



Community activation and involvement monitoring report

Deliverable 3.2



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 957843 (MAESHA). This output reflects only the author's view and the European Union cannot be held responsible for any use that may be made of the information contained therein.

Deliverable **D3.2**
COMMUNITY ACTIVATION
AND INVOLVEMENT
MONITORING REPORT



Organisation: Hudara gGmbH
Main authors: Anna Siegert

DELIVERABLE 3.2 – VERSION 1

WORK PACKAGE N° 3

Nature of the deliverable		
R	Document, report (excluding the periodic and final reports)	X
DEC	Demonstrator, pilot, prototype, plan designs	
DEM	Websites, patents filing, press & media actions, videos, etc.	
O	Software, technical diagram, etc.	

Dissemination level		
PU	Public	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	

Quality procedure

Revision	Date	Created by	Short Description of Changes

Document Approver(s) and Reviewer(s):

NOTE: All Approvers are required. Records of each approver must be maintained. All Reviewers in the list are considered required unless explicitly listed as Optional.

Name	Role	Action	Date
		<Approve / Review>	

ACKNOWLEDGEMENT

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 957843 (MAESHA). This output reflects only the author’s view and the European Union cannot be held responsible for any use that may be made of the information contained therein.

More information on the project can be found at <https://www.maesha.eu>

TABLE OF CONTENTS

ACKNOWLEDGEMENT	4
TABLE OF CONTENTS	5
EXECUTIVE SUMMARY	7
LIST OF FIGURES.....	8
LIST OF TABLES	8
1. INTRODUCTION.....	9
1.1. About MAESHA	9
1.2. Scope of this Document	9
2. BACKGROUND INFORMATION	10
2.1. Demonstration Site Mayotte.....	10
2.2. Learnings from Baseline Assessment	11
3. THE APPROACH	14
3.1. Participatory approach and Levels of Community Activation.....	14
3.2. Stakeholder Involvement and Feedback Loop Process.....	14
3.3. Local Energy Communities	14
4. LOCAL ENERGY COMMUNITY CREATION STEPS.....	16
4.1. Overall Process	16
4.2. Ground Level Panels & Transition Boards	17
4.3. Local Energy Community Implementation Committee.....	17
4.4. MAESHA internal workshops and site visits	18
5. IMPLEMENTING LOCAL ENERGY COMMUNITIES	18
5.1. Student Energy Community	18
5.2. Electric Vehicle Maintenance Community	20
5.3. Repair Workshop Community	22
5.4. Solar social housing communities 1-3	24
5.5. Energy Efficiency Community 1-2.....	26
5.6. Agricultural Energy Community	27
5.7. Solar Mama Community	27
5.8. Demand Response Community	28
5.9. PV & EV Charging Point Community.....	28
5.10. Two Directional Charging Community.....	28
6. LOCAL ENERGY COMMUNITIES WITHIN THE MAESHA PROJECT	28
6.1. Use Case.....	28
6.2. Key Performance Indicators for Community-Based Approach	28

6.3. Example of self-consumption	29
7. REPLICABILITY	29
7.1. Limitations	29
7.2. Challenges.....	29
7.3. Learnings.....	30
8. CONCLUSION	30
8.1. Summary.....	30
8.2. Outlook	30
REFERENCES	31

