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Abbreviations and Acronyms

ACRONYM	DESCRIPTION
CCCS	Communauté de Communes Coeur de Savoie.
CSPCR	Centro Social Paroquial Cristo Rei
DGEG	National Energy and Geology Directorate
DMP	Data Management Plan
DSO	Distribution System Operator
EDF	Électricité de France SA is a French multinational electric utility company owned by the government of France.
EDF-OA	EDF OA - also known as EDF Obligation d'Achat - is EDF's wholly-owned subsidiary responsible for buying photovoltaic electricity from producers, whether private individuals or professionals.
FCL	Federconsumatori Lazio. The third-party organisation involved in the implementation of the energy communities of the pilot in Roma.
FTS	Forum Terzo Settore
GDPR	General Data Protection Regulation
GIS	Geographic information System
HERB	Holistic Energy Efficient Retrofitting of Residential Building
IEPAW	International Energy Poverty Action Week
IEA	Individual Energy Advice
IMHAB	Municipal Institute of Housing and Renovation
OPAC	Public Planning and Construction Office
OPAH	Housing improvement program
PV	Photovoltaic
RCP	Roma Capitale. The Italian local authority, which is a pilot partner in the Sun4All project.
RECS	Solidarity Renewable Energy Communities
RECs	Renewable Energy Communities
SECAP	Sustainable Energy and Climate Action Plan
SOLIHA	Solidaire pour l'habitat. SOLIHA is a French organisation that works on renovation projects for vulnerable households at local levels. SOLIHA is the third party chosen by Cœur de Savoie to implement the local housing improvement programme.
SPD	Social Policies Department
Sun4All	Eurosolar for all: energy communities for a fair energy transition in Europe
WS	Workshop

Executive summary

The aim of the Sun4All project is to experiment with the implementation of energy communities for an equitable energy transition in Europe, by lowering the energy bills of the beneficiaries and empowering them to tackle energy poverty. The project started in October 2021, with implementation scheduled to start by Summer 2022 for a 1st round of pilot tests in the 4 areas of, Barcelona (Spain), Coeur de Savoie (France), Almada (Portugal), and Rome (Italy). The second pilots were scheduled to be implemented in the summer of 2024. The project ends in September 2024, when this report was last updated, but the models are intended to continue after the project.

During the 2 years of the experimentations, different models were implemented to reduce the energy bills of households in energy poverty and encourage them to get involved in the energy transition. The first model chosen in Barcelona, Almada and Coeur de Savoie (for the second pilot) is collective self-consumption with households. The other model used in Rome and Coeur de Savoie (for the 1st pilot) is that of redistributing the profits from the production of the cities' photovoltaic power plants. The photovoltaic plants all belong to the local authorities.

More than 500 vulnerable households have already benefited from financial assistance during the project or will do so in the coming months. More than 100 activities have been carried out with these beneficiaries or other citizens in the regions concerned, to raise their awareness and provide knowledge on energy transition issues or give them practical advice on how to save energy, individually or collectively. These are concrete and major achievements of the Sun4All project.

The lessons learnt are also profitable results, useful for the future implementation and reproduction of the model for a fair energy transition. Each of the cities has paved the way and helped to improve the processes so that collective self-consumption models can be put into practice with the utility companies or the administrative services in each country. It was also a key priority during the project to maintain trust and relationships with beneficiaries, particularly in cases where the reduction in bills took a long time to materialise, by establishing a close and tailored relationship with the people identified for the project and/or by relying on existing networks and social workers or local associations. The size of the photovoltaic installation is also crucial in order to provide substantial support to beneficiaries. To help with this choice, Sun4All's technical partners made an important contribution by helping to define the characteristics of the models. To finish on feedback, given the significant human and financial investment involved in this type of project, ensuring and stimulating political will but also the use of existing facilities, skills in technical or social matters, networks and human resources are also essential prerequisites for launching and succeeding this type of programme.

With regard to monitoring pilot results, and also to help find solutions to the problems encountered by the cities, INES and Ecoserveis regularly followed-up implementation through meetings and workshops. They were assisted in this by the impact assessment carried out by the University of Stavanger, the results of which are detailed in another report on the *Impact Assessment of Sun4All programme in Pilot Cities*.

The various lessons learned from the implementation of the pilots as part of the Sun4All project will be of great use in promoting effective and appropriate replications.

1. Introduction

The Sun4All project consists of experimenting in cities across the European Union a scheme to help vulnerable households gain access to renewable energy, while reducing their energy bills and giving them the means to fight energy poverty.

Spanning three years from September 2021, the project involved four local authorities: Barcelona (Spain), Cœur de Savoie (France), Almada (Portugal), and Rome (Italy). The first year focused on developing pilot models and organizing the project, with the initial piloting phase beginning in the four cities in the Summer of 2022. The second phase commenced in Summer 2023, leading up to the project's conclusion in September 2024.

This document presents the outcomes of the experimentation in these cities, particularly the results from the second pilot phase during the final project year. An interim report on the first year of implementation was published in September 2023. This report summarizes the key findings from the pilot cities, addresses the main challenges encountered, and provides solutions to guide other European cities interested in replicating parts or all of the Sun4All program.

2. Methodology

2.1. Reminder of the objectives of the project

The testing period in the 4 pilot cities was scheduled to run from August 2022 to June 2024, divided into two piloting phases for each city.

The cities aimed to activate Sun4All by engaging 1.200 vulnerable consumers and reaching more than 7.200 vulnerable consumers. For a detailed overview, please see Table 1.

For each Sun4All Pilot phase (12 months)	During the Sun4All pilots' time (after 24 months and 2 pilots)
50 vulnerable households as beneficiaries 150 vulnerable consumers engaged 750 vulnerable consumers involved	100 vulnerable households as beneficiaries 300 vulnerable consumers engaged 1.500 consumers involved 30.000 citizens reached
25kWp of PV dedicated to the project	

Table 1: Summary of the project's quantitative objectives

The implementation in the pilot cities has been regularly monitored during follow-up meetings as per the timeline shown in Table 2.

Targets	Goals per pilot and per city
# Households recruited	50 households (150 consumers) *
# Individual energy advice sessions	>= 1 session / household*
# Workshops	12 workshops *
# PV plant Visits	2 visits *
# Mentors recruited	25 mentors
€ how much aid the beneficiaries receive	No defined target
kWp Power from PV dedicated to the project	25kWp - 0,5kWp/b
€ Investments in sustainable energy	190.000 € investments in sustainable energy for all pilots

Table 2: Monitoring table for pilot objectives

* During all the 1st pilot: 750 vulnerable consumers had to be involved per city, by various means (e.g., visits, workshops, information-sharing).

2.2. Evaluation of the pilots

Evaluation actions were led by the University of Stavanger.

See the results and assessment in the report on Impact Assessment of Sun4All programme in Pilot Cities. See, which can be found in the Sun4All 'resources' webpage: <https://sunforall.eu/resources>

2.3. Internal control plan

To monitor the implementation, a first meeting occurred in July 2022, mostly to recall the objectives of the implementation and agree on a mode of coordination. The purpose of the 1st meeting was to detect and fix the implementation challenges and to share each pilot cities' experience.

A progress update was presented at the Cœur de Savoie Consortium meeting in January 2023 and also during the Consortium meeting in Almada in June 2023. Then in Roma in January 2024 and in Brussels in June 2024.

Moreover, follow-up meetings were organised between the project pilots and INES (the implementation coordinator), in a way that every pilot could update the status of the achievements of all the quantified goals, explaining what the achievements or satisfactions were, the main challenges and risks, and also the planned solutions and the next steps. These meetings were essential to share the good practices and questions between consortium partners and to appreciate the main achievements to keep moving forward. Three of these meetings were held at the end of 2022, five in 2023, and one in 2024. These follow-up meetings were completed with status during the monthly meetings or periodic consortium meetings of the project.

The status of the impact assessment was also presented and discussed during each meeting if necessary.

Results and analysis of the implementation

In this section, the results for each pilot city are presented, dated from September 2024. Note that a short description of the model is given as an introduction of each pilot cities, but the full description of the model can be found in the project website <https://sunforall.eu>. The aim here is to present the description and results of the pilots. The good practices and lessons learned conclude each pilot city overview.



Figure 1: Map of the Sun4All pilot locations

3. Sun4All in Barcelona, Spain

3.1. The 1st Pilot implementation

3.1.1. Description of the 1st pilot model

The first year's model is based on shared self-consumption in two social housing blocks managed by IMHAB (Municipal Institute of Housing and Renovation). Sun4All beneficiaries will consume energy from a solar photovoltaic system on their own roof. The idea of the model is that beneficiaries will see the benefits directly on their bill, as the production of solar energy means a reduction in consumption on the electricity grid. In addition, surplus energy is purchased by the electricity company, which also has an impact on the electricity bill. Two buildings were part of the 1st pilot model. The difference between these two buildings is the moment when the beneficiaries started living in the building, which has involved applying different procedures in each building, both during the recruitment of beneficiaries and also during the activation of self-consumption.

The “Borrell” building (1st IMHAB building) was located in Eixample district and has been in use since 2021, when different families from Barcelona started living in 35 dwellings, before Sun4All project started. Since beneficiaries start living in the building, photovoltaic energy has only been used for the lift and staircase lighting. After a few months, all of them joined the project and signed the documentation needed to participate in Sun4All.

The “Borrassà” building (2nd IMHAB building) was located in Sant Martí district. Beneficiaries started living in these buildings in March 2023, when the project had already started, so the recruitment process has been different and also in the self-consumption activation process, since Sun4All’s role started earlier in order to speed up the procedures.

The model used in Barcelona, which involves sharing the energy of areas owned by the municipality, is explained in Figure 2 below.

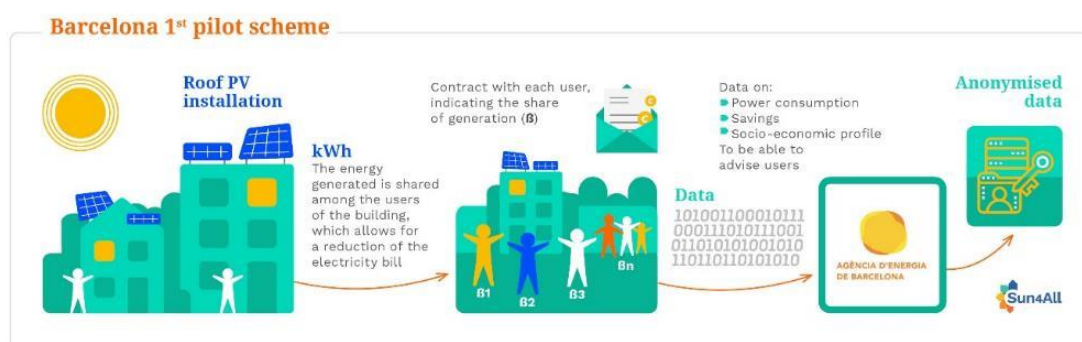


Figure 2: Barcelona pilot scheme

3.1.2. Results of the 1st pilot

Concentrated in two buildings, 82 households were recruited for the first pilot year in Barcelona, more than the 50 planned for the project for this first period.

All workshops and visits of PV installation designed in the Community Workplan have been carried out. The community workplan for each building included: 4 workshops on energy issues (1-Energy bills optimisation, 2-Energy efficiency at home, 3-Self-consumption and energy communities' theoretical session, 4-Self-consumption and energy communities practice session), 1 visit to the building PV installation, the energy kit and one individual energy advice session.

22 beneficiaries were recruited to be mentors for beneficiaries of the 2nd pilot.

Almost all objectives for the first pilot have been met. However, it has been a long process, in human resources and time, to validate the self-consumption model with some utility companies, as it is a relatively new procedure in Spain. Some companies were unaware of the current national regulations and others did not have their software prepared to activate the self-consumption option. Finally, those companies that did offer the self-consumption option, request the beneficiaries for more documentation than necessary from national regulation, which made it extremely difficult for the beneficiaries to be empowered to carry out this procedure on their own. As a result, all the self-consumption bureaucracy with the utility companies was done by Sun4All pilot.

Finally, the last issue to be resolved was the delay on the activation of self-consumption contracts. The beneficiaries were not able to receive the energy sharing in their electric bills until 12 months after completing the procedure with the utility companies because of a problem with the electricity company. Due to these delays, beneficiaries were unable to benefit from energy sharing since the beginning of the activation, even though the PV installation was running and producing power. This also affected the bond of trust that was generated at the beginning of the project between the beneficiaries and the Sun4All technicians, which made it difficult to maintain the motivation of the beneficiaries during the project, who did not see their first reduction in their energy bill until 2024.

The results of the implementation at the beginning of September 2023 are detailed in tables 3 and 4 below.

Start of the 1st pilot: 01/09/2022

Targets	Results <i>in date of September 2024</i>	Goals / pilot / city (Total 1st year)
# Households recruited	35 households (out of 35)	50 households
# Individual energy advice sessions	First energy advice sessions done at the end of the Bill Optimisation Workshop. Continuous energy advice to manage the activation of Self-consumption by phone and at the end of each workshop. Money calculations were done to inform pending billing amount to each beneficiary that asked for it (18 people). Families informed and an assessment on splitting these bills as requested by beneficiaries. Started to receive bills in April 2024 and working on case-to-case basis to split bills if necessary. Energy Kits: 31 energy kits have been delivered.	>= 1 session / household
# Workshops	4 out of 4 workshops done. 1 st workshop on Energy Bill Optimisation 2 nd workshop on Energy efficiency at home. 3 rd workshop on Self-consumption and energy communities. 4 th workshop on Advanced self-consumption and distribution company issues.	4 workshops /building (total 12 workshops for beneficiaries and 12 workshop for citizens)
# Visits	6 visits. One visit with beneficiaries during the recruitment session (June 2022); Two visits with citizens to the PV installation. (October 2022, June 2023).; Two visit with Energy Advisor Points Workers (November 2022, October 2023); One visit with CoP Members (October 2023)	1 visit
# Mentors recruited	11 mentors recruited.	25 mentors (12 as an updated target)
€ how much aid the beneficiaries receive	First beneficiaries started receiving electric bills after 12 months without receiving them since the activation of self-consumption contract. The first bills didn't include the energy sharing, but finally some beneficiaries started receiving bills with the self-consumption included. Therefore, the savings couldn't be quantified. From now on we can start to analyse savings.	No defined target
kWp Power from PV dedicated to the project	11,76 kW.	25kWp
€ Investments in sustainable energy	24.867 € (excluding VAT).	190.000 € investments in sustainable energy for all pilots

Table 3: Results of the 1st pilot (Building 1) in Barcelona - Quantified Goals

Start of the 1st pilot: 31/03/2023

Targets	Results <i>in date of September 2024</i>	Goals / pilot / city (Total 1st year)
# Households recruited	47 households (out of 48).	50 households
# Individual energy advice sessions	First energy advice sessions done at the end of the Bill Optimisation Workshop. Continuous energy advice to manage the activation of Self-consumption by phone and at the end of each workshop. Money calculations were done to inform pending billing amount to each beneficiary that asked for it (20 people). Families informed and assessment on splitting these bills as requested by beneficiaries. Started to receive bills in April 2024 and working on case-to-case basis to split bills if necessary. Energy Kits: 32 energy kits have been delivered.	>= 1 session / household
# Workshops	4 out of 4 workshops done. 1 st workshop on Energy Bill Optimisation 2 nd workshop on Energy efficiency at home. 3 rd workshop on Self-consumption and energy communities. 4 th workshop on Advanced self-consumption and distribution company issues.	4 workshops /building (total 12 workshops for beneficiaries and 12 workshop for citizens)
# Visits	1 visit. One visit with beneficiaries during the recruitment session (March 2023).	1 visit
# Mentors recruited	11 mentors recruited.	25 mentors (12 mentors as an updated target)
€ how much aid the beneficiaries receive	First beneficiaries started receiving electric bills after not having received any since they started living in the building. The first bills didn't include the energy sharing, but finally some beneficiaries started receiving bills with the self-consumption included. Therefore, the savings couldn't be quantified. From now on we can start to analyse savings.	No defined target
kWp Power from PV dedicated to the project	24,75kWp.	25kWp
€ Investments in sustainable energy	33.344 € (excluding VAT).	190.000 € investments in sustainable energy for all pilots

Table 4: Results of the 1st pilot (Building 2) in Barcelona - Quantified Goals

3.2. The 2nd Pilot implementation

3.2.1. Description of the 2nd pilot model

Second year pilot rely on the same model than 1st pilot. The idea was to replicate and improve the procedure carried out during Building 2 of the first pilot, but due to problems with the PV installation legalisation, the activation of self-consumption could not be carried out at the same time as the beneficiaries started living in the building. For this reason, this building could be considered similar to Building 1 in terms of the time when the beneficiaries start living in the building, but the lessons learned from Building 2 have been applied, replicating its procedures for collecting documentation from beneficiaries during the signing of rental contracts.

