

# The current state of research on energy communities

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## Abstract-

The introduction of the Clean energy for all Europeans package by the European Union (EU) led to a significant boost of public and research interest in energy communities. However, since neither their definition nor their goals are clearly defined, there is a very broad field of research on this topic. This paper aims to classify existing research on energy communities and to analyze what this umbrella term looks like in the literature. First, a literature review is conducted with regard to energy communities that have a local scope and are community-owned. The analysis of the results leads to the determination of the following categories for the existing literature on energy communities: the terminology used to refer to energy communities, components of energy communities, and their characteristics and structure. The review affirms that space-saving and easily constructible components are used the most, with photovoltaics (PV) and storage at the forefront. Our results also show that a third-party aggregator can be a vital part of an energy community with various functions, from managing the community's energy flow and local market to trading energy with the grid. Taking this into consideration, we conclude that the use of aggregators is a good way to make the formation of energy communities easier, especially for people without an engineering background.

**Index Terms-** energy communities; community energy; renewable energy; distributed generation

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