SOCIALRES PROJECT – FOSTERING ENERGY DEMOCRACY THROUGH SOCIAL INNOVATION

Silvia Caneva[1], Pablo Alonso[1], Iban Lizarralde[2], Isabelle Valentin[2], Audrey Abi Akle[2], Mikhail Hamwi[2], Volker Kromrey[3], Dimitri Vedel[3], Annika Wotjen[3], Andreas Schneller[4], Lena Domröse[4], Alice Ferrari[5], Claudia Crippa[5], Eleanor Denny[6], James Carroll[6], Maria Regidor[7], Sofía Mulero[7], Iban Lacoste[8], Rodrigo Ruiz[9], Nuno Brito Jorge[10], Mariana Teixeira[10], Karl Harder[11], Tom Harwood[11], Tijana Šimek[12], Daniela Leonte[13], Mihai Policarp[13]

[1]WIP – RENEWABLE ENERGIES, [2]ESTIA INSTITUTE OF TECHNOLOGY, [3]BODENSEE-STIFTUNG / LAKE CONSTANCE FOUNDATION, [4]ADELPHI, [5]FONDAZIONE ICONS, [6]TRINITY COLLEGE DUBLIN, [7]CARTIF, [8]I-ENER, [9]ENERGETICA, [10]POWER PARITY, [11]ABUNDANCE, [12]REGEA, [13]TRACTEBEL

[1]WIP – RENEWABLE ENERGIES
Sylvensteinstrasse 2, 81369 Munich, Germany
Phone: +49 (0)89 720 12 733
Fax: +49 (0)89 720 12 791
silvia.caneva@wip-munich.de

ABSTRACT

SocialRES aims at fostering energy democracy through social innovations defined as cooperatives, aggregators of renewable energy and crowdfunding platforms. The photovoltaic technology is one of the most promising technology in terms of social acceptance since it can be adapted to a variety of surfaces in buildings [1] and can offer a competitive source for the electricity supply almost everywhere nowadays [2]. PV is therefore often included among the technologies to be financed through energy cooperatives and crowdfunding campaigns. Moreover, as decentralized source of renewable electricity, it is utilized in Peer to Peer (P2P) virtual platforms implemented by aggregators as a concrete alternative to the traditional utilities based on power plants supplied by fossil fuels. Small-scale decentralised PV systems can be considered as the utilities of the future, when managed by aggregators as Virtual Power Plants (VPPs). They will therefore represent a fundamental piece in the path towards energy democracy. In order to make this sustainable future possible, having in mind the urgency generated by the climate change, a disrupted shift is needed in terms of implementation of social innovations for the energy sector. SocialRES aims to devise effective ways of increasing social innovation leading to greater social acceptability of renewable energy systems. This is done by a better understanding of support structures for successful social innovations in the renewable energy sector such as renewable energy cooperatives, aggregators and crowdfunding platforms. These businesses facilitate consumers to take an active role in the energy sector. Through research excellence and co-creation of knowledge, SocialRES will develop socially innovative and inclusive strategies for the energy system of the future. SocialRES will supplement the existing fragmented data on social innovations with new understandings from businesses, end-users and stakeholders to provide a comprehensive evidence base for policy design. Innovative techniques are employed such as a Peer to Peer (P2P) crowd-investing for renewable energy sources projects, P2P lending and ***P2P virtual photovoltaic electricity platforms*** for aggregators. Within the SocialRES project, an innovative P2P photovoltaic virtual platform will be developed as a pilot software application in off-line mode and will facilitate the understanding about existing barriers within current electricity markets and policies. Experience will be accumulated related to the main issues with the common access for energy trades between different actors on the market: prosumers, consumers, balancing responsible party and distributed photovoltaic generators. SocialRES is a research and innovation project funded by the European Commission.

Keywords: Social innovation, Crowdfunding, Aggregation, Cooperatives

1 AIM AND APPROACH USED

The overall ambition of SocialRES is to close non-technological research gaps that impede the widespread uptake of social innovation business and service models in the European energy sector. Social innovations are defined "as new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. In other words, they are innovations that are not only good for society but also enhance society's capacity to act" [3].