Only one building was part of the 2nd pilot model. **“Escolapi Cancer” building (3rd IMHAB building)**: was located in Nou Barris district. The first group of beneficiaries started living in the building between April and May 2023, and more beneficiaries started living during 2023. For this building, there were 47 dwellings, and the financial scheme was same as for the Borrell or Borrassà Buildings, which is a shared self-consumption from PV modules installed on the roof of the building.

“Pergoles” in public space (owned by city council): Barcelona pilot tried to have a second model that relied on a new Barcelona City Council Project, the Self-Consumption Service (Servei d’Autoconsum), that was expected to start in late Autumn 2023. But due to government changes the project was temporarily paralyzed. This new model will be based in a solar PV installation in public space “pergoles” owned by city council. Barcelona citizens will pay a small tax to get energy at low cost from different PV installation and be part of the Self-Consumption Service. Sun4All project was going to contribute by giving energy advice to 41 potential vulnerable citizens from two “Pergoles” and help them to become part of the new local Service. Outside the scope of the Sun4All project, when the new service will be launched, ALEB will work to incorporate the knowledge acquired in Sun4All project. There is no set date for launching the service.

3.2.2. Results of the 2nd pilot

An informative session was held in July 2023 and 24 beneficiaries joined the project. New dwellers started living in the building after summer 2023, so 7 new beneficiaries were asked to join the project.

The main difficulty encountered in this building is that one year after beneficiaries joined the project, the process of activating self-consumption with the utilities has still not been carried out. This has meant that contact with the families has been less intense, and it has been difficult to maintain the interest generated at the beginning of the project.

All workshops and visits of PV installation designed in the Community Workplan have been carried out. The community workplan for each building included: 4

workshops on energy issues (1-Energy bills optimisation, 2-Energy efficiency at home, 3- How to manage Aerothermia system, 4-Self-consumption and energy communities theoretical and practice session), 1 visit to the building PV installation, the energy kit and one individual energy advice session. The activities of the workplan have been spaced out more while waiting for the installation to be legalised. Since it will not be possible to carry out the activation procedures within the project period, ALEB will be responsible for managing this activation with beneficiaries outside the project period. Once the solar PV installation is completed and legalised, the bureaucracy to activate the self-consumption will be carried out.

The results of the 2nd pilot in Barcelona are detailed in the Table 5.

Start of 2nd pilot: 19/07/2023

Targets	Results <i>in date of September 2024</i>	Goals / pilot / city
# Households recruited	31 beneficiaries (out of 34)	50 households
# Individual energy advice sessions	First energy advice sessions done at the end of the Energy Efficiency at home. Bill Optimisation Workshop was done during the mentorship session. Energy Kits: 29 energy kits have been delivered.	>= 1 session / household
# Workshops	4 out of 4 workshops done with beneficiaries. 1st workshop on Energy efficiency at home. 2nd workshop on Energy Bill Optimisation 3rd workshop on Aerothermia. 4th workshop on self-consumption and distribution company issues.	4 workshops /building (total 12 workshops for beneficiaries and 12 workshops for citizens)
# Workshops	19 workshops done with general citizens: <ul style="list-style-type: none"> - 6 workshops on Climate resilience. - 12 Workshops for students held at institutes that have PV installations on their roofs. - 1 Children's activity to build recycled solar toy house. 	12 workshops for citizens
# Visits	1 visit. One visit with beneficiaries during the recruitment session (July 2023).	2 visits
€ how much aid the beneficiaries receive	Bureaucracy to activate self-consumption has not started.	No defined target
kWp Power from PV dedicated to the project	36kWp	25kWp
€ Investments in sustainable energy	53.462 € (excluding VAT)	190.000 € investments in sustainable energy for all pilots

Table 5: Results of the 2nd pilot in Barcelona - Quantified Goals

3.3. Activities implemented with beneficiaries

Activities were organised during the project to inform beneficiaries about energy savings, train them and motivate them about the fair energy transition, its challenges and its solutions. The activities of each pilot are detailed in the table 6 below.

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Comments
Info session	Informative session for potential beneficiaries	15/06 /2022	Meeting with potential beneficiaries from building 1	51-61%	25	Target: Beneficiaries
Visit	Visit to the solar PV installation	15/06 /2022	Visit to the solar PV installation of building 1 for beneficiaries	51-61%	25	Target: Beneficiaries
Workshop	Bill optimisation workshop	26/10 /2022	First workshop with beneficiaries from building 1	51-61%	25	Target: Beneficiaries
Workshop	Energy efficiency at home	02/05 /2023	Second workshop with beneficiaries from building 1	51-61%	27	Target: Beneficiaries
Workshop	Self-consumption and energy communities	22/06 /2023	Third workshop with beneficiaries from building 1	51-61%	13	Target: Beneficiaries
Workshop	Advanced self-consumption and distribution company issues.	21/12 /2023	Fourth workshop with beneficiaries from building 1	51-61%	10	Target: Beneficiaries
Info session	Informative session for potential beneficiaries	28/03 /2023	Meeting with potential beneficiaries from building 2	51-61%	20	Target: Beneficiaries
Visit	Visit to the solar PV installation	28/03 /2023	Visit to the solar PV installation of building 2 for beneficiaries	51-61%	20	Target: Beneficiaries
Workshop	Bill optimisation workshop	21/06 /2023	First workshop with beneficiaries from building 2	51-61%	11	Target: Beneficiaries
Workshop	Energy efficiency at home	21/08 /2023	Second workshop with beneficiaries from building 2	51-61%	22	Target: Beneficiaries

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Comments
Workshop	Self-consumption and energy communities	19/12/2023	Third workshop with beneficiaries from building 2	51-61%	17	Target: Beneficiaries
Workshop	Advanced self-consumption and distribution company issues.	09/05/2024	Forth workshop with beneficiaries from building 2	51-61%	13	Target: Beneficiaries
Info session	Informative session for potential beneficiaries	19/07/2023	Meeting with potential beneficiaries from building 3	51-61%	22	Target: Beneficiaries
Visit	Visit to the solar PV installation	19/07/2023	Visit to the solar PV installation of building 3 for beneficiaries	51-61%	22	Target: Beneficiaries
Workshop	Bill optimisation workshop	29/02/2024	Third workshop with beneficiaries from building 3	51-61%	10	Target: Beneficiaries
Workshop	Energy efficiency at home	03/10/2023	First workshop with beneficiaries from building 3	51-61%	23	Target: Beneficiaries
Workshop	How to manage aerothermal energy	18/12/2023	Second workshop with beneficiaries from building 3	51-61%	36	Target: Beneficiaries
Workshop	Advanced self-consumption and distribution company issues.	16/07/2024	Forth workshop with beneficiaries from building 3	51-61%	11	Target: Beneficiaries
Workshop	How to build your own solar house?	23/08/2023	Children's activity to build recycled solar toy house so kids can begin to understand the self-consumption.	51-60%	50	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	05/03/2024	1 st Workshop for students held at institutes that have PV installations on their roofs. Ernest Lluch Institute.	51-60%	30	Target: Citizens (Children)

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Comments
Workshop	Energy Communities and shared self-consumption workshop	05/03/2024	2 nd Workshop for students held at institutes that have PV installations on their roofs. Ernest Lluch Institute.	51-60%	30	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	07/03/2024	3 rd Workshop for students held at institutes that have PV installations on their roofs. Ernest Lluch Institute.	41-50%	30	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	12/03/2024	4 th Workshop for students held at institutes that have PV installations on their roofs. Barri Besós Institute.	41-50%	20	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	12/03/2024	5 th Workshop for students held at institutes that have PV installations on their roofs. Barri Besós Institute.	41-50%	20	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	13/03/2024	6 th Workshop for students held at institutes that have PV installations on their roofs. Barri Besós Institute.	41-50%	10	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	14/03/2024	7 th Workshop for students held at institutes that have PV installations on their roofs. Barri Besós Institute.	41-50%	20	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	14/03/2024	8 th Workshop for students held at institutes that have PV installations on their roofs. Barri Besós Institute.	41-50%	20	Target: Citizens (Children)
Workshop	Energy Communities and shared self-	09/04/2024	9 th Workshop for students held at institutes that have PV	41-50%	23	Target: Citizens (Children)

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Comments
	consumption workshop		installations on their roofs. Quatre Cantons Institute.			
Workshop	Energy Communities and shared self-consumption workshop	11/04/2024	10 th Workshop for students held at institutes that have PV installations on their roofs. Ernest Lluch Institute.	51-60%	30	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	14/05/2024	11 th Workshop for students held at institutes that have PV installations on their roofs. Quatre Cantons Institute.	41-50%	23	Target: Citizens (Children)
Workshop	Energy Communities and shared self-consumption workshop	14/05/2024	12 th Workshop for students held at institutes that have PV installations on their roofs. Doctor Puigvert Institute.	51-60%	13	Target: Citizens (Children)
Workshop	Climate resilience workshop	22/02/2024	Workshop for citizens	51-60%	20	Target: Citizens (General Public)
Workshop	Climate resilience workshop	28/05/2024	Workshop for citizens	51-60%	6	Target: Citizens (General Public)
Workshop	Climate resilience workshop	07/06/2024	Workshop for citizens	51-60%	21	Target: Citizens (General Public)
Workshop	Climate resilience workshop	26/06/2024	Workshop for citizens	51-60%	22	Target: Citizens (General Public)
Workshop	Climate resilience workshop	08/07/2024	Workshop for citizens	51-60%	16	Target: Citizens (General Public)
Workshop	Climate resilience workshop	10/07/2024	Workshop for citizens	51-60%	10	Target: Citizens (General Public)
Visit	Visit to the solar PV installation	05/10/2022	Visit to the solar PV installation of building 1 for citizens	51-60%	30	Target: Citizens (General Public)

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Comments
Visit	Visit to the solar PV installation	25/11 /2022	Visit to the solar PV installation of building 1 for citizens	51-60%	15	Target: Citizens (Energy Advisor Points Team)
Visit	Visit to the solar PV installation	19/06 /2023	Visit to the solar PV installation of building 1 for citizens	41-50%	10	Target: Citizens (General Public)
Visit	Visit to the solar PV installation	03/10 /2023	Visit to the solar PV installation of building 1 CoP Members	41-50%	8	Target: Citizens (COP Members)
Visit	Visit to the solar PV installation	05/10 /2023	Visit to the solar PV installation of building 1 for citizens	71-80%	15	Target: Citizens (Energy Advisor Points Team)

Table 6: List of activities implemented in Barcelona

Figure 3 below shows a photo of the first workshop organised in Barcelona in October 2022 with Ecoserveis. It was aimed at beneficiaries to explain how electricity bills work. We can see from the catering how conviviality is an added value.



Figure 3: First workshop in Barcelona, October 2022

3.4. Analysis of the implementation

3.4.1. Main remaining challenges and solutions

Listed in the table 7 below are the remaining points of the pilot project that appear to be the riskiest, making it impossible to complete the experiment and/or not meeting all the expectations of the project. The probability of the risk occurring is ranked between 0 and 4 (0 is no risk, 1 low risk, 2 significant risk, 3 very high risk, 4 almost certain). This table only includes risks from levels between 2 and 4.

<i>Main Risks identified and potentially blocking</i>	<i>Probability of the risk occurring (0 to 4)</i>	<i>Solutions or mitigation actions.</i>
Malpractices of distribution and utility companies when some action is required by users, such as changing the contract holder, or any other change.	3	The project plans to deliver a comprehensive DIY kit that includes all necessary documents and a procedural journey map. Additionally, when possible, it's crucial to provide users with a follow-up accompaniment service, such as energy advice points.
Due to the metropolitan context, PV installations are of moderate size, resulting in a very small PV share or allocation per household. Despite several informative sessions conducted by the project, there is still a risk that beneficiaries might increase their energy consumption during peak solar hours, mistakenly believing they are saving money. However, because of the limited PV allocation, they would actually be consuming energy during the most expensive hours.	3	A solution has not yet been found, but providing beneficiaries access to the PV inverter app or interface could help reduce the risk. This access would enable them to monitor their energy consumption more effectively, allowing them to better understand when their PV system is generating power and adjust their usage accordingly to avoid higher costs.

Table 7: Main remaining challenges and solutions

3.4.2. Good practices and lessons learned from the implementation

Good practices to share

- **Good practice 1:** Providing **relaxed spaces** (such as a casual snack break) where neighbours can talk to each other and with project leaders, helps create a relaxed sense of community.
- **Good practice 2:** Basing the engagement strategy on **active listening** to the beneficiaries, for instance, the energy-saving kit provided to them was designed considering what they indicated they needed.
- **Good practice 3:** A **trustful relationship** has been built with the users, with a designated person accompanying them throughout the entire process.
- **Good practice 4:** Providing **small incentives** like the energy kit and flyers with energy efficiency tips has proven to be effective in maintaining commitment throughout the process, especially considering the exceptionally lengthy activation process of the photovoltaic generation.
- **Good practice 5: Speeding up all procedures** that depend on the user as much as possible, since once the utility companies have all the documentation it can take a long time to have the self-consumption is activated and normalise the reception of bills.