EXECUTIVE SUMMARY

<Please customise as per your specific deliverable needs>

LIST OF FIGURES

Figure 1: Reasons for complaint about the energy system	12
Figure 2: Types of involvement in a community renewable energy project.....	12
Figure 3: Different community variables by socio-economic background.....	13
Figure 4: First intervention at CUFR	19
Figure 5: Climate Fresk Workshop at CUFR	19
Figure 6: Students participating in Climate Fresk.....	20
Figure 7: Third intervention at CUFR	20
Figure 8: Future (E-) Bike Technicians visiting Mob'Helios.....	21
Figure 9: Kick-off EV Maintenance Community.....	21
Figure 10: Mahorais with Bike	22
Figure 11: Event for Repair Workshop Community.....	22
Figure 12: Showing children how to repair bikes	23
Figure 13: Bike Tour around Mayotte	24
Figure 14: Talus de Majicavo I as first demonstration site.....	25
Figure 15: Hamachaka as second demonstration site.....	25
Figure 16: Planning Massimouni buildings	25
Figure 17: Site visit where Massimouni will be built	25
Figure 18: Massimouni construction plan	26
Figure 19: Ground Level Panel with future community	27
Figure 20: Ground Level Panel.....	27
Figure 21: Basis for Solar Home System	28
Figure 22: Solar Mama Training.....	28
Figure 23: Three Solar Mamas from Mayotte	28
Figure 24: Self-Consumption Example.....	29

LIST OF TABLES

1. INTRODUCTION

While the stark benefits of a community-based approach have been widely discussed, the approach has not yet been modified and applied to an energy transition project. The MAESHA project did exactly this: taking a community-based approach and adapting it to support energy transition processes by including and activating the local population. The goal was not only to integrate the local population into technical solutions and best practices, but also to empower local communities, conduct capacity building interventions, organize Local Energy Communities and let them benefit from technological leapfrogs regardless of their socio-economic difficulties. With this, we want to show how the transition towards renewable energies can be performed in a participatory and inclusive way that is sustainable in the society.

1.1. ABOUT MAESHA

There are more than 2 200 inhabited islands in the European Union, many of which depend on expensive fossil fuel imports for their energy supply. The large-scale deployment of local renewable energy sources and storage systems would contribute to decarbonizing the energy system. However, this endeavour requires flexible solutions, new tools and efficient frameworks that can be adapted to local needs. The EU-funded MAESHA project develops smart and flexible methods of storage and energy management as well as modelling tools and technical systems with the aim of promoting the transition towards sustainable energy. Designed with respect to the interests of the local communities, adapted to the market and ready to be disseminated, the new approaches serve as a demonstration for the future decarbonization of Mayotte and other European islands.

1.2. SCOPE OF THIS DOCUMENT

The following document provides an overview of community activation and involvement activities that took place within the MAESHA project as part of the community-based approach. It starts with providing background information (chapter 2) needed to understand the context not only geographically, but also project wise. This includes a summary of the learnings from the baseline assessment we conducted, on which all activities that are outlined in this report built upon. Then follows chapter 3 with an explanation of the approach used in order to include the local population in the process of the energy transition. It describes the participatory approach and the different levels of community activation (chapter 3.1), the stakeholder involvement and feedback loop process (chapter 3.2) and introduces the concept of Local Energy Communities, including all relevant definitions, the respective laws and implementation examples from other contexts. Chapter 4 looks at the way of establishing Local Energy Communities in the MAESHA project. It first outlines the general steps undertaken in this experimental setting (chapter 4.1). What follows are some parts of this way which are explained in more detail, namely Ground Level Panels and Transition Boards (chapter 4.2), the LEC Implementation Committee (chapter 4.3) and MAESHA internal workshops and site visits (chapter 4.4). The core of this document is chapter 5, as it describes all Local Energy Communities that were set up within the MAESHA project. In order to dive deeply into each Energy Community, the sub-chapters not only tackle the goal, description and overall activities of each Local Energy Community, but also outline all local stakeholders involved, specificities in the creation process, challenges faced as well as learnings that can be drawn from the implementation. Chapter 6 places the Energy Communities and all activities conducted in the higher context within the project

and looks at all use cases and key performance indicators that are or are not met by our action. It also included the example of self-consumption, as it is quite representative of the MAESHA internal cooperation between all partners. Chapter 7 is about replicability, pointing out limitations, challenges and learnings in a more general way (specific and detailed learnings are already included in chapter 5). This document ends with a conclusion, summarizing the community-based approach within the MAESHA project with its major activities and providing an outlook on its future usage.

