

Rethinking the Boundaries of Energy Justice in Demand-Side Flexibility across Europe: A Critical Review

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Abstract As urban transitions towards decarbonised energy systems accelerates, demand-side flexibility (DSF) has become a key strategy for integrating variable renewable energy sources and promoting more sustainable energy consumption behaviours. These strategies are often framed as win-win solutions, enhancing grid stability while empowering consumers. However, they tend to prioritise technological and market-based incentives, often overlooking everyday motivations and barriers that shape consumer behavior and influence individuals' ability to participate in and benefit from DSF initiatives. Shifting and changing energy demand requires not only technical solutions but also societal and lifestyle changes that can raise important questions of energy justice, particularly for vulnerable and marginalised groups, in the design and implementation of DSF.

This research responds to this gap by bringing a critical interpretive perspective to the societal challenges and ethical dimensions of DSF. Within the Consumer energy Demand Flexibility (CoDeF) project, this study explores the question: how do dominant narratives shape the way in which energy users, scientists and policymakers understand and experience energy justice in DSF? It analyses user, academic and policy discourse to examine who DSF is designed for, by whom, and for what purpose. Instruments such as time-based tariffs, dynamic pricing, smart metering and demand-response programmes are assessed to determine how justice considerations are embedded. Using an intersectional lens, the study explores how energy justice is conceptualised and pays special attention to assumptions behind prevailing narratives that often simplify identities, overlook diverse needs, and exclude certain perspectives.

A systematic literature review first evaluates how energy justice is framed and operationalised in DSF debates, identifying over- and under-represented narratives and revealing gaps between research, policy and practice. Special attention is given to less visible expressions of power that influence consumption and may reinforce systemic injustice. Empirically, the project conducts a comparative case study of the Netherlands, Norway and Italy. All three recognise DSF as essential for aligning consumption with supply, yet differ in geographic, demographic, socio-economic and cultural contexts, generating distinct narratives and justice concerns.

The next phase will use participatory methods, such as interviews and focus groups with researchers, policymakers, providers, consumers and associations, to explore both the intentions of those setting the "rules of the game" and the lived experi-

ences and perceived burdens of those affected. Findings will inform fine-grained, context-specific policy recommendations to co-create more inclusive and diverse approaches to addressing energy (in)justice.