

# New Clean Energy Communities in a Changing European Energy System (NEWCOMERS)

*Summary case study report*

## Solidarity & Energy Social Housing

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## About NEWCOMERS

NEWCOMERS is an international research project that aims to deliver practical recommendations about how the European Union as well as national and local governments can support the development and growth of energy communities across Europe. The project involves a consortium of eight partners across Six European Countries: Sweden, UK, The Netherlands, Germany, Slovenia and Italy. For more information, please visit our website: <https://www.newcomersh2020.eu/>

## About this document

This case study report provides a short summary of a full case study report on Solidarity & Energy Social Housing (SO\_EN) a transdisciplinary pilot project aiming to establish a place-based energy community located in an abandoned low-income neighbourhood in Messina, Scilly. The full case study was guided by 14 research questions, across four themes. The themes and questions are presented in the following table.

Theme	Research questions
<b>Actors</b>	Who is involved in the EC and what are their roles? What knowledge and skills are needed to develop and operate ECs?
<b>Technologies</b>	What technologies are employed in ECs? What are the advantages and disadvantages of certain novel technologies, including smart applications? What implications do they have for the viability of different EC BMs? What influences the choice of technologies employed in ECs?
<b>Values</b>	What forms of value do case study communities currently generate and for whom? What values do ECs provide to the energy systems they are connected to?
<b>Business models</b>	How are actors and technologies connected to deliver products or services? How do ECs emerge? How do they operate? How replicable and/or scalable are ECs likely to be? How might scaling/replication occur?

This summary document focuses on the emergence and operation of SO\_EN, showing how it creates and delivers different types of value to citizens, consumers, and energy systems, as a business model. It concludes with a brief discussion of the potential for SO\_EN to grow or to be copied in new contexts. It presents – in a highly reduced format – the interpretation of the researchers. It does not necessarily reflect the opinion of those involved in its development and operation. Any factual errors remain the responsibility of the authors.

## Suggested Citation:

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Contact: [paula.hansen@ouce.ox.ac.uk](mailto:paula.hansen@ouce.ox.ac.uk)



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## Solidarity & Energy Social Housing

Solidarity & Energy Social Housing (SO\_EN) is a transdisciplinary pilot project aiming to establish a place-based energy community located in an abandoned low-income neighbourhood in Messina, called Fondo Saccà. The primary objective is to provide an equitable means of accessing electricity from renewable sources of generation to socially disadvantaged tenants. To achieve this, one idea is to develop an embedded network configuration (a micro-grid) which would link up solar PV and battery storage technology to six domestic units. An innovative algorithm has been designed to take residents' health or socioeconomic situations into account in electricity pricing and billing.

### Emergence

SO\_EN Social Housing is a pilot project being developed by the Community Foundation of Messina (Fondazione di Comunità) (FdC) in collaboration with SO\_EN S.p.A. (an energy service company), and a range of research and other partners. The pilot's main objective is to test novel energy generation and storage technology, and an innovative cost distribution/ accounting system (referred to as 'social algorithm') which together enable the equitable sharing of solar energy. The technologies are being implemented in a purpose-built apartment building where units will be rented out to socially disadvantaged tenants.

The trial is embedded within the Capacity Project. The Capacity Project was set up by the Community Foundation of Messina in partnership with the European Society of Ethical and Alternative Finance. It is a large-scale, multi-pronged urban regeneration and redevelopment project to transform Fondo Saccà, a derelict low-income neighbourhood in Messina. Figure 1 illustrates the key linkages between actors involved in the Capacity Project and the SO\_EN Social Housing trial.

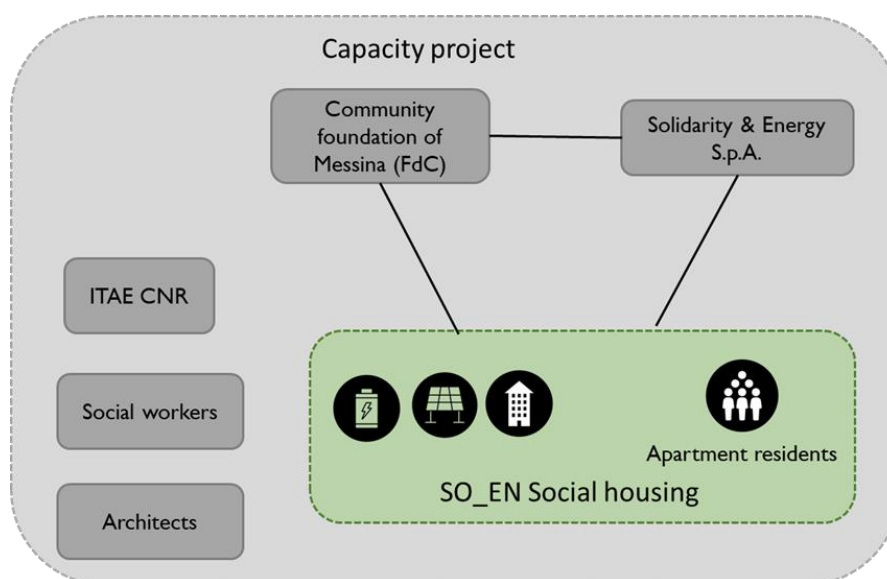


Figure 1: Central actors and relationships within the SO\_EN social housing project

Before the current energy sharing trial began, an earlier phase of the Capacity Project was concerned with the testing of methods to integrate environmental sustainability into architecture and engineering. Two experiments were carried out which informed the choice of technologies adopted in the SO\_EN Social Housing trial.

The project has been supported financially by banks and other institutions such as the CARIPLO Foundation, Fondazione con il Sud, ENEL Foundation, and Caritas Foundation. Two of the units will be funded by the Capacity project which is funded by the Italian government.