SocialRES identifies the business models and services implemented by cooperatives, crowd-funders and aggregators, operating in the renewable energy sector, as the social innovations to be investigated. By creating a better understanding of socio-economic, socio-cultural, socio-political and gender factors, a more evidence-based regulatory, investment and policy landscape will be enabled for decision makers. This creates the essential environment for clean energy business and service models, which place ***consumers at centre stage in the energy system.***

The partners involved in the SocialRES project have been carefully selected in order to ensure the achievement of the project objectives and to maximise the scope of research and innovation involvement of the target group and key actors. The project's target group consists of providers of socially innovative business models and services such as crowdfunding platforms, cooperatives and aggregators, all of which have been directly involved in the SocialRES consortium as partners.

The SocialRES consortium brings together thirteen partners who have been chosen specifically for their expertise and experience to ensure the successful implementation of the novel research proposed in this project and to guarantee a widespread geographical coverage (Fig.1). The SocialRES project partners are briefly described in the following paragraph.

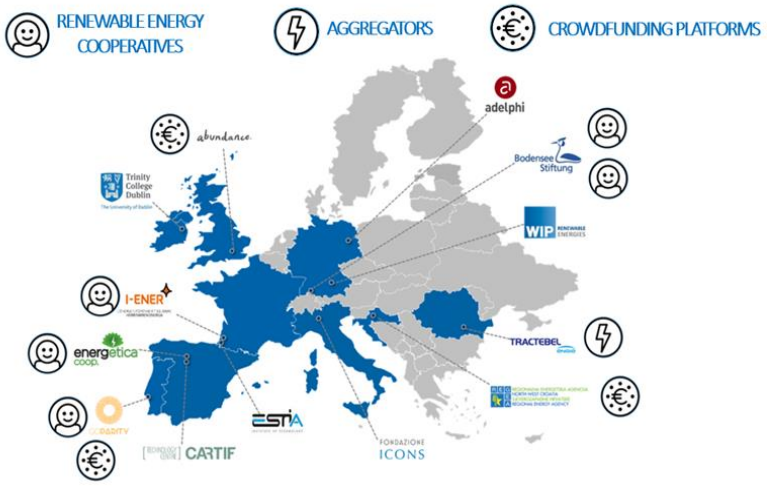

Figure 1 SocialRES geographical and social innovation coverage

1. WIP – Renewable Energies (WIP), based in Germany, the project coordinator.
2. ESTIA Institute of Technology (ESTIA), based in France, with extensive experience in research aspect of social innovation and innovative business models.
3. CARTIF, energy expert based in Spain.
4. Bodensee-Stiftung - Lake Constance Foundation (LCF), based in Germany, as networking and innovation expert and providers of case studies for RES cooperatives.
5. Adelphi, policy think tank based in Germany.
6. Fondazione iCons (ICONS), communication, dissemination and exploitation expert based in Italy.
7. Trinity College Dublin (TCD), University based in Ireland, with extensive experience in behavioural and energy economics, and consumer engagement.
8. I-ENER, RES cooperative based in France, involved in social innovation research projects.
9. EnergEtica, RES cooperative based in Spain.
10. Power Parity, RES cooperative and crowdfunding platform based in Portugal.
11. Abundance, RES crowdfunding platform based in United Kingdom.
12. REGEA, RES crowdfunding platform based in Croatia.
13. Tractebel, RES aggregator based in Romania.

2 SCIENTIFIC INNOVATION AND RELEVANCE

The SocialRES innovation potential is based on devising more effective ways of increasing social innovation, leading to greater social acceptability as well as more durable governance arrangements and socioeconomic benefits. ***SocialRES considers the realisation of energy democracy as fundamental in the transition towards a sustainable development. Social innovations are the decisive tool in this transition as they give citizens the chance to become part of a community aimed at fostering energy democracy***. Citizens clearly need to be researched more deeply and implemented in a broader context to become a real asset for the Energy Union.

Cooperatives, crowdfunding platforms and aggregators are highly innovative and the driving forces for the energy transition in Europe. However, the activities of those actors are limited due to policy regulations, economical restrictions, or the lack of professional support.

SocialRES will bring together all three forms of social innovation actors to create a new momentum and offer new and highly innovative business cases. The innovative value of the SocialRES project is represented by the fact that crowd-funders, cooperatives, and aggregators will define in the project ***new ways of cooperation leading to new business models and services of social innovations for the renewable energy sector***. Combining business models and services of those three organisations allows SocialRES to cover social (cooperatives), economic (crowdfunding) and technological (aggregator) aspects of the clean energy transition, whilst analysing related socioeconomic, gender, sociocultural, and socio-political issues. SocialRES aims to comparatively analyze the success and contribution potential of the mentioned social innovations and to highlight their added value to a broad audience. To do so, the following case studies will be analyzed:

