

Andrews-Speed, P. (2016). Applying institutional theory to the low-carbon energy transition. *Energy Research & Social Science*, 13, 216-225.

Laakso, S., Castellazzi, E., Matschoss, K., & Rinkinen, J. (2023). Agents of change or victims of transition? Media framings on household roles during the energy crisis. *Sustainability Science*, 1-24.

Numminen, S., Ruggiero, S., & Jalas, M. (2022). Locked in flat tariffs? An analysis of electricity retailers' dynamic price offerings and attitudes to consumer engagement in demand response. *Applied Energy*, 326, 120002.

Scott, W. R. (1995). *Institutions and Organizations*. Thousand Oaks, CA: Sage Publications.

Wooten, M., & Hoffman, A. J. (2017). Organizational fields: Past, present and future. *The Sage handbook of organizational institutionalism*, 2, 55-74.

Preselected paper tracks

17. Tackling the complexities of household agency and resilience in energy transitions

15:48 - 16:00

308 Vulnerable Neighbourhoods in Transition: Understanding the Multilevel Decision-Making in Housing Energy Retrofit Processes.

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Abstract

Housing energy renovation in vulnerable neighbourhoods disrupts established delicate systems. These renovations are critical micro-level processes for energy transition, offering more than environmental benefits and technological innovation; they hold the potential and bear the responsibility to enhance community well-being. Decision-making in these processes involves a complex socio-technical system that includes a multilevel structure of strategic, tactical, and operative decisions and stakeholder interactions. Vulnerable neighbourhoods struggle with energy poverty and exhibit socio-spatial fragilities that necessitate targeted programme and project strategies to effectively integrate local needs and capabilities. However, a path dependency on top-down technocratic interventions sustains a deep-rooted lack of resident agency in such contexts.

Embracing inclusive renovation approaches requires new organisational structures and higher-order learning. This can either enable or constrain development opportunities within household agencies, seen as a system of relations, resources, and learnings for socio-technical innovation diffusion (Suitner et al., 2023). Clear information, co-decision and co-creation strategies, an understanding of residents' interactions with living spaces and renovation technologies, and their willingness to adopt sustainable behaviour are central to renovation efforts and emphasise the crucial role of users. In such scenarios, institutional support and trust-building mechanisms become pivotal in empowering households' agency. Social-innovative approaches to the renovation of residential buildings are still in the embryonic stage of niche innovation and present unclear decision-making structures among the actors involved. Therefore, exploring stakeholder iterations of engagement and adaptation between the demand and supply sides is crucial in transitioning to sustainable building practices (Rohracher, 2001) and in viewing the household system as dynamic, shaped by internal interactions and external influences (Raven et al., 2021).

This research examines a community-friendly renovation and energy transition project in Dutch social housing as a *learning case*, aiming to reconstruct the process and map the multilevel decision-making. The scope is to understand stakeholders' interactions and engagement in addressing socio-technical challenges and in enabling or constraining resident-oriented strategies. Through a retrospective empirical analysis, the study addresses the research question: *How do the different stakeholders interact with each other and with the socio-technical challenges in renovating vulnerable neighbourhoods?* A combination of narrative and semi-structured interviews provides insights from various stakeholders' perspectives, including the neighbourhood cooperative, residents, the housing association, municipality, energy supplier and construction company. The *learning case* focuses on a pilot project for a resilient, gas-free community in one of the Netherlands' poorest neighbourhoods. It includes the renovation of social housing apartment buildings and the installation of a heat network.

Critical decision-making junctures are identified, serving as interaction *touchpoints* among stakeholders and clusters of challenges, pitfalls, and potential solutions. These touchpoints in renovation processes are crucial for bridging the gap between service providers' goals and residents' needs, facilitating active engagement, and fostering trust and agency between experts and non-experts (de Feijter, 2023). Notably, the decision-making process resulted positively influenced by the personality traits of supply-side actors, such as open-mindedness and a collaborative spirit, and by the role of active residents serving as spokespersons for the buildings' needs. Financial schemes and social infrastructure have been strategically managed to safeguard residents, whereas the choice of renovation measures and implementation remained unclear and impactful for residents. The scalability of such community-oriented processes remains an open question.

The findings from this empirical case, combined with insights from the literature, suggest actionable strategies for just and inclusive renovation projects and illustrate how to transform these *touchpoints* into opportunities for developing more equitable and resident-centric decision-making.

De Feijter, F. (2023). Trust in circular design: Active stakeholder participation in Chinese and Dutch housing retrofit projects. *Building Research & Information*, 51(1), 105–118.

Raven, R., Reynolds, D., Lane, R., Lindsay, J., Kronsell, A., & Arunachalam, D. (2021). Households in sustainability transitions: A systematic review and new research avenues. *Environmental Innovation and Societal Transitions*, 40, 87–107.

Rohracher, H. (2001). Managing the technological transition to sustainable construction of buildings: A socio-technical perspective. *Technology Analysis and Strategic Management*, 13(1), 137–150.

Suitner, J., Haider, W., & Philipp, S. (2023). Social innovation for regional energy transition? An agency perspective on transformative change in non-core regions. *Regional Studies*, 57(8), 1498–1510.

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