

Study on Small and Medium Enterprises' Acceptance and Readiness To Engage in Renewable Energy Communities - A Polish Case with European Implications (SMARTER EC)

Renewable energy communities (RECs) are characterized by open and participatory governance, ensuring effective control by citizens, local authorities, and small and medium-sized enterprises (SMEs). REC is an entity whose main goal is to provide environmental, economic, or social benefits, such as energy efficiency, CO₂ emissions reduction, local economic support, and job creation. In REC, decision-making powers are linked to geographical proximity – its members must be located in close distance from each other. Specific proximity criteria are defined by each EU Member State. Furthermore, membership and decision-making rights are limited to private citizens, local authorities, or SMEs, provided that participation in a REC is not their main activity. The participation of SMEs operating mainly in the energy sector, such as utility companies and service providers, remains a subject of political debate.

So far, empirical studies on existing business models of energy communities in Europe have shown that traditional local communities mainly focus on producing renewable energy for the own needs of their members (Neska and Kowalska-Pyzalska, 2022). In contrast, REC variants offering more advanced services, such as demand flexibility or peer-to-peer trading, are still relatively rare (Kubli & Puranik, 2023; Reis et al., 2021). Analysis of these models in the context of communities involving SMEs seems particularly promising, as this segment of energy users may be more willing to participate financially than individual consumers. Additionally, recent studies indicate that the integration of SMEs with individual consumers and prosumers within energy communities can bring additional technical and economic benefits.

Currently, available empirical data regarding the readiness of stakeholders to participate in RECs is limited. Although SMEs have significant potential and play an important role in the energy transition, they are still underrepresented in research (Petrovich & Kubli, 2023). According to our knowledge, only a few empirical studies have been conducted in Europe, and practically none in Poland, that analyze the motivations and barriers to SME participation in RECs. The aim of this study is to fill this gap by analyzing the preferences of Polish SMEs regarding their involvement in energy communities. As part of the project, using empirical research among a representative sample of SMEs in Poland, we plan to **examine the readiness of Polish SMEs to participate in modern energy communities that integrate SMEs with individual consumers and prosumers**. In order to increase the international usability of the results, **a comparative framework will be developed that will allow the translation of findings from the Polish context into recommendations applicable in other EU countries**.

The specific objectives of the study include: (O1) assessment of SME awareness regarding the concept of REC and related modern technologies, (O2) identification of key attributes of energy communities relevant for SMEs, (O3) classification of SME types in Poland according to barriers and motivations for participation in REC, (O4) identification of effective external stimuli influencing SMEs' decisions to engage in REC and development of a comparative framework enabling the adaptation of results in other EU countries.

As part of the project, a mixed-methods approach will be applied. In particular, in-depth interviews with SMEs (N=50) will be conducted to identify types of SMEs, their level of knowledge about the REC concept, and their preferences regarding REC. Then, using the CAWI method, empirical data will be collected among N=900 Polish SMEs (divided into N=300 from the sectors: trade, industry, services). Qualitative and quantitative data will be integrated and interpreted according to the mixed-methods approach using MAXQDA software (in particular SME segmentation, analysis of their preferences, opinions, and motivations to participate in REC). The results will be translated into practical recommendations for stakeholders in Poland and the EU and incorporated into a comparative framework allowing their application in a broader European context.

This study will significantly contribute to the political discourse, academic literature, and practical development of RECs. Considering the limited empirical research on energy communities and the dominant focus on individual users and prosumers, this exploratory analysis of SME preferences in participating in energy communities has the potential to shape the future research agenda. Moreover, the study provides critical practice-oriented implications: insights into SME preferences can offer information for designing scalable business models and developing marketing and communication strategies to attract SMEs to energy communities.

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