Lessons learned from implementation

- The process with the utilities was slower than expected. It is important to bear in mind that when a third party is involved, they have their own constraints which can lead to delays. It is therefore important to anticipate these difficulties by thinking about **how to keep beneficiaries motivated** if they have to wait through the bureaucratic process.
- Some of the lessons learned are related to **the self-consumption activation** procedure. Being a relatively **new process** in Spain when the project began, we encountered initial difficulties because the procedures were still being established by all involved parties. Currently, we still face the issue that users with activated self-consumption are not receiving bills, which is a global problem, not just specific to the project.
- A lot of time has been saved in the second IMHAB building, which has welcomed new tenants. On their arrival at the dwellings, IMHAB took the opportunity to **immediately inform the families** about the information session of the project. Some of the documents needed to legalise self-consumption were also signed at the same time.
- Creating collaboration procedures with other municipal departments has allowed the dissemination of the workshops that Sun4All offered to citizens. On

the one hand, through the municipal program of workshops for citizens (**Carrega't d'Energia**), the "climate resilience workshop" was disseminated through the Barcelona City Council's resource catalogue. And on the other hand, ALEB worked with **More Sustainable Schools program** to open the door for Sun4All to contact the institutes that had a PV installation on the roof to offer workshops for their students about energy communities and how shared self-consumption works.

- Different barriers have been identified. The delay in the activation of self-consumption has resulted in the residents not having a personal experience to share with the mentored. Another barrier was the time availability of the **mentors**: participating in Sun4All is already time consuming enough for them, it has been difficult to motivate the mentors to spend more time to help people from other buildings.

Remarkable achievements or satisfaction with implementation

- 100% of the **recruitment achieved and no drop out**.
- **Bond with beneficiaries** to ensure good communication and engagement.
- Good **coordination between all stakeholders** involved.

4. Sun4All in Communauté de Communes de Cœur de Savoie, France

4.1. The 1st Pilot implementation

4.1.1. Description of the 1st pilot model:

The first pilot at Cœur de Savoie was more about redistributing the profits from the sale of energy from the local authority's existing solar power plants, rather than sharing the energy.

Two use cases and financial schemes were implemented in the frame of the Sun4All project in the Communauté de Commune de Cœur de Savoie (CCCS). The energy produced by the 5 photovoltaic installations is sold to EDF-OA to generate income. EDF-OA is the French entity responsible for buying photovoltaic electricity from producers, whether private individuals or professionals. Once maintenance and credit are paid, profits left are used to finance subventions to vulnerable households. In any case, there are no PV shares directly distributed.

- The first use case, called «J'écorénove», concerns vulnerable owners renovating their home. They get 400€ to 600€ (as a one-time subsidy) to help them change their isolation or heating system allowing them to save on energy bills on a long-term perspective.
- The second use case, called «Eco'énergie», is dedicated to even more vulnerable households, tenants or vulnerable owners, who get an "energy free advice session" at home to help them make long-term energy savings and therefore on energy bills. They also get a 200€ subsidy/grant (as a one-time subsidy) to help them paying energy bills.

The model used in Cœur de Savoie for the 1st pilot, is summarised in Figure 4 below.

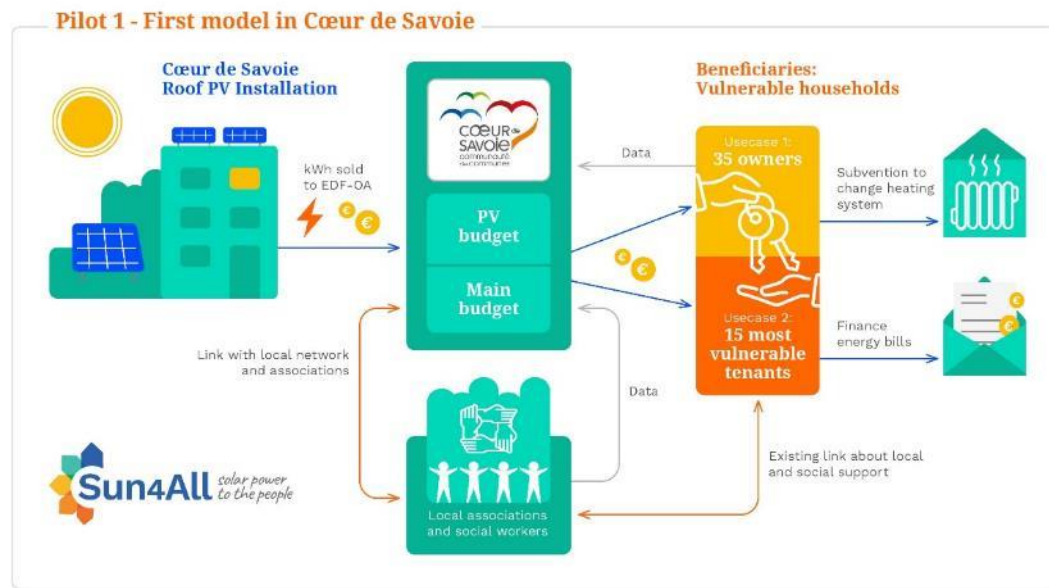


Figure 4: Cœur de Savoie 1st pilot scheme

The way in which individual sessions are carried out varies according to the use case. Sessions are organized:

- By SOLIHA staff at beneficiaries' home, as "energy management at home specialist" for the use case called "Eco'énergie". SOLIHA is the third party chosen by Cœur de Savoie to implement the local housing improvement programme.
- By SOLIHA staff at beneficiaries' home, as "renovation specialist" for the use case called "J'écorénove". This use case is applied when the household renovates at least 2 aspects (insulation and heating system, for example) to achieve +35% energy savings.
- By Cœur de Savoie / Sun4All staff for beneficiaries that are renovating only 1 aspect. It is done by phone or making a visit to their home, if necessary.

The comprehensive OPAH (Local Programmed Operation for Housing Improvement) programme, which deals with all housing problems, was not planned in the beginning of the project, it was later decided by the political leaders of the CCCS, during Summer of 2022 and launched in mid-October of the same year. This was a valuable opportunity to create a synergy for the implementation of Sun4All in the field. The third party recruited was SOLIHA, which deals mainly with renovation projects for vulnerable households in the regions and with crucial social issues.

In addition, to make contact with beneficiaries, SOLIHA staff take part in the Sun4All process by carrying out the tasks described in Table 8.

Use case 1: J'écórénove	Use case 2: Eco'énergie
<p>For complicated renovation cases: (15 beneficiaries/year)</p> <ul style="list-style-type: none"> • Presentation of Sun4All • Individual advice session n°1 (at home) focused on renovation issues and renovation choices. • Engagement document • Questionnaire n°1 and 2 <p>For easier renovations cases: (20/year)</p> <ul style="list-style-type: none"> • Presentation of Sun4All • Engagement document • Questionnaire n°1 and 2 	<p>For all beneficiaries: (estimated 15/year)</p> <ul style="list-style-type: none"> • Presentation of Sun4All • Engagement document • Questionnaire n°1 and 2 • Individual advice session (at home or by phone): Focused on eco-advice, how to save energy and reduce invoices.

Table 8: Use Cases in the CCCS pilot

No fundings from the EU funding will be used to pay SOLIHA tasks. The CCCS uses the funds planned and budgeted for the OPAH.

4.1.2. Results of the 1st pilot:

The recruitment process was very successful in Coeur de Savoie with 50 beneficiaries recruited. Coeur de Savoie has requested a deviation to allow continuous recruitment until the end of 2023, for its specific scheme in the first pilot. Nevertheless, the beneficiaries seem often only interested in the financial part of the program and it is a major concern to be able to empower them on energy transition. Activities are great successes with 9 workshops and 1 visit already done and more than 180 attendees in total, even though most of them are not direct beneficiaries. Recruitment of mentors was a difficult task to achieve, mainly achieved with interviews shared on media than direct mentoring.

The results of the 1st pilot in Coeur de Savoie are detailed in the Table 9.

Start of the 1st pilot: 01/11/2022

Targets	Results in date of September 2024	Goals / pilot / city
# Households recruited	50 households (35 owners and 15 tenants)	50 households (150 consumers)
# Individual energy advice sessions	44 households done – 6 waiting	>= 1 session / household
# Workshops	12 workshops ~218 participants	12 workshops
# PV plant Visits	2 visit done June and Oct 2023	2 visits
# Mentors recruited	Emailing for mentor recruitment. Interviews for newsletters and magazine articles: 4 mentor interviews and 1 video interview	25 mentors
€ how much aid the beneficiaries receive	~20 800€	No defined target
kWp Power from PV dedicated to the project	57 kWp	25kW(peak!?) - 0,5kWp/b
€ Investments in sustainable energy	Use of existing PV plants	190.000 € investments in sustainable energy for all pilots

Table 9: Results of the 1st pilot in Coeur de Savoie - Quantified Goals

4.2. The 2nd Pilot implementation

4.2.1. Description of the 2nd pilot model:

The 2nd pilot is based on a different technical and financial model than the 1st pilot.

It is a self-consumption solution based on a photovoltaic installation built by CCCS and that was commissioned in July 2023. The self-consumption started on the 1st of October 2023.

The photovoltaic system (36kWc) was installed on a building owned by the Communauté de Communes. A collective self-consumption operation will reduce the monthly electricity bills of the tenants of the social landlord OPAC.

The model used in Coeur de Savoie for the 2nd pilot, is summarised in Figure 5 below.

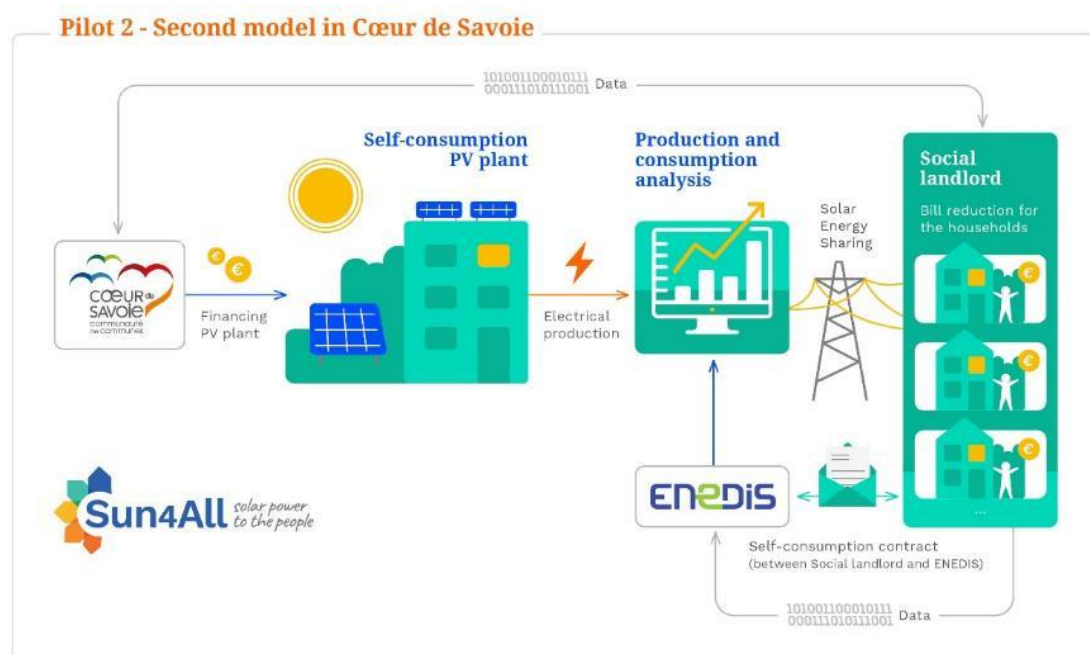


Figure 5: Coeur de Savoie 2nd pilot scheme

4.2.2. Results of the 2nd pilot:

The model for the 2nd pilot, that is a collective self-consumption scheme, is fully validated and the installation is done, which is a great achievement. Recruitment of new beneficiaries is slower than expected, but further recruitment sessions are regularly planned. An information meeting was held on June 21st, 2024, and two information sessions were held at the lobby of the buildings included in the program in early August. Workshops and PV plant visits were carried out are planned and should be as successful as they have been until now.

The recruitment of mentors was difficult because the 2nd pilot has a different model from the first, so innovative forms of mentoring needed to be found.

The results of the 2nd pilot in Coeur de Savoie are detailed in the Table 10.

2nd pilot estimated start: July 2023; Effective start: 15/09/2023

Targets	Results <i>in date of September 2024</i>	Goals / pilot / city
#Households recruited	37 Households -> 13 Households remaining to convince	50 households (150 consumers)
#Individual energy advice sessions	Individual session (on request) Phone advice session (mandatory) Small group advice session (on request)	≥ 1 session / household
# Workshops	11 workshops done	12 workshops
# Visits	2 Visits in 2024: June and Sept	2 visits
#Mentors recruited	2 mentors involved to convince their neighbours	25 mentors
€ how much aid the beneficiaries receive	Estimated around 70€ to 90€/households Online tracking tool available – 10–13 €/month	No defined target
kWp Power from PV dedicated to the project	~ 70-80% of the production ~28kWp	25kW(peak!?)
€ Investments in sustainable energy	55 000 €	190.000 € investments in sustainable energy for all pilots

Table 10: Results of the 2nd pilot in Coeur de Savoie - Quantified Goals

4.3. Activities implemented with beneficiaries:

Activities were organised during the project to inform beneficiaries about energy savings, train them and motivate them about the fair energy transition, its challenges and its solutions. The activities of each pilot are detailed in the table 11 below.

