Karlsruher Institut für Technologie

Deutsch-Französisches Institut für Umweltforschung

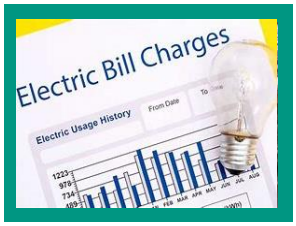
Institut für Industriebetriebslehre und Industrielle Produktion
Lehrstuhl für Energiewirtschaft

Bachelor/Master Thesis

Energy Communities in Germay and EU: a comparative analysis of the regulatory framework

Background

The energy transition in Europe is characterized by a dense ecosystem of players and varying national policies. While it is suggested to focus on moving away from a short-term crisis management approach (IDDRI 2023), a medium-term resilience-building approach yet needs to be defined. For instance, the effort should go towards increasing investments in energy efficiency and fostering sustainable behaviour around energy use. However, forms of energy production, energetic renovation of the existing housing stock, grid infrastructures, and energy use patterns are all decisions that are inevitably influenced through the policy context! The constitution of energy communities is a recent phenomenon that allows to generate energy within the building complex. Because it is based on renewable energy systems used for primarily self-consumption, it can incentivize demand flexibility according to the time of day the energy is produced. Flexibility in energy demand can take the form of shifts, reduction or substitution which can help manage loads and alleviate pressures on the local grid. However, the variability in production and consumption times can also lead to gaps where excess energy is fed into or consumed from the grid. Therefore, we need to understand how the regulatory and administrative framework is constructed in Germany today and what evolutions are likely to happen in the future, that incentivize and stir these processes within energy communities.



Objectives of the thesis

The goal of this project is to conduct a systematic literature review that summarizes the regulatory situation around energy communities in Germany and neighbouring European countries. Specifically, by pooling upon the findings from existing studies, a clear picture for Germany is to be drawn. Moreover, by drawing upon recent developments in neighbouring countries, an overview on the European context will shed light on the likely evolutions to come. In particular, different forms of Energy communities, load profiles and incentive types need to be considered for the analysis.

Requirements

- Interest in social science topics (regulation, user behavior) and energy (e.g. load management)
- Willingness to work independently
- Ideally existing skills synthesizing literature and using citation tools (e.g. Endnote)

Start date/duration/language

Thesis can start immediately / 3-6 months / English required

Contact person

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