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Abstract

STAKEHOLDERS INVOLVEMENT IN RENEWABLE ENERGY COMMUNITIES CO-OWNERSHIP

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The energy transition towards a more sustainable and fossil-free energy system still faces several challenges. In fact, the transformation from the current system to a decentralized renewable energy system requires a successful involvement of the communities to remodel the current energy production. As a solution, Renewable Energy Communities (RECs) can involve the stakeholders in an active financial participation labelled Consumer Stock Ownership Plans (CSOPs). By acquiring co-ownership in RE, the model places the stakeholders as producers and consumers of the system, making them "prosumers". Along these lines, an ongoing EU Horizon 2020 project called "Supporting Consumer co-Ownership in Renewable Energies" (SCORE) seeks to overcome the energy usage of fossil sources by promoting the creation of RECs and facilitating co-ownership, focusing on the inclusion of vulnerable groups. Into this framework, this thesis aims to involve stakeholders in RECs co-ownership. This thesis adopts a mixed methodology with an interdisciplinary framework. In this way, based on a stakeholders-oriented approach, the thesis follows three phases: (1) Assessment of different Key Performance Indicators (KPIs) to determine the best refurbishment alternative in terms of energy efficiency, considering a multi-criteria analysis with the PROMETHEE method; (2) Involvement of stakeholders in co-ownership models and evaluation of impacts regarding the creation of RECs, by applying the Storytelling method in two workshops with a WebGIS - Geographic Information system visualization tool; (3) Elaboration of recommendations to enable policies on prosumership at EU and local level. Finally, the thesis provides six interdisciplinary recommendations, going over social, environmental, and economic dimensions of sustainability under the phenomenon of prosumerism. The thesis outcomes can assist energy research and policy making to evaluate best scenarios for urban energy retrofiting; to understand stakeholders' visions about the project scenarios; and to build an effective model to involve the stakeholders in successful energy transitions. The conclusion gives an overall view on how to achieve better interdisciplinary practices when designing RECs with the involvement of stakeholders in co-ownership models by coupling different areas and multi-actors to support decision-making processes in urban energy planning. The proposed methodology has been applied to five pilot case studies of Susa Valley municipalities in Italy. However, the methodology can be applied to other contexts due to its flexibility. This thesis is part of the European H2020 SCORE project (<https://www.score-h2020.eu/>).

Keywords: renewable energy communities (RECs); stakeholders involvement; consumer co-ownership; interdisciplinary mixed methodology.

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