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Assessment / Comments
Workshop	Movie "We the power" followed by community talk	05/10/2021			25	it was before Sun4All officially starts but just about energy communities
Workshop	Projection Débat "Agir au quotidien"	06/10/2022			23	Screening and debate of a committed film on the energy transition
Workshop	Matinée rénovation (renovation morning)	22/10/2022			23+10 professional	
Info session	Comics distribution	01/01/2023			300	Distribution of the Comic Emma's destiny to the town library
Info session	Comics Emma's destiny distribution	01/01/2023			120	Distribution of the comics Emma's destiny to beneficiaries and each potential beneficiary
Workshop	Atelier Eco'énergie	14/02/2023	Save energy save on the bill	61-70%	28	
Workshop	Atelier Eco'énergie at Terre Solidaire	14/02/2023		51-60%	20	
Workshop	Réunion Publique information sur l'énergie solaire	08/03/2023	The objective of the meeting is to bring to the public a better knowledge of solar energy.	21-30%	23	Lots of interest and questions from the participants
Workshop	Workshop Eco'énergie	29/03/2023	Atelier sensibilisation aux écogestes	71-80%	13	

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Assessment / Comments
			et économies d'énergie			
Workshop	Public meeting	04/04/2023	Installer du solaire pour les professionnels	11-20%	30	
Workshop	Matinée rénovation (renovation half-day)	22/04/2023			15	
Info session	Self-consumption information meeting	21/06/2023	information meeting to launch the recruitment of beneficiaries for pilot 2. The presentation took place in a hall next to the buildings concerned by self-consumption project. two partners of the project (landlord) where attending.	31-40%	5	
Visit	PV visit	22/06/2023	PV visit at the gymnastic Hall; we had 10 persons registered to participate.	11-20%	5	We had limited the number of registrations due to the size of the hall and safety conditions, and many participants didn't turn up in the end.
Info session	Information session by building	08/08/2023	CCCS organizes and runs this information session in the buildings involved in the self-consumption program.	31-40%	30	
Workshop	Theatrical conference about energy and greenhouse	15/09/2023	CCCS is organizer, speaker is a third party	31-40%	70	

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Assessment / Comments
	gas emissions					
Workshop	Matinée rénovation (Renovation work half day)	20/09/2023	Half-day informing and recruiting beneficiaries for pilot 1	21-30%	30	
Workshop	Solar workshop (PV, thermal, cooking, steam sterilization)	07/10/2023	Raising participants' awareness of solar energy (for hot water, cooking or sterilizing jars)	51-60%	20	High rate of participation - we had to close inscriptions to respect the level gauge
Visit	PV visit	12/10/2023	Organiser and speaker in collaboration with INES	61-70%	20	
workshop	Half-day meeting with professional and energy advice session	18/11/2023	Organiser CCCS + stand Sun4All + energy renovation professionals + local association for advice	21-30%	40	
Workshop	Webinaire PV	18/12/2023	CCCS organizer and ASDER as a third-party expert and speaker	11-20%	15	
Workshop	Workshop	22/02/2024	CCCS is speaker for the workshop about reducing energy bill	41-50%	8	
Workshop	Solar Workshop	05/03/2024	Workshop about solar energy - CCCS organiser - INES experts' speaker	31-40%	20	A lot of interest about solar thermal and electrical energy
Workshop	Matinée rénovation (Renovation work half day)	16/03/2024	Half-day informing beneficiaries	21-30%	30	
Workshop	Workshop low impact and local food	19/04/2024	CCCS organizer with La partageraie and Terre solidaire (local	81-90%	14	3 people working in the local associations and the animator is a

Type of activity (Workshop, Visit, Info session)	Name of activity	Date	Details: event description	% of women	Audience	Assessment / Comments
			association) + 1 local animator			local vegetable producer
Visit and Workshop	Informative and recruitment session	05/06/2024	CCCS organizer and speaker and INES expert speakers	61-70%	16	
Opening event	Inauguration of Atelier des quais Solar power plant	09/07/2024	CCCS organizer and speaker + all the partners speakers (INES, Social landlord, DSO)	40%	25	After 1 year almost of production and 10 month of energy sharing.
Workshop	Solar cooking and learning	31/07/2024	CCCS organizer and local association speaker	61-70%	12	
PV visit	PV visit	12/09/2024	CCCS organizer and INEs speaker	11-20%	5	
Workshop	Theatrical conference about energy transition and waste	22/09/2024	CCCS organizer and a local artistic company playing	50%	71	Successful performance in one of the villages of Cœur de Savoie

Table 11: List of activities implemented in Cœur de Savoie

Figure 6 below illustrates an activity carried out at Cœur de Savoie with INES. This was a workshop on solar energy with beneficiaries and open to other citizens of the area. A great success with more than 50 participants.



Figure 6: Workshop in CCCS on solar energy solutions, March 2024

4.4. Analysis of the implementation

4.4.1. Main remaining challenges and solutions

Listed in Table 12 below are the remaining points of the pilot project that appear to be the riskiest, making it impossible to complete the experiment and/or not meeting all the expectations of the project. The probability of the risk occurring is ranked between 0 and 4 (0 is no risk, 1 low risk, 2 significant risk, 3 very high risk, 4 almost certain). There should be here only risk levels from 2 to 4.

#	<i>Main Risks identified and potentially blocking</i>	<i>Probability of the risk occurring (0 to 4)</i>	<i>Solutions or mitigation actions.</i>
1	Low numbers of beneficiaries for the second pilot (Self consumption)	3	Lack of participation in the collective self-consumption program. Mistrust with the landlord. As potential beneficiaries can join the program at any point in the self-consumption process the operation will grow in the time.
2	Low rate of mentoring: No mentoring possible from P1 to P2 and low mentorship participation in both pilot after solicitations.	4	Other kind of mentoring – Testimony in a video or magazine interview Offer Energy kit to the mentor for pilot 2 for helping recruitment (2 mentors)

Table 12: Main remaining challenges and solutions

4.4.2. Good practices and lessons learned from the implementation

Good practices to share

- **Good practice 1:** Develop **communication** for the recruitment and follow-up of beneficiaries. (e.g., working on several communication tools to explain the project, the impact on their bills and their role in the project, or also planning a door-to-door session to find new beneficiaries).
- **Good practice 2:** Develop exchanges with the **local social worker** from the OPAC social landlord (for example, with the social landlord's technician who is responsible for the maintenance of the building in question and who knows its residents well).
- **Good practice 3:** Create a **comic book** to raise awareness of the challenges of the energy transition and explain the main issues and possible solutions. Available here: <https://www.ines-solaire.org/news/le-destin-demma/>

Lessons learned from implementation

It should be noted that the **low density and dispersion** of beneficiaries in Coeur de Savoie area pose specific challenges. However, this experience, including its difficulties, is all the more interesting for local authorities wishing to replicate the Sun4All model in rural areas.

- It is important to **draw on existing programs, tools and skills** in the region and in the organizations concerned to build this type of project.
 - Use the local existing social network to develop beneficiaries.
 - Combining similar or complementary programs brings efficiency. For example, in the case of recruitment at Coeur de Savoie for the 1st pilot, which was partly linked to another program called OPAH (Opération Programmée d'Amélioration de l'Habitat), that can be translated as «Housing improvement program».
- **Political will**, as at Coeur de Savoie, is an unavoidable prerequisite for the success of a project of this scale.
- Use **adapted communication tools for beneficiaries**. Repeatedly soliciting potential beneficiaries for answers or going door to door.
- **Get all the partners involved** all along the project (ex: electricity network supplier, social landlord, gatekeeper...).
- Beneficiaries may be reluctant to respond to enquiries about energy, as they are already often approached by private companies on this subject. Initial experience shows that going **door-to-door** to recruit and provide information about Sun4All generates more trust among beneficiaries than providing information by email or telephone.

Remarkable achievements or satisfaction with implementation

- Good **participation rate to the workshops** for a rural territory.
- **Sharing of energy in self-consumption for 11 months** during the Sun4All project.
- **Decision to implement a new collective self-consumption programme** in the Coeur de Savoie region following the Sun4All project.

5. Sun4All in Almada, Portugal

5.1. The 1st Pilot implementation

5.1.1. Description of the pilot's model

The municipality of Almada has used the same approach for both the first and second pilots, with the municipality as the owner of the PV installation and the residents of a set of municipal buildings as the target area/group. Ageneal (AGN) is involved in supporting the Almada City Council in its responsibilities of managing the data and keeping the beneficiaries' list up to date at the collective self-consumption regulatory body. This simple approach provides a reduced electricity bill for the beneficiaries, according to their solar energy consumption up to a certain monthly limit, established depending on the house size and family number.

The municipality and Ageneal acts as "intermediaries" between the PV installation production and the end users/beneficiaries. The municipality and the DSO are responsible for collecting and managing the data to provide the corresponding benefits to the end users of the project, the vulnerable consumers.

The model used in Almada for both pilots, is summarised in Figure 7 below.

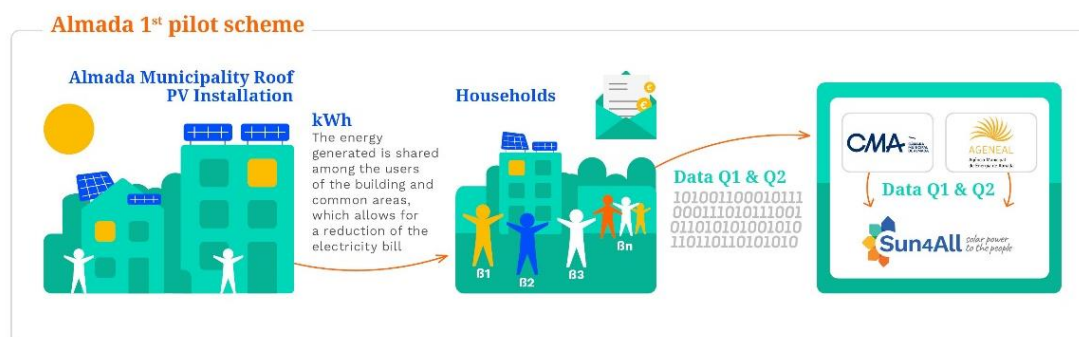


Figure 7: Almada's pilot scheme

5.1.2. Results of the 1st pilot:

Due to delays in the activation of collective self-consumption by the National Energy and Geology Directorate (DGEG -Direção Geral de Energia e Geologia), it was not possible to activate the energy sharing in 2023, when the first pilot was due to start implementation. In order to avoid further delays, the first phase was carried on by recruiting beneficiaries, implementing the capacitation activities and energy advice sessions, as well as the site visits, without the energy sharing.

A total of 10 households were part of the 1st pilot, which suffered from delays in activating the collective self-consumption system. For the first pilot phase, which lasted more than 12 months, 3 informative and recruitment sessions have been

organized for beneficiaries and there were 9 local events at which Sun4All was presented.

In order to implement the mentoring between pilots, Ageneal and CMA started working with local partners, Centro Social Paroquial Cristo Rei (CSPCR), a local social association that is more familiar with the community. So, one workshop for the community has been held to consult the potential mentors regarding their part and it was successful.

Although the energy sharing was not activated in the time proposed, the results of the 1st pilot in Almada are detailed in the Table 13.

Start of the 1st pilot: 31/03/2023

Targets	Ongoing results in date of September 2024	Goals / pilot / city
# Households recruited	10 beneficiaries (households).	10 households
# Individual energy advice sessions	1 session for each household.	>= 1 session / household
# Workshops	2 workshops on energy efficiency session for Sun4All beneficiaries with the provision of an efficient bulb 1 workshop on energy efficiency session for the general public 1 workshop on energy bill reading session for Sun4All beneficiaries 3 public sessions about Sun4All project for the general public 2 dissemination activities on solar energy, including Sun4All project 3 Informative/Recruitment Sessions	12 workshops
# Visits	1st visit in October/2023 2nd visit in April/2024	2 visits
# Mentors recruited	First approached on a thematic workshop session with beneficiaries	10 mentors
€ how much aid the beneficiaries receive	Maximum support beneficiaries will receive ranges 70 to 160 kWh/month/household (estimated maximum of 14 to 32 euros/month/household) depending on family and house size	No defined target
kWp Power from PV dedicated to the project	4kWp (because only 10 households will benefit)	25kWp
€ Investments in sustainable energy	None, the pilot is using solar panels previously installed	120k € investments in sustainable energy for all pilots

Table 13: Results of the 1st pilot in Almada - Quantified Goals

5.2. The 2nd Pilot implementation

5.2.1. Description of the 2nd pilot model:

As the municipality of Almada has used the same approach for both the first and second pilots, the only thing that changed between the pilots was the number of beneficiaries. For the 1st pilot 10 beneficiaries were recruited, and for the 2nd pilot the goal was 90.

5.2.2. Results of the 2nd pilot:

Although the energy sharing was not activated yet, the results of the 2nd pilot implementation are detailed in the following table 14:

Targets	Results <i>in date of September 2024</i>	Goals / pilot / city
# Households recruited	62 pre-recruited households	90 households (150 consumers)
#Individual energy advice sessions	Door-to-door sessions to 15 households	>= 1 session / household
# Workshops	2 workshops on Energy Efficiency and general information on Sun4All update for beneficiaries with the reward of an efficient bulb 3 door-to-door session for Q2 1 workshop on Solar Panels for beneficiaries with the reward of an efficient bulb 1 workshop on Energy Label and Q2 answer for beneficiaries 2 workshops on the Agenda for Carbon Neutral Almada, one for youth and other for the general public 2 workshops on Energy Bill Reading and general information on Sun4All update for beneficiaries with the reward of an efficient bulb 2 workshops on Energy Efficiency in Summer and general information on Sun4All update for beneficiaries with the reward of an efficient bulb 2 Workshops on Energy Label and general information on Sun4All update for beneficiaries with the reward of an efficient bulb	12 workshops
# Visits	1 visit delivered in April 2024 1 visit delivered in September 2024	2 visits
# Mentors recruited	1 consultation session with 6 mentors in June 2024	10 mentors
€ how much aid the beneficiaries receive	Maximum support beneficiaries will receive ranges 70 to 160 kWh/month/household (estimated maximum of 14 to 32 euros/month/household) depending on family and house size	No defined target

Targets	Results <i>in date of September 2024</i>	Goals / pilot / city
kWp Power from PV dedicated to the project	<i>A part of the 108 kWp installed</i>	25kW
€ Investments in sustainable energy	94 801 €	100k € <i>investments in sustainable energy for all pilots</i>

Table 14: Results of the 2nd pilot in Almada - Quantified Goals

5.3. Activities implemented with beneficiaries:

Activities were organised during the project to inform beneficiaries about energy savings, train them and motivate them about the fair energy transition, its challenges and its solutions. The activities of each pilot are detailed in the table below.

Some deviations were identified in the activities. Firstly, the individual energy advice sessions faced challenges because the target audience is primarily elderly individuals with limited education who rarely leave their homes and do not consume much energy. This made it difficult to recruit them or encourage attendance at the sessions. To address this, we continued to reach out by calling beneficiaries to inform them that we could assist with paperwork, which helped us engage more closely with the households.

Another issue arose with the mentoring aspect; the activation of energy sharing is still pending, leaving beneficiaries without experience in solar energy. During an initial meeting with six potential mentors, we found that they were apprehensive about receiving special benefits like toolboxes or vouchers for local appliance shops, though they expressed a willingness to help by providing information about neighbours who might be interested in joining the project.

Lastly, recruitment efforts were conducted in September to continue bringing in new members with the goal of reaching 100 households, and this process will persist as the municipality plans to expand the target area.