2. BACKGROUND INFORMATION

2.1. DEMONSTRATION SITE MAYOTTE

Geographically, Mayotte belongs to the Comoros. Due to its colonial history and a referendum in 2009, it is officially considered a department of France. These circumstances and the resulting social and cultural dynamics have a significant impact on life in Mayotte. The island is situated in the Indian Ocean near Madagascar and the coast of Mozambique. It is composed of two main islands, Petite Terre and Grande Terre, and is locally administrated by the elected Departmental Council.

Despite officially being part of the European Union, existing socio-economic differences need to be considered when implementing a technological innovation project such as MAESHA in Mayotte. Official statistics illustrate the contextual differences of the island compared to mainland Europe. With an annual population-growth of 3.8 per cent, on average 5 children per woman, and a Gross Domestic Product (GDP) comparable to that of Djibouti, Mayotte stands out compared to many other European regions. In comparison, the GDP of La Réunion, another European oversea department, is more than double of the GDP of Mayotte (Mayotte ann. GDP p.c.: 13 000 \$, Réunion: 27 000\$). The economy is at the same time very dynamic with an annual growth rate of 9% in recent years but at the same time has a high unemployment rate of around 35%. Compared to France with 16%, a staggering 70-84% of people in Mayotte live below the poverty line. Half of the population is younger than 18 years old (INSEE.fr).

People with different cultural backgrounds from East Africa, Europe and the Arab world live together. Nevertheless, this unique and diverse society is confronted with enormous social, economic and ecological challenges: increasing economic inequality, high unemployment, environmental destruction, post-colonial tendencies and struggles for resources are part of everyday life. While the island is extremely poor, it is yet by far the most prosperous region among its immediate neighbours. This has made Mayotte a major destination for illegal migration. It is estimated that about half of the 500 000 inhabitants have no valid legal status and are at constant risk of being deported. Ultimately, the society in Mayotte is split in half between the better-off and people with very little income, often migrants.

The distribution of electricity on the island is managed entirely by Electricité de Mayotte (EDM), who is in a situation of monopole. 95% of the electricity production comes from Diesel generators, and the remaining 5% come from recently installed RE plants, mainly solar (23MWp with a 4% annual growing rate). The potential for PV development is high as opposed to wind, as the wind deposit is very low, and not workable with the actual wind power technologies. Land availability is one of the main limits for large-scale expansion of solar PV plants. As for the grid, it is not conforming to European standards and illegal connection is a severe issue. The share of the population without access to electricity was indeed of 10% in 2017. All this results in a very polluting energy sector and in very high electricity generation prices, which, however, do not directly impact the local population as the electricity tariffs

proposed by EDM are aligned with those proposed in metropolitan France. This should however be qualified by taking into account that the GDP of Mayotte is three times lower compared to metropolitan France.

Regarding the transport system, which is the primary source of GHG emissions on the territory, it is almost exclusively based on thermal vehicles although the first slow EV charging stations have recently been installed, and only one car dealership offers electric vehicles. However, given the size of the island, the electric vehicles, if they are recharged with non-carbonized electricity, could provide significant reductions in CO2 emissions and air pollutants.

Official statistics suggest that one out of three households have insufficient access to running water, and many have no connection to the main energy grid. Ultimately, the local energy infrastructure suffers from a growing number of illegal connections and energy theft poses major challenges to the local grid operator. Conversations with communities and authorities revealed that some of the recently installed solar streetlamps were subject to theft. While this illustrates the reasons behind some people's scepticism towards shared community solar panels, it also reveals the massive demand for energy in marginalized communities.

The island finds itself in a phase of transition to renewable energy. The number of solar panels on buildings is constantly increasing. As part of the effort to move towards a greener and more sustainable energy system, the administrations of the four main districts CADEMA, CCSUD, CCPetit Terre and 3CO have recently launched the PCAET (plan climat air énergie territorial) which aims to foster an ecological transition within a time horizon between 2021 until 2026.

An important aspect concerning recently installed solar panels on rooftops is that most of them are owned by private independent power producers who sell the electricity to the local distribution system operator EDM. It is one goal of MAESHA to establish Local Energy Communities which can benefit from locally owned generation assets and practice self-consumption. This will be topic of the present document.

