relationships, and influence of stakeholders. Key approaches include:

1. **Mapping along interest and influence on a topic:** prepares solid ground for a sound stakeholder engagement strategy
2. **Power and Influence-Based Mapping:** Identifies key actors based on their level of power and influence in the energy transition process
3. **Network Analysis Mapping:** Examines relationships and interactions among stakeholders to reveal collaboration opportunities and potential conflicts.
4. **Needs-Based Mapping:** Focuses on identifying the specific needs and expectations of different stakeholders to create tailored engagement strategies.
5. **Value Chain Mapping:** Analyzes the roles of stakeholders within the energy transition supply chain to ensure comprehensive involvement from production to consumption.
6. **Experimential and Lived Experience-Based Mapping:** Focuses on firsthand narratives and real-life experiences to identify energy needs and vulnerabilities.

7. **Participatory and Inclusive Mapping:** Actively involves marginalized or underrepresented groups, ensuring that their perspectives are included in decision-making.
8. **Collaborative and Co-Creative Mapping, Empowerment-Oriented Mapping:** Aims to provide agency to participants rather than merely extracting data; encourages partnerships between researchers and local communities to create shared solutions.
9. **Context-Sensitive Mapping:** Adapts to cultural, social, and environmental factors affecting stakeholder inclusion.
10. **Reflexive and Iterative Mapping:** Allows for continuous adaptation based on participant feedback.
11. **Technology-Enhanced Mapping:** Leverages digital tools to facilitate stakeholder engagement and data collection.

Findings from the European Pilot Sites

The implementation of stakeholder mapping methodologies in six pilot sites across Europe (Innsbruck, Austria; Krakow, Poland; Iasi, Romania, Budaörs, Hungary; Karlsruhe, Germany; Helsingborg, Sweden) provides valuable insights into effective engagement strategies. These cases reveal that place-based and context-sensitive approaches are vital in ensuring meaningful participation.

Conclusion

The interplay between energy citizenship and participatory governance underscores the significance of tailored stakeholder mapping approaches in fostering collaboration and shared decision-making. By adopting place-based, inclusive strategies, stakeholder mapping enhances local engagement, ultimately driving more effective and equitable energy transitions within PEDs. The findings from this research Key lessons will be structured along several dimensions such as (1) Aligning Solutions with Local Needs; (2) Addressing Structural Inequities; (3) Enhancing Participatory Decision-Making (4) Building Multi-Stakeholder Partnerships and emphasize that a one-size-fits-all approach is inadequate to ensure sustainable and fair energy transitions.