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Event – Organization of informative session	Informative and recruitment sessions for beneficiaries	12/07/2022	Informative Sessions for the potential beneficiaries followed by recruitment	61-70%	Beneficiaries
Event – Organization of informative session	Informative and recruitment sessions for beneficiaries	12/08/2022	Informative session for beneficiaries followed by recruitment session.	61-70%	Beneficiaries
Event - Organisation of workshops	European Mobility Week - SEM 2022	18/09/2022	This edition's campaign tagline was "Combine and Move!" and its main topic was "Better Connections." Undoubtedly, it was a chance for everyone to take stock of what had happened and talk about how to use and plan the city more effectively in order to encourage more efficient, healthy, and sustainable urban mobility practices. The Sun4All project was highlighted and presented to general public.	61-70%	General Public
Event - Participation in a conference	Almada Climate Action Plan 2030	21/09/2022	Presentation of the Climate Plan that Almada intends to develop, namely what is being outlined in order to meet the ambitious, but vitally achievable, emission reduction targets at local and European level by 2030. The Sun4All project was highlighted as one of the measures.	61-70%	General Public
Event - Participation in a conference	Comunidades de Energia - Apresentação do Guia Prático	18/10/2022	At this session, AGENEAL was invited by Coopérnico to present the project Sun4All - Solar Energy for All.	61-70%	Policy makers and/or authorities, Civil Society (= organisations of people /

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
					networks / projects / ...), General
Event – Organization of informative session	Informative and recruitment sessions for beneficiaries	26/10/2022	Informative session for beneficiaries followed by recruitment session.	61-70%	Beneficiaries
Event - Organisation of workshops	Earth Friendly Christmas Market 2022	17/12/2022	Session presented regarding the Solar Energy for All (Sun4All) initiative. Additionally, a workshop on solar energy and energy efficiency—good practices for electricity consumption—was held, raising awareness about responsible everyday power use at work, home, and in schools.	61-70%	General Public
Events - Participation in a conference	ICLEI Member Webinar "Energy Communities and Cities"	15/02/2023	ICLEI Europe's webinar series for Members explores different ways European cities are making sustainability a reality. The session included presentations from ICLEI Members Almada (PT) and Larissa (GR) and ICLEI topical experts, sharing tools, resources and/or best practices, followed by time of open discussions and questions. Members had the chance to network and exchange on challenges related to the topic(s) at hand.		Policy makers and/or authorities, Civil Society (= organisations of people / networks / projects / ...), General
Events - Participation in a conference	Ponto Energia – Balcão Único de Investimento em Energia	08/03/2023	Seminar organised by European funded project BUNDLEUP NEXT, who invited Almada	31-40%	Policy makers and/or authorities, Civil Society

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
	Sustentável - BundleUp Next H2020 Project		Municipality to present Almada Sun4All pilot.		(= organisations of people / networks / projects / ...), Investors
Event - Organisation of workshops	Energy Efficiency Session	29/03/2023	Energy Efficiency thematic session/workshop with beneficiaries' community, clarification about social electricity tariff and governmental programme for reduction in propane gas.	61-70%	Beneficiaries
Event - Organisation of workshops	Energy Efficiency workshop	30/05/2023	Beneficiaries were able to learn how to improve the energy efficiency of their home. We also took the opportunity to make project status update and were available for questions and clarifications.	51-60%	Beneficiaries
Event - Organisation of workshops	Sun for All: Energy Bill Advice Session	14/06/2023	Workshop on energy bill reading (Information on invoice details, Different tariffs and their advantages, simulator for the best operator and how to change operator?)	81-90%	Beneficiaries
Events - Other	Circular Economy Fair	01/07/2023	The Circular Economy Fair is an initiative that aims to highlight local and regional initiatives, projects, and businesses that promote a more circular economy by reducing waste and converting waste into raw materials for new uses, with the goal of more sustainable consumption with a lower environmental	51-60%	General public

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			impact. Sun4All had a dedicated booth as well as a time slot for a project session titled: Solar Energy for Everyone - A case study of a collective self-consumption of energy being established in Almada.		
Events - Organisation of workshops	European Mobility Week 2023	18/09/2023	Presentation of Sun4All project, with video in the background and video interview in Almada, for 1 hour, during the European mobility week activities at Costa da Caparica. Ageneal and CMA gave personal explanations to anybody who came and shown interest.	41-50%	General public
Events - Organisation of PV plant visit	PV Visit	28/10/2023	PV plant visit at the municipal building Fórum Municipal Romeu Correia	61-70%	General public
Events - Participation in a conference	Solar Cities and regions – Webinar: "Accelerating permitting, staffing, and skilling in solar cities and regions webinar"	23/11/2023	Almada City council was a speaker. The event focuses on the EU's ambitious new renewable energy targets and the crucial role of cities and local authorities in achieving them	41-50%	Policy makers and/or authorities, Civil Society (= organisations of people / networks / projects / ...)
Events - Participation in a conference	"Eurosolar for all: energy communities for a fair energy transition (Sun4All)" Open Call Informative	01/12/2023	Presenting the Sun4All Project - The Implementation and testing Sun4All in Almada		Policy makers and/or authorities, Civil Society (= organisations of people / networks / projects / ...)

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Event - Organisation of workshops	Recruitment Session and Energy Efficiency Workshop	24/01/2024	Beneficiaries were able to learn how to improve the energy efficiency of their home. We also took the opportunity to make project status update and were available for questions and clarifications.	71-80%	Beneficiaries
Events - Other	CoP Study Visit Almada	27/02/2024	Organization of Almada Study Visit. In the morning session Almada was also participant and speaker, as the pilot was present. In the afternoon there was a visit for CoP members to learn about Almada Pilot and share knowledge.	51-60%	CoP members and guest speakers
Event - Organisation of workshops	Information on Energy Labels and Q2 answers	27/03/2024	The workshop to explain the concept of Energy Label and how to read it. Part of the session was also dedicated for update on Sun4All implementation and Q2 answers.	51-60%	Beneficiaries
Visit	PV Visit	13/04/2024	Solar visit at the municipal building Fórum Municipal Romeu Correia	51-60%	General public
Events - Participation in a conference	Empowered Futures	23/04/2024	Event focused on municipal scale energy governance. Sun4All Almada Pilot was presented with focus on our experience with setting up a REC/CSC and the municipality's perspective on electricity distribution grid concessions, and its implications.	41-50%	Scientific community

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Events - Participation in a workshop	INCLU:DE // Ludwigsburg - Almada introduction & exchange	22/05/2024	Support measures for Ludwigsburg's climate action were discussed, including general strategies for advancing social justice and fostering engagement opportunities with citizens. Overarching insights from Almada included the need for tailored, face-to-face engagement, as well as the necessity of building bridges and long-term connections with low-income communities. During the exchange, insights from Almada were provided on Ludwigsburg's support measures for promoting inclusive communication and social equity across key areas: developing inclusive outreach material (flyers and gadgets); working with multipliers and the overall engagement with disadvantaged communities.	41-50%	Scientific community
Events - Participation in a workshop	INCLU:DE peer exchange: Effectively engaging disadvantaged communities in municipal climate action	27/05/2024	Almada pilot was presented at this peer exchange session that aimed to explore innovative approaches for ensuring social justice in municipal climate programs by actively engaging disadvantaged communities.	41-50%	Scientific community

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			This exchange focused on providing practical insights and strategies to empower municipalities and leverage community engagement and develop more inclusive and, ultimately, effective climate actions.		
Events - Participation in a conference	Agenda for a Carbon Neutral Almada 2050	05/06/2024	Executive members of Almada municipality were at the event, this was a great opportunity to disseminate the Sun4All project. There were 2 sessions, one for youth (around 30 people) and the 2nd one for the general public (around 50 people).	61-70%	Civil Society, General public, Scientific community
Events – Organisation of mentoring session	1st Session with mentors	06/06/2024	Ageneal and CMA organized the first session with mentors, they were informed about their tasks and benefits. The best approach to getting more Sun4All beneficiaries and the next steps were discussed.	31-40%	Beneficiaries
Events - Participation in a workshop	INCLU:DE side event - Peer exchange equitable climate action	18/06/2024	In this event, Almada Municipality presented a slide on the Sun4All project, during the Digital gallery walk panel of this event.	51-60%	Scientific community
Events - Participation in a workshop	ICA Forum GGND Europe; City Peer Group Working Session 2	18/06/2024	Session title: Promoting access to affordable renewable energy to tackle energy poverty.	31-40%	Scientific community

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			<p>Leveraging municipal assets for energy poverty alleviation projects.</p> <p>Almada Municipality presented Sun4All to other municipalities in this meeting organized by C40 Cities.</p>		
Event - Organisation of workshops	Energy Bill Reading with beneficiaries	08/08/2024	Workshop focused on bill reading in Part 2. Part 1 was dedicated to recruitment and informative session about Sun4All project and future Renewable Energy Nucleous.	51-60%	Beneficiaries
Event - Organisation of workshops	Energy Efficiency with beneficiaries and recruitment	23/08/2024	Workshop focused on Energy Efficiency with beneficiaries in Part 2. Part 1 was dedicated to recruitment and an informative session about the Sun4All project.	81-90%	Beneficiaries
Events - Other	2 webinars	11/09/2024	Sun4All Webinar on Energy Communities and Energy Poverty. This webinar aims to promote the replication of the Sun4All model among organisations and municipalities interested or active in these topics. It is targeted at municipalities, energy agencies, and other organisations focused on energy communities and the social aspects of combating energy poverty:	41-50%	Civil Society

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			Panel 1: Policies on Energy Communities and Energy Poverty Panel 2: Sun4All Project Replication and Energy Support System		
Event - Organisation of workshop	Energy advise session with beneficiaries and recruitment	14/09/2024	Door to door sessions for recruitment and energy advise session.	81-90%	Beneficiaries
Events - Other	National Technical Visit	27/09/2024	During the visit, the support model was presented by the technicians and the expected benefits were discussed, as well as the long-term positive impacts for the local community and municipality, among other aspects.	41-50%	Civil Society
Events - Other	Feira Comunitária - Community Fair	28/09/2024	Sun4all was present at the local community fair, organized by CSPCR partners, with a stand dedicated to the project. Throughout the day the project was disseminated to interested people.	51-60%	General public and Beneficiaries

Table 15: List of activities implemented in Almada

One of the activities in Almada is illustrated below in figure 8 by a visit in April 2024 to a photovoltaic installation, showing great interest in this activity.



Figure 8: PV Visit in Almada, April 2024

5.4. Analysis of the implementation

5.4.1. Main remaining challenges and solutions

Listed in Table 16 below are the remaining points of the pilot project that appear to be the riskiest, making it impossible to complete the experiment and/or not meeting all the expectations of the project. The probability of the risk occurring is ranked between 0 and 4 (0 is no risk, 1 low risk, 2 significant risk, 3 very high risk, 4 almost certain). There should be here only risk levels from 2 to 4.

#	<i>Main Risks identified and potentially blocking</i>	<i>Probability of the risk occurring (0 to 4)</i>	<i>Solutions or mitigation actions</i>
1	Effective reduction of bills – depends on 2 other factors: administrative procedures and PV installation.	4	If beneficiaries can't access solar energy: disregard solar energy production; Carry on with energy efficiency sessions and advice, with a focus on bill reduction.
2	Administrative procedures – depends on 2 factors: the regulation specifying the amount of support, approved at municipal assembly; the activation by the DGE (Energy Directorate).	4	Closely monitor the developments of the regulation approval process and all the steps: council submission of the proposal; public consultation period of 30 days; final document sent to the municipal assembly evaluation and voting; publication in the national law book (Diário da República). Invest in a close and frequent contact with the Energy Directorate prior to the submission of 2nd phase activation request; this may reduce the activation waiting time.
3	PV installation: acquisition is now approved. Parallel to this, there are electrical adaptation works being developed.	2	Panels were installed in May and finishing PV installation in July. Beneficiaries were more interested in the project although the electrical adaptation did not occurred yet.
4	Individual energy advice sessions: target audience is old aged, low schooled, doesn't leave the house or spend much energy	2	Plan closely with the social workers of the area. Develop communication more focused on old aged target audience, creating appropriate graphical materials to be delivered.
5	Mentoring: energy sharing activation is pending, so there is no solar energy experience from beneficiaries.	2	Working with CSPCR/APAP, community workers, that support in implementing mentorship. 1st meeting occurred even without mentors having energy benefits, but the whole process was explained.
6	Total number of beneficiaries not achieved	4	The municipality will continue to work with the local community even after Sun4All end period, not just to provide tools and measures for bill reduction, but also to recruit new members for Collective Self Consumption.

Table 16: Main remaining challenges and solutions

5.4.2. Good practices and lessons learned from the implementation

Good practices to share

- **Good practice 1:** Almada's partners started community participation activities to mitigate the delays in establishing collective self-consumption.
- **Good practice 2:** Gifts/rewards in general are very well accepted by the community and enhance participation rates.
- **Good practice 3:** In recent workshop sessions, regarding energy advice, Almada's partners already approached the mentoring task and prepared beneficiaries for this next step.

Lessons learned from implementation

Even if the implementation is delayed, it is critical to **keep the work with the community on track, by delivering the regular thematic workshops and energy advice sessions**. Internal procedures were set and licensing bureaucracy.

Remarkable achievements or satisfaction with implementation

- **Successfully formalizing collective self-consumption**, despite numerous challenges, was a significant achievement. This pilot project served as the foundation for the municipality to establish a genuine renewable energy hub. Despite the obstacles encountered, we were able to achieve positive outcomes in terms of **community and partner engagement**. This initiative has paved the way for future developments, setting the stage for continued success and growth in renewable energy initiatives.
- It is important to emphasize the efforts made to license the first collective self-consumption initiative in the municipality, including the formal establishment of the EGAC - Entidade de Gestão do Autoconsumo Coletivo (**Collective Self-Consumption Management Entity**). Additionally, the creation of internal regulations, which are a mandatory requirement for licensing, has undergone internal validation by the municipal assembly and was published in the Diário da República.
- Building on the work accomplished in the Sun4All pilot, we were able to advance to a larger initiative: **the establishment of the first Renewable Energy Nucleus (NER) in Almada**. This project will include several municipal buildings located near the housing complex involved in the Sun4All pilot, specifically the health center, schools, and other facilities that will be equipped with solar panels.

- Also, it is important to note that, building on the framework developed during the four years of the Sun4All project, **the municipality is now preparing to replicate this model in the city center**. This initiative will leverage the existing solar installation at the Forum Municipal Romeu Correia building, a cultural municipal facility, with the aim of sharing the surplus solar energy produced with nearby residential buildings.

6. Sun4All in Rome, Italy

6.1. The 1st Pilot implementation

6.1.1. Description of the 1st pilot model:

The model is implemented on the basis of local community work plans called RECS (Solidarity Renewable Energy Community).

Municipal photovoltaic plants generate income, part of which is allocated to the beneficiaries of the Sun4All pilot project. Forum Terzo Settore (FTS) is the municipality's associate partner, which will manage the distribution of economic benefits provided as a direct offset to the cost of the energy bill for each RECS beneficiary.

This model is promoting the transformation of the local initiative into the launch of an association registered as a REC, while the solidarity approach represents the reference framework. Existing municipally owned photovoltaic plants are adopted by communities and RECS energy sharing is simulated.

The entire pilot project in Rome is divided into two phases (100 + 100 households), but the entire process is designed in the first pilot project and the selection process is carried out entirely in the first pilot phase.

The Rome Pilot REC(S) model is detailed in Figure 9 below

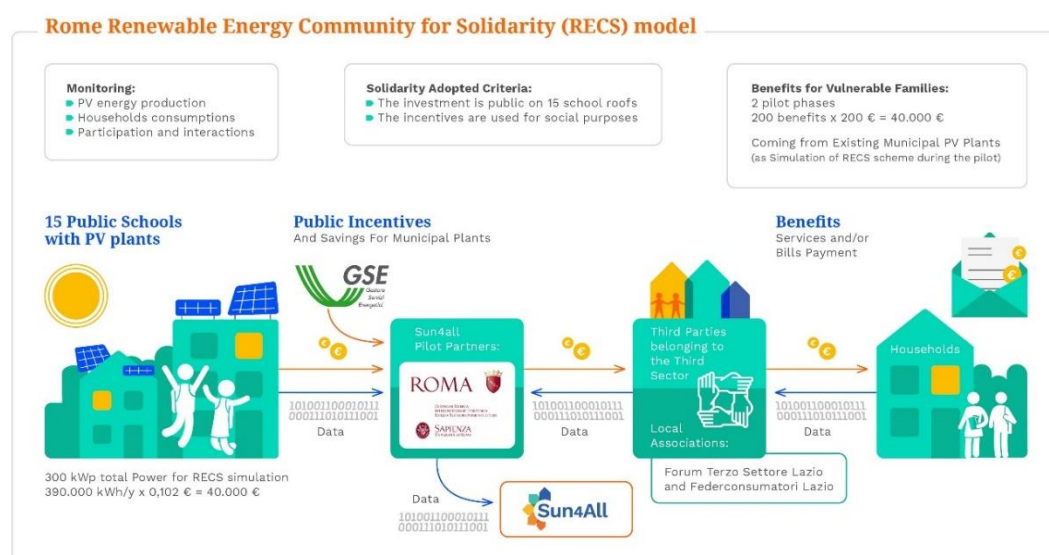


Figure 9: Rome Pilot REC(S) scheme

Use Case Sun4All pilot Rome – The business model is based on the reuse of the income from the existing municipal to simulate the future RECS for each community-group

For the post-project, the Rome use case business model is detailed in Figure 10.