2.2. LEARNINGS FROM BASELINE ASSESSMENT

Our aim was not to follow any general statistics or a generalization of reports, but an up-to-date and comprehensive investigation of the actual situation on site. That is why we conducted the baseline assessment. Finished in M14, we conducted a quantitative survey including 400 participants as well as qualitative key informant interviews and ethnographic observations on site. The aim was to get clarity on community's needs, knowledge and attitudes towards renewable energy sources as well as their willingness to get engaged.

We found out that there are quite contrasting lived realities on the island and approximated the socio-economic background through housing conditions. As already pointed out in chapter 2.1, the socio-economic differences on Mayotte are exorbitant and shape the way people experience energy in their everyday life. The baseline assessment outlined the low level of awareness for climate change and renewable energy technologies (<50%). The following graphs shows that majority of people criticized the energy system for having high electricity costs, service and security problems and for causing environmental damage.

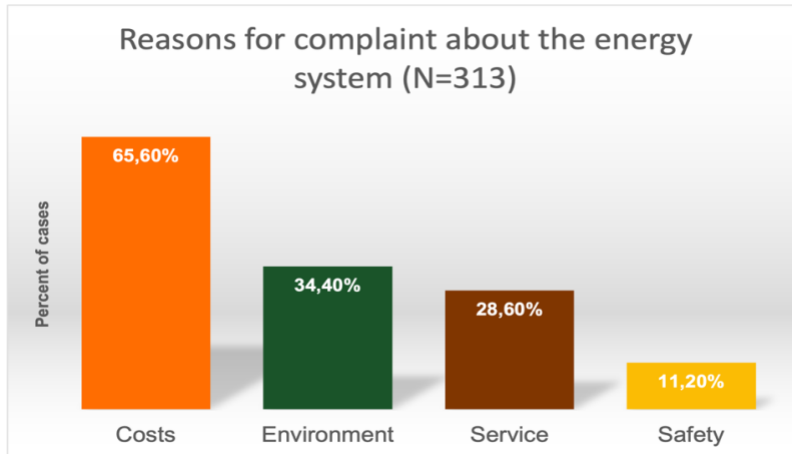


Figure 1: Reasons for complaint about the energy system

About 80% of our survey participants would like to see more renewable energy installations. The purchasing power of the community is generally very low. There is a lack of upfront capital to establish and maintain community-based energy systems. Hence, we learned that for our project it is important to find ways for financing more than initially expected.

Furthermore, we found a very high willingness to participate in community energy projects.

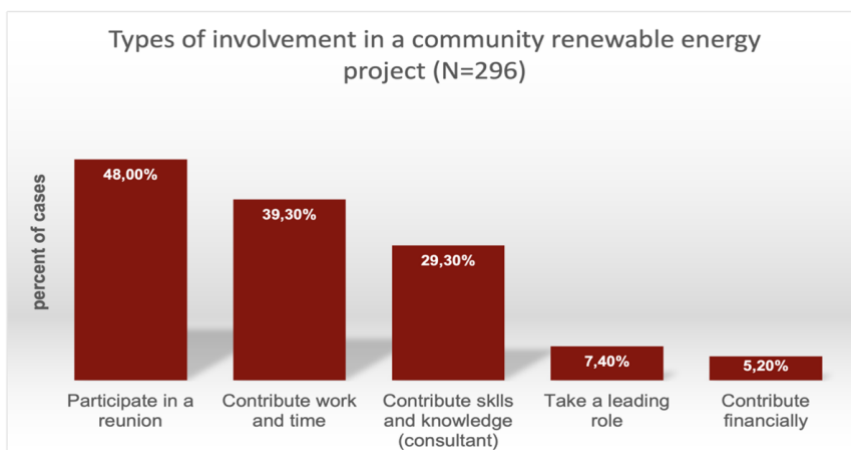


Figure 2: Types of involvement in a community renewable energy project

As shown in the graph, many citizens on Mayotte, especially those from stable socio-economic backgrounds would like to join a community reunion or help as volunteer to make their community more sustainable and maybe generate some income. The more unstable the socio-economic situation becomes, the more unlikely it becomes that people join community reunions and official events. But we found out that people from unstable situations would join more often if there is a financial component for them.

