GENTE

D4.1

Characteristics of energy communities and motivations, engagement, and socio-economic profiles of end users

SUMMARY

This report provides a literature review on characteristics and organizational models of energy communities, motivations, engagement, and the socio-economic profile of end users. The result is a description of energy communities for GENTE.

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Impressum

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Abstract

The ERANET GENTE project aims to develop a distributed governance toolbox for local energy communities (LECs) or more generally energy communities (ECs). This toolbox includes advanced digital technologies such as the internet of things (IoT), distributed ledger technology (DLT), edge processing and artificial intelligence (AI) for autonomous energy resource management within and across LECs and for flexibility provisions to energy networks. The toolbox also considers social processes and includes a set of guidelines and methods for developing new LECs with potential end users and further stakeholders.

This report provides a literature review on definitions and characteristics of energy communities including organizational models, motivations, engagement and the socio-economic profile of end users. The report begins by exploring the meaning of "community" within the context of energy communities and examines existing typologies and analytic dimensions found in the literature. It then discusses the diverse organizational models adopted by energy communities. Motivations for user engagement and participation in energy communities are examined, along with an analysis of end users' demographic and socio-economic profiles. A case study of the residential estate "am Aawasser" provides a practical illustration of the concepts and dimensions discussed. Finally, the report proposes a simplified and practical description framework for energy communities for GENTE.

The main results of the report include a definition of energy communities, and a set of dimensions for describing energy communities. For the purposes of GENTE, the relevant meanings of “community” are identified as community by technology, community of place and community of interest. The ECs GENTE targets and wants to promote will generally fit simultaneously in all three categories.

The report also lays down mandatory characteristics which an energy community within the scope of GENTE will fulfil. For GENTE, an energy community which fulfils these characteristics is an energy project (1) involving energy consumers and/or prosumers who share renewable energy generation units, (2) who live in a shared place or have a shared interest and (3) have some level of control over or participation in the project. We assume energy communities will also be connected to the public grid, organized as a legal entity and have only “smaller actors” as members.

The report also defines 4 archetypes (and 4 four sub-variants) in Section 6.2. These are intended to provide an illustrative set of types of energy community to facilitate discussion within the project and help align technology development. The main archetypes are (1) *Community-led local optimization communities*, focused on local optimization and with a single connection to the grid (2) *Virtual community-led local optimization communities*, with a virtual connection type, (3) *Business-led service-focused communities*, with a single connection to the grid and (4) *Virtual business-led service-focused communities*.

The report further summarizes insights on organisational models adopted by energy communities, end user engagement and roles, motivations of end users and their socio-economic profiles.

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