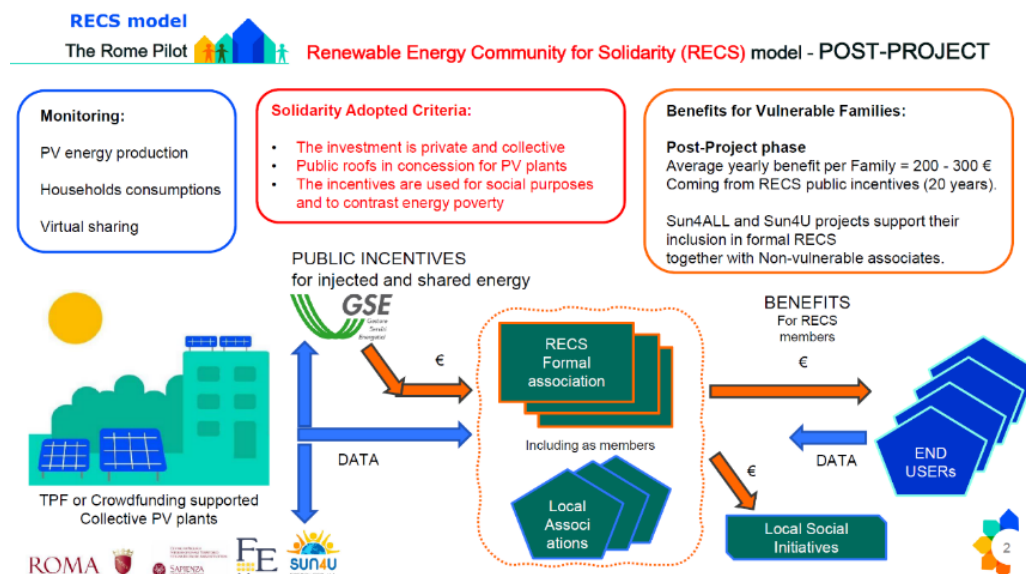


Figure 10: Rome Use Case Sun4All post-project business model

In the following Figure 11, a diagram of the project objectives for the Rome pilot divided into the two phases of activity: 11 Groups that can evolve into as many RECS.



Figure 11: Diagram of the project objectives for the Rome pilot

The implementation plan for the Rome pilot was structured in several key phases:

First, 200 families were selected from the "Bonus Energia" beneficiaries (24,000 in total) to target those most in need.

The plan then involved engaging various stakeholders, including Roma Capitale, with departments such as the Rome Municipality, Social Housing, Environment, Financial, and Legal/GDPR Departments. Other key stakeholders were the Faculty of Sociology at Sapienza University of Rome, grassroots associations, and LOS

signatory partners like the local energy utility (ARETI/ACEA), the Energy Efficiency Incentives Authority (GSE), and Federesco.

These stakeholders, spanning institutional, technical, educational, third sector, and civil society sectors, were essential in engaging households, with a focus on addressing the needs of those in energy poverty and empowering them to participate in the energy transition.

Communication was managed by Roma Capitale's Department of Social and Health Policies, in collaboration with third-sector organizations. A consent form was distributed to beneficiaries for data management, followed by informational flyers and a pre-selection questionnaire via mail and WhatsApp. Selected individuals were also asked to schedule a telephone appointment.

The Rome Pilot aimed to support the implementation of relevant SECAP policies approved by Roma Capitale, including energy poverty mitigation in collaboration with the Observatory on Energy Poverty (OIPE) and the development of inclusive, solidarity-based energy communities.

The Sun4All Rome pilot was organized around the following tasks:

- Preselection: Georeferencing 400 potential beneficiaries and assigning them to a photovoltaic (PV) system or school.
- Selection of Beneficiaries: Coordinated by the Dipartimento Politiche Sociali e Salute (DPSS) of Roma Capitale, leading to the selection of 200 end-users.
- Promotion and Citizen Engagement: Conducted by experts in socio-territorial animation to engage the community effectively.
- Energy Poverty Monitoring: Defining and tracking key performance indicators (KPIs) to assess and address energy poverty.

Communication efforts targeted both selected beneficiaries and potential new participants to ensure broad engagement.

Criteria for selecting municipal photovoltaic systems

In the first phase, being able to proceed only with the simulation of formal RECS, we proceeded by assigning, or rather by having each group adopt, one or more existing municipally managed plants and simulating their RECS structure with the use of the related incentives.

This approach led to the following criteria for the selection of photovoltaic plants:

- 154 photovoltaic plants owned by the Municipality.
- 17 photovoltaic plants associated with Sun4All RECS.
- Principle of proximity between photovoltaic plant and beneficiaries,

- Peak power/Energy,
- Roof of school building,
- Operating plant,
- Accessible for visits,
- Preference for O&M with concessionaire

Following the resolution of Rome Capital in February 2024 which selected 15 schools that will host photovoltaic plants on the roof serving energy communities, they were included in the GIS (Geographic Information System) mapping carried out by the CITERA center of Sapienza University of Rome. The map allowed for proximity analysis by evaluating the distance between the PV system present in the Sun4All community and resident beneficiaries.

The following image in Figure 12 shows a GIS map developed by the CITERA center which represents the communities of the Rome pilot as of May 30, 2024, the assigned municipal facilities and the beneficiaries trained during the engagement activities.

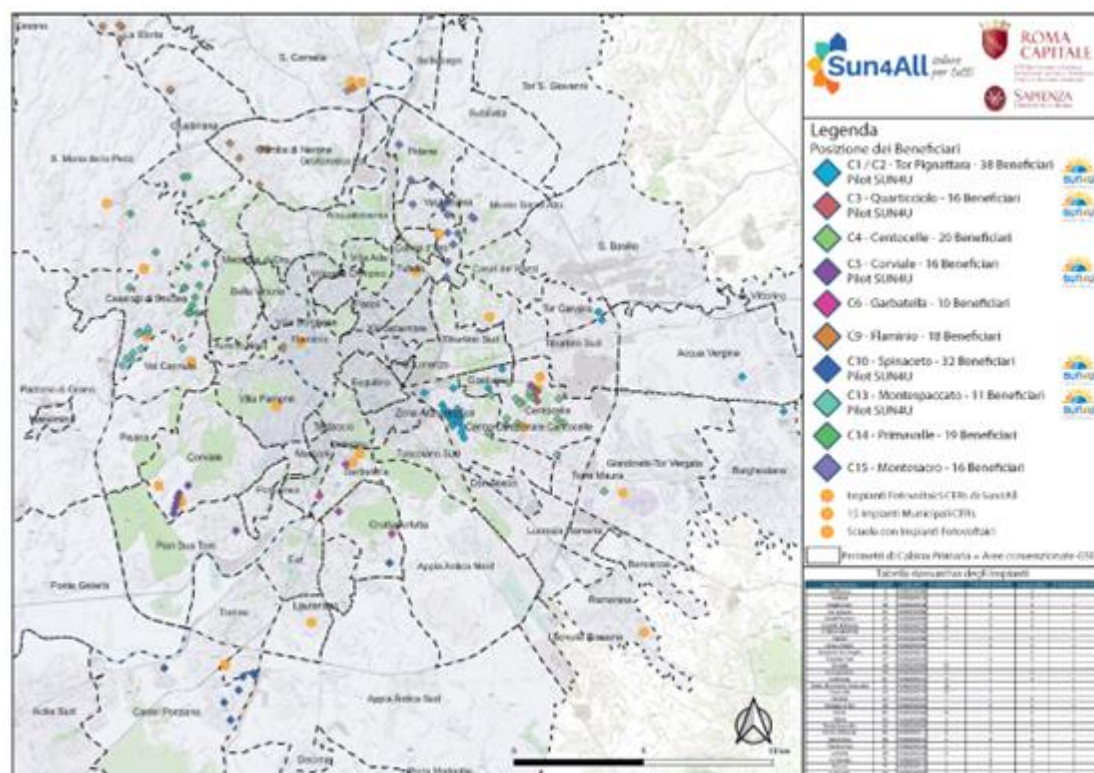


Figure 12: map of the communities of the Rome pilot

The municipal facilities selected from the database made available by the SIMU office of Rome Capital are those in the following table 17.

SCHOOL NAME	YEAR BUILT	ADDRESS	Municipio	Conto_Energia INCENTIVES	S4A Communities	potential beneficiaries (n households)	kWp	moduli	inverters	estimated yearly production (kWh)
Ist Compr Manzoni	2013	Via Del Pigneto 301	5	4	c2	21	10,56	n. 44 da 240W	n. 2	13728
Scuola Via Torre Annunziata	2013	Via Torre Annunziata 12	5	4	c11	17	8,64	n. 36 da 240W	n. 2	11232
Ist Compr Via Anagni	2013	Via Anagni 48	5	4	c7	21	10,56	n. 44 da 240W	n. 2	13728
Ist Compr Via Pirotta	2013	Via P. Romualdo Pirotta 95/A	5	4	c1	29	14,4	n. 60 da 240W	n. 3	18720
Ist Compr Via Pirotta	2013	Via P. Romualdo Pirotta 95	5	4	c1	11	5,28	n. 22 da 240W	n. 1	6864
Ist Compr Via Casale Del Finocchio	2013	Via Del Casale Del Finocchio 56	6	4	c3	36	18,24	n. 76 da 240W	n. 3	23712
Scuola M. Amulio	2013	Via Amulio 4	7	4	c8	23	11,472	n. 48 da 239W	n. 1	14914
IC C. Battisti	2009	Piazza Damiano Sauli 1	8	2	c13	10	4,84	n.22 da 220W	n. 1	6292
Asilo Nido Monelli	2010	Via G. Casalinuovo 32	8	2	c13	8	4,025	n. 23 da 175W	n. 2	5233
Sede Municipio VIII	2011	Via Benedetto Croce 50	8	3	c13	11	5,32	n. 24 da 220W	n. 3	6916
Primary School	2009	Via Salvatore Pincherle, 142	8	2	c12	24	11,88	n. 64 da 185W	n. 6	15444
Plesso Renzini	2009	Via Augusto Renzini, 48	9	SSP	c10	40	20,13	n. 122 da 165W	n. 6	26169
Scuola E. Ghiglia	2013	Via Oscar Ghiglia	10	4	c4	38	19,12	n. 80 da 239W	n. 1	24856
Scuola Felce	2013	Via Della Felce 19	10	4	c5	38	19,12	n. 80 da 239W	n. 1	24856
Scuola Herzi	2013	Via Theodor Herzi 51	10	4	c6	38	19,12	n. 80 da 239W	n. 1	24856
Scuola E. Dragone	2013	Via Di Dragone 404	10	4	c9	38	19,12	n. 80 da 239W	n. 1	24856
Scuola M. Dragone	2013	Via Di Dragone 405	10	4	c9	38	19,12	n. 80 da 239W	n. 1	24856
					13	442	220,95			287231

Table 17: Roma Capitale facilities selected for Sun4All

Within each cluster perimeters, there are several municipal-owned PV plants. Based on the peak power and the yearly energy production, 17 PV plants are assigned to the 12 Community Groups granting, which means 287.000 kWh / year (more than 0,5 kWp/house.)

Engagement of beneficiaries

Between October and November 2022, five meetings were held to present the project to the Forum Terzo Settore Lazio (FTSL) and Federconsumatori Lazio (FCL) and to define the program of engagement activities in the territories of some of the fifteen municipalities of Rome Capital. These meetings were held with the participation of the team from the Department of Social Policies and Health of Rome Capital together with FTSL and FCL.

The selection of municipalities and neighbourhoods in the municipality of Rome in which to meet citizens was based on two primary social objectives: bringing the Sun4All project to those municipalities where the phenomenon of energy poverty is highest, reaching the micro-communities present through the support of grassroots Associations and the third sector. This activity allowed us to build the engagement strategy of the Rome pilot through a customized workflow. It was possible to build a unitary vision of the needs of the territory of Rome and its urban micro-communities by integrating the Top-down approach with the contribution of DPSS and CITERA, with the Bottom-up approach thanks to the contribution of the

third sector. Clusters were organized to form 12 RECS (Solidarity Renewable Energy Communities), each of which adopts photovoltaic systems on public schools managed by Roma Capitale.

GIS analysis of the proximity of approximately 24,000 Energy Bonus recipients and photovoltaic systems on public schools managed by Roma Capitale. It is illustrated in the following Figure 13.

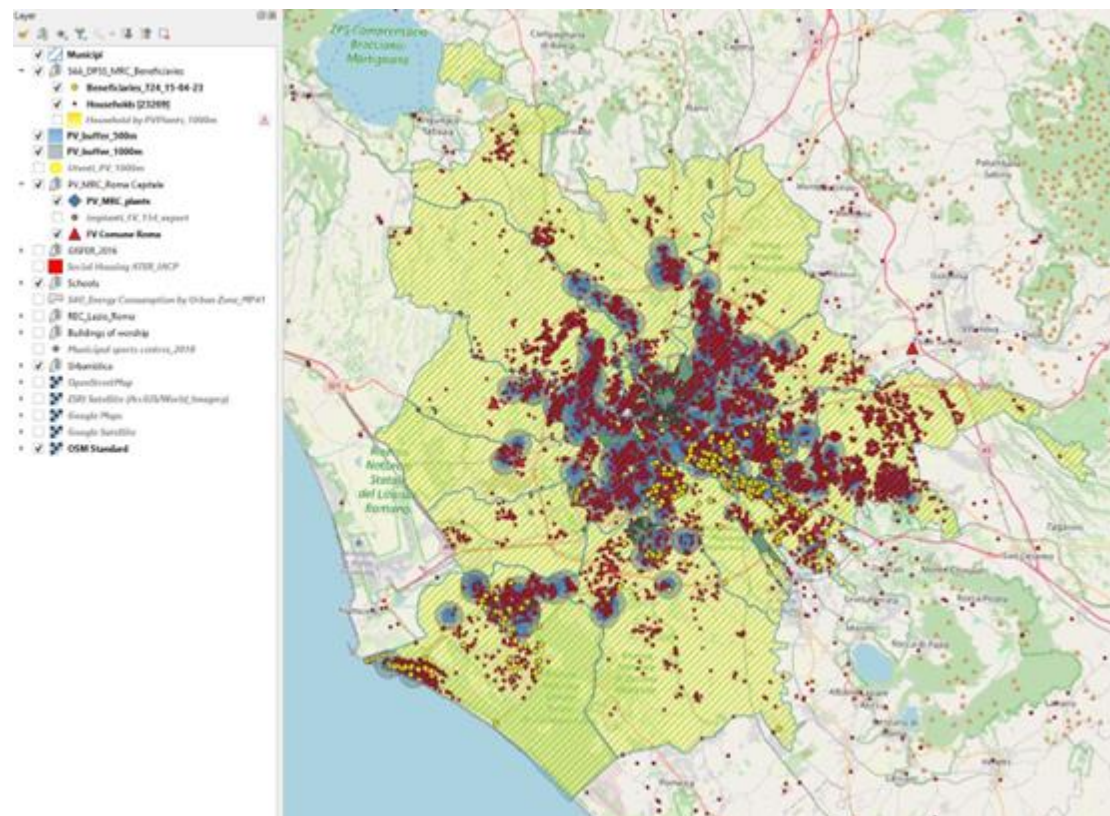


Figure 13: GIS analysis of the proximity

The 15 communities identified at the start of the Sun4All Rome pilot project are shown in Table 18 below (data by 30 May 2024).