- Abundance, a crowdfunding platform cooperating with Swindon Borough Council for interesting projects such as building and financing of a 4.8MW ground mounted solar park and the first Council low carbon project.
- EnergEtica, a cooperative counting more than 1100 members and 1300 electricity supply contracts. This cooperative owns 20% of a mini-hydroelectric power plant of 1 MW.
- I-ENER, a cooperative focusing on the development of renewable energy projects, mainly the production of electricity through photovoltaic and heat through biomass.
- GoParity providing the case study of Power Purchase Agreement (PPA) and the RES crowdfunding P2P lending case study for the Lisbon Swedish School.
- Lake Constance Foundation, a cluster of two German citizen energy cooperatives in Baden-Württemberg: Bioenergy Villages and Bürgerenergie Bodensee (Civil energy cooperatives at Lake Constance).
- REGEA providing a P2P crowdfunding investment model to finance an installation of a 30kW PV system on the rooftop of a business center owned by the City of Krizevci (Croatia).
- Tractebel providing a case study consisting in the development of a virtual energy transaction P2P platform based on small-scale rooftop PV systems designed to address the needs of the local community and improve energy transactions at the level of individual households in Bucharest.

Figure 2 Contribution potential of social innovation

The combination of the investigated social innovation schemes will result in advancement and an increased level of cooperation between cooperatives, crowd-funding platforms, and aggregators (Fig. 2). There are no European projects or initiatives aiming at combining the social innovation of cooperatives, crowd-funding platforms, and aggregators.

3 PRELIMINARY RESULTS AND CONCLUSIONS

During the expected duration of project activities, from May 2019 to August 2022, SocialRES will develop socially innovative and inclusive strategies for the energy system of the future. SocialRES will supplement the existing fragmented data with new understandings from businesses, end-users, and stakeholders to provide a comprehensive evidence base for policy design.

Among the expected results, SocialRES will collect new data through surveys from the 9 social innovation case studies described in the previous session and 6,000 citizens across Europe. SocialRES will develop new business and service models, define a vision for the future and will contribute to an extensive stakeholder and policy engagement. The preliminary results of the survey carried out for Ireland are available in the next figures below with the related addressed questions.

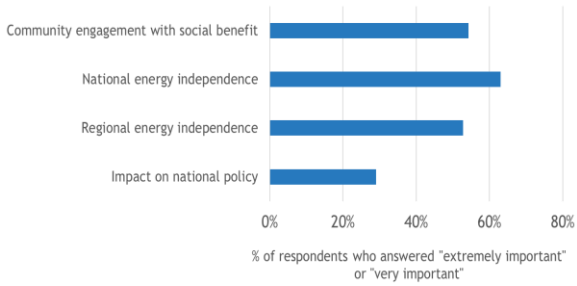

Figure 3 What aspects of renewable energy projects are important to you?

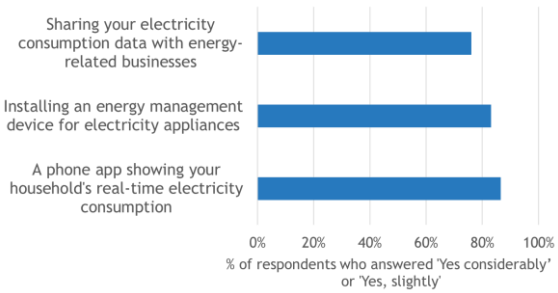

Figure 4 Would you be interested in the following energy related aspects?

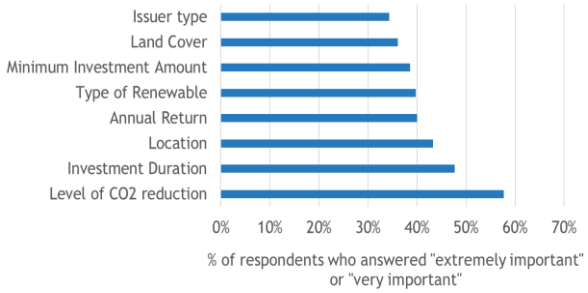

Figure 5 When picking your preferred crowdfunded project, how important were each of the following aspects?

