Which Living Lab processes for the Renewable Energy Communities? A pilot experimentation in NRRP-T4Y Research

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CONFERENCE SESSION

Please indicate the session in which you want your contribution to be considered (session's information here).

1. People and communities

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KEYWORDS

Please indicate up to five (5) keywords, arranged in alphabetical order.

Co-Design; Decarbonization; Emerging Technologies; Energy Communities; Living Lab

ABSTRACT

300 words minimum, 500 words maximum. No images

Renewable Energy communities (REC) are increasingly being recognized by the recent regulatory frameworks as entities capable to contribute significantly to decarbonisation of the built environment, through the adoption of renewable energy technologies and policies, that imply a wide and inclusive participation of communities in new technological cultures and energy systems. The aim of this contribution is to illustrate how a Living Lab (LL) process can trigger the design and activation of a REC in the municipality of Bova (Inner Area “Grecanica” of Reggio Calabria), within the LL activities already started for the NRRP Tech4You Pilot Project 4.7.1, which purpose is the management of information on the issues of structural and environmental "safety" of cultural and natural heritage of 2 pilot cases in this territorial context, through a “physical and digital” user-profiling platform. In the framework of RECs, LLs serve as real-life demonstrators, where community members actively can participate in the co-design and development of Renewable Energy Solutions (RES), to generate co-benefits (environmental, social and economic). This process is based on co-design and action-research methodologies, commonly used in the field of “Just Transition”, in order to engage citizens and researchers on environmental goals can be achieved, through open knowledge and energy “presuming” processes and technology innovations. The *first phase* concerns the construction of Data Information Content from case studies, identifying best practices and similar challenges at national and international level. The *second phase* concerns the mapping of the *operational phase* of the LL for REC: the activities will be defined inside the programme of the “Ecophigital” Tech4You LL, wherein, at this stage, the process will start by engaging the institutions and local community in recognizing needs and available resources through participatory laboratories, surveys and knowledge transfer events. In addition to this step, the studies of climate factors and the preliminary evaluation of photovoltaic electricity production in Bova by level of integration and type of technology used, have been processed through GIS and Regenerative Digital Design tools (radiation, sunlight analysis and studies) to direct RES performances on the 3 climate scenarios (2030, 2050, 2085). This activity is preparatory to next steps of the research: a) the activation of the LL facilities in Bova, as a physical space, where the Energy Community can be developed with the stakeholders and with the possibility of experimenting, transferring and sharing both the procedural and technological aspects on site; b) the mapping of buildings and spaces eligible for the installation of technologies that are more suited to such processes, currently available in terms of energy assets (solar and PV panels, batteries), measuring components, energy management systems and platforms, toolboxes (*emerging technologies*). In conclusion, this pilot experimentation aims to demonstrate how the integration of RECs through a Living Lab process, as for the NRRP Tech4You research, can become an exportable model of transformative impact for sustainable development, by combining co-design methodologies, action-research, and digital tools. The phased approach, from data construction to mapping operational phases, establishes a comprehensive foundation for REC activation, reinforcing the commitment to achieving "net zero" by 2050 through inclusive and innovative energy solutions.