	Cluster areas	Beneficiaries long list	Beneficiaries selected	Participant beneficiaries	Date start	local references associations
1st Pilot	TOR PIGNATTARA	39	21	20	1/12/2022	Federconsumatori Lazio Forum Terzo Settore Lazio Parrocchia S. Barnaba Municipio V
	TOR PIGNATTARA		18	18	1/12/2022	Federconsumatori Lazio Forum Terzo Settore Lazio Parrocchia S. Barnaba Municipio V

	QUARTICCIOL O	85	16	16	9/3/2023	Forum Terzo Settore Lazio Associazione Nonna Roma Comitato Quartiere Palestra Popolare Quarticcio Municipio V
	CENTOCELLE	20	43	20	9/3/2023	Forum Terzo Settore Lazio Cooperativa Nuove Risposte Municipio V
	CORVIALE 1	23	23	16	15/3/2023	Forum Terzo Settore Lazio Coop di Comunità Associazione Mitreo - Iside Municipio XI
	GARBATELLA 1	40	20	10	Mar/Apr 2023	Forum Terzo Settore Lazio Replay Network Aps Municipio VIII
	GARBATELLA 2*	52	20		1/12/2022 Engageme nt not started	Forum Terzo Settore Lazio Replay Network Aps Municipio VIII
	PIETRALATA*	90	20		1/12/2022 Engageme nt not started	Forum Terzo Settore Lazio
2nd pilot	FLAMINIO - Municipio XV	20	18	18	9/5/2023	Forum Terzo Settore Lazio Municipio XV
	SPINACETO 1 Scuola Renzini	50	40	15	18/4/2023	Federconsumat ori Lazio Scuola Renzini
	SPINACETO 2 Casal Brunori	95	50	7	17/5/2023	Associazione VIVERE IN CERS Casal Brunori Municipio IX
	CORVIALE 2	95			1/12/2022 Engageme nt not started	Forum Terzo Settore Lazio Coop di Comunità Associazione

						Mitreo - Iside Municipio XI
	MONTESPAC CATO	35	11	11	nov-23	Forum Terzo Settore Lazio Assoc. Aurelio in Comune
	PRIMAVALLE	30	20	19	7/3/2024	Forum Terzo Settore Lazio Municipio XIV
	MONTESACR O	25		16	6/5/2024	Forum Terzo Settore Lazio Municipio III
	TOTAL	699	320	186		
	TOTAL 1st pilot	207	141	100		
	TOTAL 2nd pilot	350	139	86		

Table 18: Features of the 15 communities in Rome

6.1.2. Results of the 1st pilot:

Roma Capitale selected 700 households in energy poverty as potential beneficiaries of the Sun4All project, between September to November 2022. Sapienza University identified the pilot urban areas associated to municipal PV plants to be adopted for each community-group, so limiting to 267 the families to be contacted to reach the target of 200 households, twice the project objective (100 for each 2 pilots). The beneficiaries have been organized by proximity clusters to form 12 RECS (Solidarity Renewable Energy Communities), adopting 17 photovoltaic plants already in operation on the school roofs to simulate the energy sharing.

The first pilot is achieving the engagement plan for 5 Communities involving 100 vulnerable families. It started on 1st December 2022 and will finish by 30th of November 2023. Regarding the workshops, 15 have already been delivered on energy transition issues and good practices for home energy. Also, 7 mentors have been engaged in the webchat to support the participation process.

The results of the 1st pilot in Rome are detailed in the Table 19.

Start of the 1st pilot: 01/12/2022

Targets	Result in date of <u>May 2024</u>	Goals / pilot / city
# Households recruited	98	100 households (300 consumers) for 1 st phase
# Individual energy advice sessions	1 in Torpignattara Community using the Energy Efficiency Cards elaborated by CITERA Sapienza University of Rome	>= 1 session / household
# Workshops	15	12 workshops
# Visits	15 th December 2023 in the Corviale neighbourhood of South Rome is illustrated in Figure 14	2 visits
# Mentors recruited	7 selected, waiting to be able to communicate the correct amount of the benefit (200 or 100€?).	12 mentors
€ how much aid the beneficiaries receive	180€-220€ (TBD)	20.000 € (25% in low-carbon devices)
kWp Power from PV dedicated to the project	0,5 kWp/hh (Total of 100kwp in the first phase and 100 kwp in the second phase)	200 kWp for 200 households (1 kWp/hh) for 2 phases
€ Investments in sustainable energy	100.000 € / 700.000 € *	190.000 € investments in sustainable energy for all pilots

Table 19: Results of the 1st pilot in Rome - Quantified Goals

**Rome Municipality decided to invest in 15 new PV plants dedicated to REC for Solidarity. This correspond to an investment in sustainable energy of around 700.000 €, but the process of investment and building the plants is quite long. At present only 2 on 15 plants have been designed and financed, via the Districts' administrations (Municipi), for a current investment of 100.000 €*

6.2. The 2nd Pilot implementation

6.2.1. Description of the 2nd pilot model:

The second pilot continued the engagement activities as defined in the first part and the overall picture of which is shown in the following table.

Given the experience of the first pilot which highlighted great difficulties on the part of the beneficiaries in participating in the workshops in the summer months, in the second pilot it was decided to hold a workshop for the Spinaceto 1 Renzini and Spinaceto 2 Casal Brunori communities on 13 September 2024.

During the second pilot, an intense activity was carried out to collect the Q1 and Q2 questionnaires, for the impact assessment of the project. The minimum requirements for having a beneficiary profile are to have the completed questionnaire (the online mode with a "GForm" was also activated in the second pilot) and at least three bills. However, some beneficiaries contacted or who participated in a workshop could no longer be found.

6.2.2. Results of the 2nd pilot:

The results of the 2nd pilot in Rome are detailed in the Table 20.

2nd pilot estimated start: 01/07/2023; Effective start: 01/07/23

Targets	Previous results in date of September 2024	Goals / pilot / city
# Households recruited	186 participant beneficiaries and 155 completed questionnaires.	50+50 households (150+150 consumers)
#Individual energy advice sessions	The particularity of the Rome pilot with 11 communities and 200 beneficiaries distributed over the entire area of the municipality of Rome does not allow IEA to be carried out for individual beneficiaries . The CITERA team assessed the possibility of carrying out some visits to their homes with some beneficiaries. This highlighted beneficiaries' reasonable barriers to having someone enter their home for an IEA. During the second phase, new meetings are underway in some communities. A workshop was held on May 6 May during which the sheets on domestic energy efficiency were delivered to the beneficiaries of the Torpignattara community. Some of them requested information on their bills regarding consumption, costs, etc. Torpignattara was the first community of the Rome Pilot with the workshop on November 11 November 2022. Since then, also through the WApp chat of the Torpignattara community, useful information has been conveyed. Service information, for example, on how to access social bonuses or the website of the Regulatory Authority for Energy, Networks and the Environment (ARERA) which provides	>= 1 session / household

	a comparison service of the best offers for electricity, gas, and water. The home efficiency sheets in digital format have been released on the chat, so you can consult them on your mobile.	
# Workshops	16 workshops in 6 community of the second pilot. For further details on the dates, please consult the attached table.	<i>12 workshops</i>
# Visits	25 May 2024 second site visit to the municipal photovoltaic system at the City of the Other Economy in the Testaccio district of Rome	<i>2 visits</i>
# Mentors recruited	11 mentors recruited	<i>10 mentors</i>
€ how much aid the beneficiaries receive	The benefits are being distributed to the beneficiaries, under the coordination of the Social Policies and Health Department of Roma Capitale	<i>No defined target</i>
kWp Power from PV dedicated to the project	0,5 kWp/hh (Total of 100 kwp in the second phase) The PV plants dedicated to each community-group provide more than 0.5kWp/hh to the beneficiaries	<i>25kW</i>
€ Investments in sustainable energy	Existing public plants for REC simulations + new investments for formal RECS (estimated 100k€ / 700 k€) The Municipality have still to clarify which total amount of investment will be dedicated to the planned 15 new PV plants	<i>190.000 € investments in sustainable energy for all pilots</i>

Table 20: Results of the 2nd pilot in Rome - Quantified Goals

6.3. Activities implemented with beneficiaries:

Activities were organised during the project to inform beneficiaries about energy savings, train them and motivate them about the fair energy transition, its challenges and its solutions. The activities of each pilot are detailed in the Table 21 below.

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Info session 1	preparatory meetings for the project presentation to Forum Terzo Settore Lazio (FTSL) and Federconsumatori Lazio (FCL)	12.10.2022	Definition of the engagement activity program in the territory of the fifteen municipalities of Rome Capital.	61-70%	5
Info session 2	preparatory meetings for the project presentation to Forum Terzo Settore Lazio (FTSL) and Federconsumatori Lazio (FCL)	26.10.2022	Evaluation of beneficiary lists and targeting activities	61-70%	5
Workshop	WS 1 Community Tor Pignattara 1 and 2	11.11.2022	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires;	51-60%	42
Workshop	WS 2 Community Tor Pignattara 1 and 2	6.12.2022	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses;	81-90%	35
Webinar	Mentor capacity building online	15.3.2024	Third meeting with the mentors of the second phase to illustrate in detail the activities to be carried out. In this meeting a survey was made using Slido to evaluate the level of knowledge of the project.	81-90%	7
Workshop	WS 3 Community Tor	29.03.2023	Renewable energy, what are CERs and how and	61-70%	30

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
	Pignattara 1 and 2		why to become a member.		
Workshop	WS 1 Community Quarticciole	9.03.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires;	61-70%	16
Workshop	WS 2 Community Quarticciole	25.05.2023	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses;	81-90%	3
Workshop	WS 3 Community Quarticciole	8.06.2023	Renewable energy, what are CERs and how and why to become a member.	61-70%	5
Workshop	WS 1 Community Centocelle	20.04.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires;	51-60%	14
Workshop	WS 2 Community Centocelle	25.05.2023	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses;	81-90%	11
Workshop	WS 3 Community Centocelle	8.06.2023	Renewable energy, what are CERs and how and why to become a member.	61-70%	11
Workshop	WS 1 Community Corviale	19.04.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires;	61-70%	19
Workshop	WS 2 Community Corviale	24.05.2023	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses;	81-90%	5

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Workshop	WS 3 Community Corviale	9.06.2023	Renewable energy, what are CERs and how and why to become a member.	51-60%	8
Workshop	WS 1 Community Garbatella	15.06.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires;	61-70%	7
Workshop	WS 2 Community Garbatella	12.07.2023	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses;	61-70%	4
Workshop	Spinaceto at the Parco degli Eroi with the participants of the Municipio IX	22.07.2023	A meeting open to all citizens was held at the multifunctional green point Parco degli Eroi di Cefalonia in the Spinaceto district of Rome to present public, European and national projects that aim to improve the quality of life starting from those who are in conditions of socio-economic vulnerability. The main theme was to create communities for a better quality of life.	51-60%	19
Workshop	WS 3 Community Garbatella	11.09.2023	Renewable energy, what are CERs and how and why to become a member.	51-60%	4
Workshop	WS 1 Community Flaminio	29.09.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires;	51-60%	19
Workshop	WS 2 Community Flaminio	10.11.2023	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses;	61-70%	14

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Workshop	WS 3 Community Flaminio	19.01.2024	Renewable energy, what are CERs and how and why to become a member.	61-70%	11
Workshop	WS 1 Community Spinaceto 1 Scuola Renzini	29.05.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires; With support of Federconsumatori Lazio	81-90%	15
Workshop	WS 2 Community Spinaceto 1 Scuola Renzini	10.10.2023	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses; With support of Forum Terzo Settore Lazio	81-90%	7
Webinar	Mentor capacity building online	3.11.23	Site visit for the beneficiaries of the first pilot to a photovoltaic plant managed by the municipality of Rome in the community of Corviale. At the headquarters of the cultural association Mitreo-Iside, which has already hosted the engagement workshops, there was a meeting with the beneficiaries and residents of the neighbourhood. Great support was given in contacting in person or via WhatsApp chat those beneficiaries who had not filled out the questionnaires or provided electricity bills.	51-60%	30
Workshop	Capacity building F2F workshop for the mentors of Rome Pilot	27.11.2023	During the second meeting at the CITERA Sapienza University of Rome research center we met Alessandra and Marco mentors of the Sun4All project. They illustrated the activities to	51-60%	4

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			be promoted in the Garbatella and Montesapaccato communities of the Rome pilot.		
Workshop	Sun4All and RECs	13.12.2023	On December 13, 2023, the second event open to citizens was held at the multifunctional green point Parco degli Eroi di Cefalonia in the Spinaceto district of Rome and the main themes of the Sun4All project were discussed. With the support of neighbourhood associations, citizens interested in learning about and learning more about the themes of Sun4All and how to start the establishment of REC participated.	81-90%	7
Workshop	WS 3 Community Spinaceto 1 Scuola Renzini	13.12.2023	Renewable energy, what are CERs and how and why to become a member. With support of Forum Terzo Settore Lazio	81-90%	5
Workshop	WS 1 Community Montesapaccato	24.11.2023	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires; With support of Forum Terzo Settore Lazio	61-70%	16
Workshop	The Sun4All project presented to the students of the Sapienza University Faculty of Architecture	28.11.2023	Talking to today's young students, who will be the professionals of the future, about the Sun4All project that aims to combat energy poverty in the municipality of Rome. This is what happened during the meeting on November 28, 2023 held by Prof. Flavio Rosa at the Faculty of	51-60%	14

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			<p>Architecture of Sapienza University of Rome.</p> <p>Despite study commitments, the student community responded in large numbers to the invitation to delve into two strongly interconnected and very current topics such as energy poverty and the new Italian legislation on renewable energy communities.</p> <p>During the meeting, it was possible to represent the phenomenon of energy poverty which, in its transversality, touches on many themes specific to architecture.</p>		
Visit	Municipal PV plant visit	15.12.2023	<p>Site visit for the beneficiaries of the first pilot to a photovoltaic plant managed by the municipality of Rome in the community of Corviale. At the headquarters of the cultural association Mitreo-Iside, which has already hosted the engagement workshops, there was a meeting with the beneficiaries and residents of the neighbourhood.</p> <p>Explaining live what a photovoltaic system is to some people who have never had the opportunity to see one up close allowed us to address various issues and answer many questions. The operation of photovoltaic systems was illustrated during the workshop on May 24, 2023, while during the visit we focused on how their energy can be</p>	51-60%	25