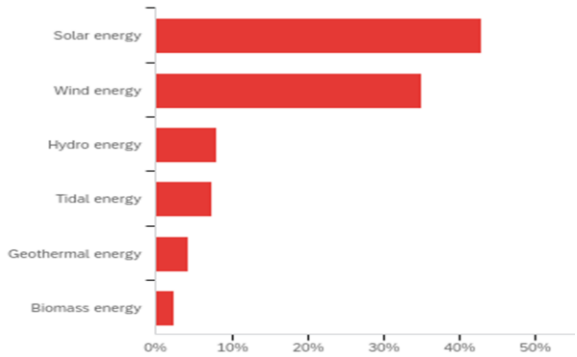

Figure 6 From this list of six renewable energy types, which would you most like to see installed in your region?

In parallel to the work carried out with the surveys, approximately 200 smart meters have been installed to collect data from the customers of selected case studies providers to carry out a behavioural analysis of the users involved in social innovation.

The project will employ innovative techniques such as a Peer to Peer (P2P) energy trading platform similar to the Brooklyn Microgrid Community (Fig. 7).

Figure 7 PV system connected to the Brooklyn Microgrid Community, New York, USA

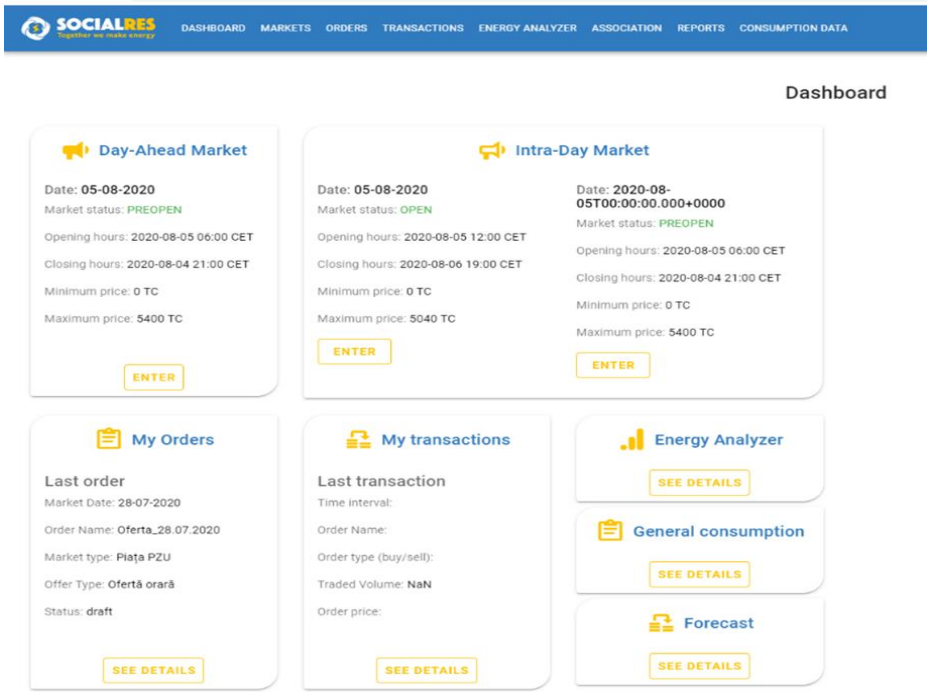

Figure 8 SocialRES P2P energy trading platform developed by Tractebel

The SocialRES P2P energy trading platform has recently been finalized by Tractebel (Fig. 8) and will be ready in the upcoming months to be tested as a pilot in real-life condition.

In addition to that, an analysis has been carried out among the managers of the case studies providers with the aim to define the barriers and motivation that drive citizen, investors and relevant stakeholders to contribute in social innovation for a sustainable development. The preliminary results show that the main barriers are:

- Most relevant: passivity of society
- Relevant:
  - Absence of legal framework
  - Amministrative and bureaucratic barriers
  - Lack of access to information needed
- Less relevant: passivity and low level of stakeholder support
- Not so relevant:
  - Lack of experience in carrying out social innovation projects
  - Lack of funding
- Not relevant: deficiency of society to open up the experience of other groups

The criteria for citizens to join innovation project in the energy sector have been defined as:

- Most relevant:
  - Economical
  - Ecological
- Relevant: territory development
- Less relevant:
  - Personal development
  - Political
  - Social relationship

The results of this analysis are available in the deliverable "Database of driving factors in social innovation in the energy sector" available on the SocialRES website.

Moreover, SWOT workshops have been implemented among the case studies providers in order to define the Status Quo of their social innovation and investigate possibility for co-creation. The outcomes of these workshops have been summarized in the deliverable "SWOT analyses for cooperatives, crowdfunding platforms and aggregators of renewable energies" also available on the SocialRES website.

4 REFERENCES

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