In 2020 new regulation came into force that offers new possibilities for collective self-consumption and/or the creation of energy communities. At the start of 2021 the project team began evaluating alternative organisational structures to make the best use of the incentives available within the new scheme.

## Operation

One avenue to create and deliver value to members being discussed at the start of 2021 was operating the community through an energy service company (ESCO) model (Figure 2). Within this model SO\_EN S.p.A would be expected to operate as an ESCO, managing onsite generation and storage assets to maximise collective self-consumption. Residents would be billed via energy service contracts according to the ‘social algorithm’ developed by ITAE CNR (Institute of Advanced Technologies for Energy). FdC would remain the owner of the apartments (and receive rents) and the energy assets. A single meter point to the public grid would measure collective electricity imports and exports and a bi-lateral contract between SO\_EN S.p.A and a supplier would be used to deliver any additional electricity required. The supplier would also take care of all regulatory compliance issues.

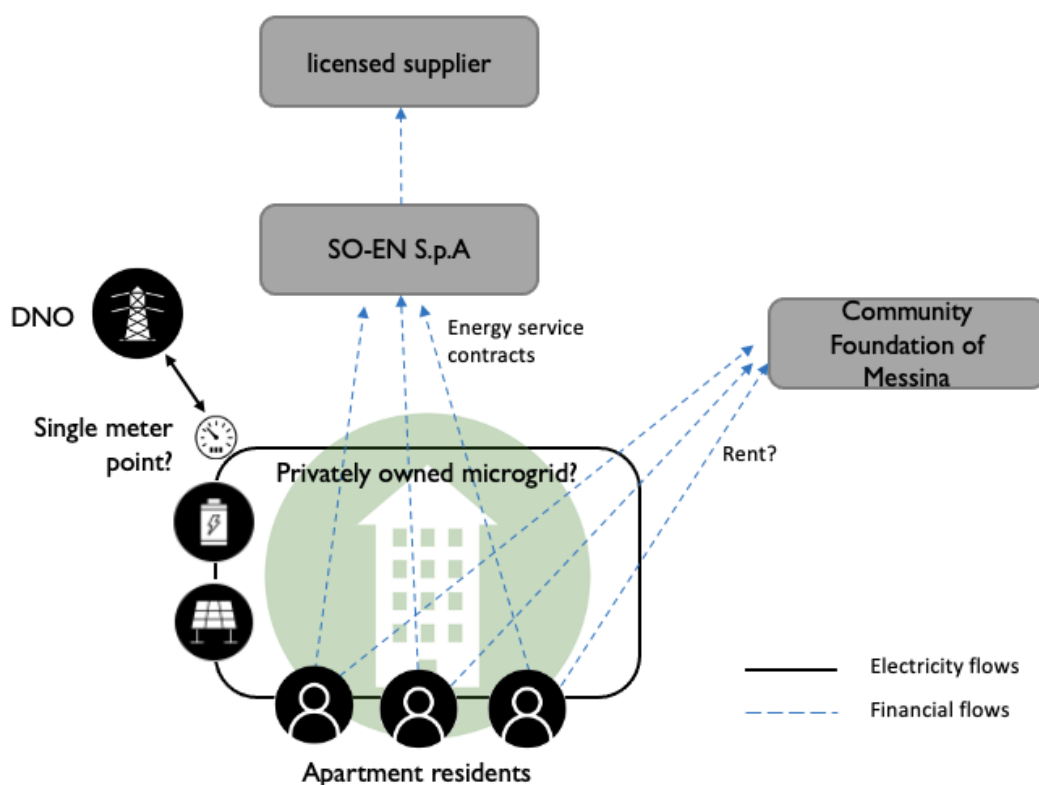


Figure 2: Primary electricity and financial flows in the SO\_EN social housing project

## Business model

The resulting business model would take on a networked structure, with multiple actors undertaking interdependent activities to create and deliver value to members. SO\_EN S.p.A would act as the focal energy business with contractual links between residents and a supplier as well as operational links to FdC.

The primary value proposition or service to members can be summarised as collective, equitable energy services. Forefront in this offer is the promise to take residents’ health or socioeconomic situations into account in electricity pricing and billing. Removing upfront costs to residents and limiting the extent of participation in the business activities, such as requiring changes in behaviour to deliver value, both contribute to making the offer accessible to more marginalised sections of society. Beyond this the project offers to improve social equity, the opportunity for socially marginalised community members to access higher quality housing and clean energy, savings on electricity bills and participation in the energy transition.

To create and deliver value the pilot provides secondary value propositions (services) to organisations partnering in the capacity project. For the FdC it offers a means to deliver urban regeneration and development. The pilot also offers value to the energy system it is embedded within. Its principal benefit being reduced demand on the grid via collective self-consumption from building-integrated generation and storage.

## Prospects

Whilst reliant on a supplier for provision of all electricity not generated onsite, the pilot could reduce the risk the supplier faces when reconciling expected demand with actual demand, due to advanced storage technologies employed. The pilot could also offer services to the distribution network, depending on local conditions. Comprised of six apartment blocks the pilot remains relatively small in terms of delivering a range of ancillary services to the local distribution network (services that help grid operators maintain a reliable electricity systems). Its capacity to deliver such services will depend on the configuration of the pilot's infrastructure (its capacity to deliver ancillary services) and whether the local distribution network is configured to call upon and reward the delivery of ancillary services.

More broadly, the pilot presents a novel model that, if it proves viable, could be replicated within Italy and beyond. A central question for its future viability concerns the funding of initial capital investment costs and whether the novel allocation of costs to residents (billing) covers the upfront costs associated with the pilot, whilst providing economic and social benefits to participants.