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			distributed to the members of a Renewable Energy Community. The group of participants asked many questions, not only technical ones but also about the entire authorization process for CERs and the different forms of constitution between prosumers and consumers and user profiles		
Visit	Visit to the Rome pilot by the consortium and the cities of the Community of Practice	01.02.2024	<p>The theme of sharing through the use of public spaces, in particular with the creation of renewable energy communities (REC) and urban gardens, was at the center of the Study and stakeholder visit on January 31 for the Rome pilot and the communities of citizens and beneficiaries of the Sun4All project.</p> <p>In fact, the pilot visit was held in five cities that are replicating in their territories as Communities of Practices what has already been implemented in the four pilot cities: Rome, Barcelona, Coeur de Savoie and Almada.</p>	51-60%	35
Visit	A solidarity REC a few steps from the Vatican	02.02.2024	<p>On February 2, during the pilot visit and stakeholder meetings organized by Roma Capitale and the CITERA Sapienza University of Rome research center, the first REC born in the historic center of Rome was visited. On the roof terrace of the Vaccari Institute (https://www.leonardavaccari.it/) there is a 90 KW</p>	51-60%	17

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			photovoltaic system, composed of 198 modules, and will produce about 120 thousand kWh of clean energy per year. With its use, the emission into the atmosphere of about 41 tons of CO ₂ will be reduced, equivalent to 1,365 trees planted. In addition to the environmental benefits, the aim is to finance, with the savings obtained and with the proceeds of the incentives, social interventions aimed at people in energy poverty, which is connected to the mission of Banco dell'energia.		
Workshop	WS 2 Community Montespaccato	26.02.2024	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses; With support of Forum Terzo Settore Lazio	81-90%	12
Workshop	WS 3 Community Montespaccato	20.03.2024	Renewable energy, what are CERs and how and why to become a member. With support of Forum Terzo Settore Lazio	51-60%	17
Workshop	WS 1 Community Primavalle	7.03.2024	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires; With support of Forum Terzo Settore Lazio	61-70%	19
Workshop	WS 2 Community Primavalle	18.03.2024	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses; With support of Forum Terzo Settore Lazio	81-90%	14

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
Workshop	WS 3 Community Primavalle	22.03.2024	Renewable energy, what are CERs and how and why to become a member. With support of Forum Terzo Settore Lazio	51-60%	16
Workshop	WS 1 Community Montesacro	06.05.2024	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires; With support of Forum Terzo Settore Lazio	61-70%	16
Visit	Municipal PV plant visit	25.05.2024	Visit to the photovoltaic plant managed by Roma Capitale at the Città dell'Altra Economia. Visit dedicated to the beneficiaries of the first pilot. The difficulty in reaching the plants on the municipal schools (opening hours and access safety) led to the selection of a plant that was easily accessible and safe. The beneficiaries were able to reach the site with a transfer service made available by the Rome pilot. During the visit, a workshop was also held on Renewable Energy Communities that can be created by integrating micro wind turbines on the roofs of social housing buildings. Cards on domestic energy efficiency were distributed, explaining how to reduce the cost of energy bills.	51-60%	32
		post 30 May 2024			
Workshop	WS 2 Community Montesacro	12.06.2024	Reading and understanding of electricity bills and the	81-90%	7

Type of activity	Name of activity	Date	Details: event description	% of women	Audience
			possibility of accessing public Energy Bonuses; With support of Forum Terzo Settore Lazio		
Workshop	WS 3 Community Montesacro	18.06.2024	Renewable energy, what are CERs and how and why to become a member. With support of Forum Terzo Settore Lazio	51-60%	8
Workshop	WS 1 Community Spinaceto 1 Casal Brunori	15.06.2024	The Sun4All project, the first renewable energy is saving and how the cards on domestic energy efficiency can help reduce waste and the cost of the electricity bill. Administration of questionnaires; With support of Forum Terzo Settore Lazio	51-60%	10
Workshop	WS 2 Community Spinaceto 1 Casal Brunori	13.09.2024	Reading and understanding of electricity bills and the possibility of accessing public Energy Bonuses; With support of Forum Terzo Settore Lazio	61-70%	28
Workshop	WS 3 Community Spinaceto 1 Casal Brunori	13.09.2024	Renewable energy, what are CERs and how and why to become a member. With support of Forum Terzo Settore Lazio	61-70%	28

Table 21: List of activities implemented in Rome

The visit to the photovoltaic system organized by the Rome pilot in December 2023 in the Corviale neighbourhood of South Rome is illustrated in Figure 14 below. It aroused a lot of interest among beneficiaries and participants.



Figure 14: Site Visit, Corviale community in Rome, December 2023

6.4. Analysis of the implementation

6.4.1. Main remaining challenges and solutions

Listed in Table 22 below are the remaining points of the pilot project that appear to be the riskiest, making it impossible to complete the experiment and/or not meeting all the expectations of the project. The probability of the risk occurring is ranked between 0 and 4 (0 is no risk, 1 low risk, 2 significant risk, 3 very high risk, 4 almost certain). There should be here only risk levels from 2 to 4.

#	<i>Main Risks identified and potentially blocking</i>	<i>Probability of the risk occurring (0 to 4)</i>	<i>Solutions or mitigation actions.</i>
1	Less than 200 beneficiaries involved in the Workshops	1	Webinar given the difficulty for many beneficiaries to physically follow the WS due to lack of time or because they are busy at work.
2	IEA (individual energy advice session) concerning less than 50% of the households involved	2	<p>The Rome pilot coordinates 10 communities distributed across the entire territory of Rome Capital for 200 beneficiaries therefore a limited number of beneficiaries are being selected to evaluate the possibility of carrying out the IEA (individual energy advice session) at their homes. This solution encounters various difficulties: psychological barriers to allowing strangers into homes, schedules and work activities of the beneficiaries. Furthermore, we are considering the home visits not enough representative of the 200 households on board and so quite un-useful compared to the group meetings and collective initiatives.</p> <p>The IEA of the Rome Pilot is designed with an engagement activity on multiple levels: 1) Automated IEA procedure developed by CITERA to identify the beneficiaries; 2) targeted engagement through home energy efficiency sheets during the WS; 3) Webinars.</p>
3	Reduced Mentors participation	1	Involvement of Mentors in additional capacity building activities: IEA, WEBINAR. Mentors have not acquired all the basic knowledge to be able to disseminate it later, it is necessary to involve them more, also considering that energy and REC related are definitely complex. The time they can dedicate to this activity is strongly influenced by their work.
4	Limited New PV installation	3	<p>The implementing decrees for the creation of CERs in Italy were published, after 2 years, on 24 January 2024. This has generated uncertainty about how to carry out CERs in Italy and which Business Plans to adopt. There remains the long authorization and construction times for new PV systems coordinated by Roma Capitale. Rome Municipality planned to install 15 PV plants for RECS but the related roadmap is not clear. But the requests coming from below: organizations, associations, individual citizens are a strong push to accelerate the creation of public CERs.</p> <p>Anyway, the Rome pilot can conclude positively using existing PV plants.</p>

5	Energy data availability	3	<p>Availability of electricity consumption data for individual beneficiaries is difficult to acquire. The national website of the Regulatory Authority for Energy, Networks and the Environment (ARERA) provides each electricity user with consumption data in csv format. Such data are provided on clustered consumption for every 15 minutes and therefore very useful for defining consumer profiles. However, access is only possible with certified digital identities (SPID) or Electronic Identity Card (CIE) that most beneficiaries are unable to obtain due to the complex procedures. This represents a barrier with metering access especially for the vulnerable.</p> <p>Targeted engagement activities for the vulnerable, F2F or through the Energy Desks (Sportelli Energia e Tutor Energia Domestica), the latter provided for each of the 15 municipalities of Rome Capital.</p>
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Table 22: Main remaining challenges and solutions

6.4.2. Good practices and lessons learned from the implementation

Good practices to share

- Domestic energy efficiency aims to optimize the use of individual appliances to make the best use of energy by reducing waste and lowering the cost of bills. The Rome pilot with the contribution of the CITERA Sapienza center, developed **information sheets** analysing the following four behaviours in relation to the use of household appliances:
 - What do I use best?
 - Where do I save?
 - How do I save?
 - The more you know, the more you save.

The WHAT and WHERE sheets concern household appliances and systems and aim to optimize the use of energy for their operation.

The HOW and WHO sheets deal with their management in relation to the use made of them by individual users.

The behaviours that each individual user has within their home have been reported in individual actions in the use of appliances for maximum comfort.

- For those in vulnerable socio-economic conditions, **improving behaviours in the use and management of energy at their home** can be a great help in reducing the cost of bills.
- Cards have been drawn up for a segment of the population in conditions of socio-economic vulnerability, with **actions that can be implemented in**

homes without technical knowledge, and at low cost, but which still guarantee a reduction in bill consumption

([https://sunforall.eu/resource?t=Factsheets%20on%20home%20energy%20efficiency%20\(in%20EN%20and%20IT\)](https://sunforall.eu/resource?t=Factsheets%20on%20home%20energy%20efficiency%20(in%20EN%20and%20IT))).

- A **calculation procedure has also been developed for Individual Energy Advice** (IEA) which, based on the electricity consumption deduced from the bills they provide, makes it possible to identify the type of advice to be provided. The tool, by cross-referencing the data from the questionnaires collected and a selection of benchmark criteria based on the user's consumption and those collected by ARERA for Energy Bonus recipients.

Lessons learned from implementation

- Participation in the **workshops can be open to more than just "energy poor"** beneficiaries.
- **Use appropriate communication strategies for a vulnerable population** segment. With the support of the third sector (Forum Terzo Settore e Federconsumatori Lazio), it was possible to implement a targeted assessment of the type of user, avoiding creating further communication barriers. Absolutely avoid a paternalistic approach.
- **Great demand for support services** on project topics from the beneficiaries met. Roma Capitale has made itself available to strengthen the "Sportelli Energia one-stop-shop" in several municipalities in the municipal area. The experience accumulated during the project is a great lesson learned to be replicated in the coming months.

Remarkable achievements or satisfaction with implementation

- **Greater involvement of civil society by public bodies**, regions, municipalities, etc., in decision-making processes where effective solutions can be found to combat energy poverty and improve energy efficiency.
- The complex phenomenon of energy poverty, if combined with the process of establishing RECs, better if in solidarity, presents **many barriers of a social, economic and specific knowledge nature**.
- After two years of meetings, it was possible to note the great interest of citizens in conditions of energy poverty. Above all, the lack of simple and effective information on the **issues of domestic energy saving**. At the end of the workshops, we found satisfaction with what Sun4All had transmitted and the beneficiaries always asked if there would be other meetings.
- The support of the Department of Social Policies of Rome Capitale was fundamental, but above all that of the **Third Sector associations that best know the social and urban realities** in all their facets.

- It is important to **involve associations** in the process of establishing RECS, especially by welcoming citizens who do not have the economic means to access them. Any economic request to families in economic vulnerability represents an insurmountable barrier in the phases of establishing CERs.

Focus on the WhatsApp Community Chats

The Rome pilot, involving 11 communities across the municipal territory, posed a significant challenge in ensuring maximum beneficiary participation in engagement activities. During initial workshops, beneficiaries showed interest in staying informed about project activities. In some areas, delays occurred between workshops, leading to the decision to create WhatsApp chats for each community, in collaboration with Forum Terzo Settore Lazio and Federconsumatori Lazio. Beneficiaries provided consent to be included in these chats, which were used for project updates and service information.

Given the widespread location of the communities, a meeting was held at Tor Pignattara to distribute information on domestic energy efficiency, bill reading, and new electricity market tariffs. The chats also shared updates on social bonuses and changes in Italy's electricity sales market, particularly for those in vulnerable situations.

The Table 23 below shows the members for each of the communities/clusters.

Community WhatsApp Chat	Members
Tor Pignattara	31
Quarticciolo	11
Centocelle	18
Corviale	19
Garbatella	8
Flaminio	18
Spinaceto Renzini	14
Spinaceto/Casal Brunori	7
Montespaccato	20
Primavalle	14
Montesacro	13
Total	173

Table 23: Size of Rome's WhatsApp communities

Figure 15 below illustrates the WhatsApp group discussions in the Rome communities.

D4.2: Final Report on implementation.

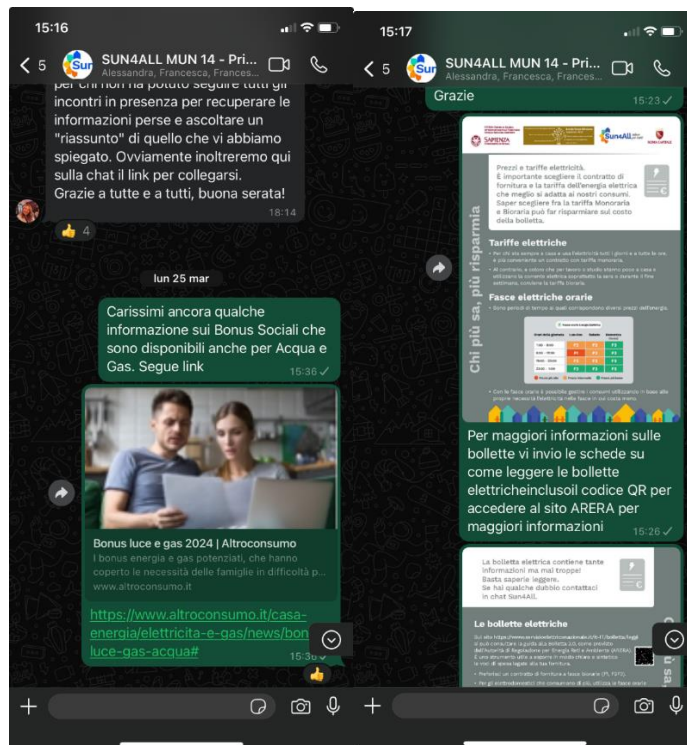


Figure 15: WhatsApp group chats in Rome

7. Conclusion

The Sun4All project aimed to promote an equitable energy transition in Europe by establishing energy communities that reduce energy costs for vulnerable households and empower them to combat energy poverty. The project, funded by the European Union's Horizon 2020 program, began in October 2021 and is set to conclude in September 2024. Over this period, four pilot cities—Barcelona (Spain), Coeur de Savoie (France), Almada (Portugal), and Rome (Italy)—have implemented two rounds of pilot tests, with the goal of continuing these models beyond the project's end.

The project's core objective was to experiment with different models of energy community participation, including collective self-consumption and the redistribution of profits from municipal photovoltaic power plants. Throughout the project, more than 500 vulnerable households in the pilot cities/towns have already benefited from a reduction in their energy costs or will soon do so, with ongoing support for other households. The project also emphasized the importance of engaging these communities through various activities, such as workshops and energy-saving advice sessions, to enhance their understanding of and participation in the energy transition.

Key lessons learned from the project include the importance of maintaining strong relationships with beneficiaries, particularly when benefits are delayed, and the critical role of appropriately sized photovoltaic installations in providing meaningful financial support. The project also highlighted the need for political commitment, and the advantages of building on existing actors, skills and infrastructures, and exploiting local networks with expertise in social issues to successfully launch and support these initiatives.

Finally, the Sun4All project has laid a solid foundation for the future replication of these energy community models across Europe, providing valuable insights and a framework for other cities to follow in the pursuit of a fair and inclusive energy transition.