When looking at the motivation of people to participate in energy related projects, our analysis revealed that the issue of climate change has gained much relevance in privileged circles. However, the topic is given much less importance by communities who struggle to meet their basic needs. Their objective would be rather concentrated on the provision of access to energy.

Furthermore, the baseline assessment made clear that the identification with one's own community, a sense of belonging and personal responsibility can be crucial for the successful establishment of a citizen energy project. The following graph shows different community variables by socio-economic

background. We used a 5-point likert-scale on which participants could indicate different levels of agreement or disagreement (the higher the number, the stronger they agree).

DIFFERENT COMMUNITY VARIABLES BY SOCIO-ECONOMIC BACKGROUND

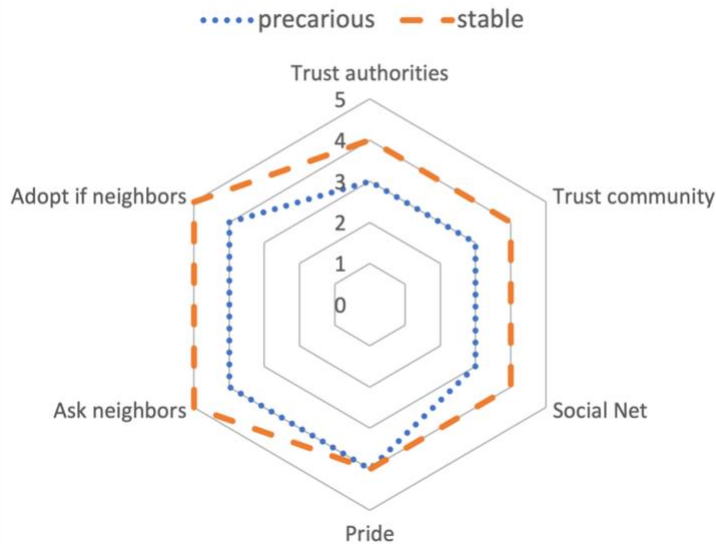


Figure 3: Different community variables by socio-economic background

We found that people feel generally quite proud of their own community. However, we discovered that people from a precarious background have significantly lower levels of trust in authorities and the “community” and less often have the feeling of being part of a social network. The lack of trust towards authorities was also topic in our interviews. We found out that it is because of the inaction of local politicians. Some districts have not experienced any changes and still find themselves in precarious living conditions. So they are left with the feeling of simply being forgotten. It can be challenging for new projects to restore this lack of trust. A helpful strategy could be to work very closely with community representatives or local mediators. These can serve as a trustworthy bridge between the local population and the project initiators.

We also found that most people would adopt innovative technologies if they would see that their neighbors did so as well. This is very promising for our project, as MAESHA is intended to be a demonstration project. So the establishment of some LEC can result in a wider acceptance and replication of such projects. One last point to mention, especially when having in mind the huge social inequality on the island, is the importance of making community projects as inclusive as possible to enable equal participation by all community members.

Concerning the establishment of Local Energy Communities, our Baseline Assessment found a great potential for residential solar technology, possibly in combination with social housing and resettlement schemes set up by municipalities. Another idea highlighted in the assessment is the use of P2H2P technology which can be used to help areas which are not connected to main grid getting access to energy. Our interviews made clear how important it is to pay attention to social problems and people’s perspectives and priorities while combating energy poverty. Any initiative for technological innovation should have this at its core, because renewable energy alone will not lead to a more equal and inclusive society.

So overall, the baseline assessment showed great potential for community-based initiatives. The following paragraphs make clear in which way those learnings were used to activate and involve the

community in the process of energy transition and in which way those learnings helped create Local Energy Communities, the final goal of T3.2.

3. THE APPROACH

3.1. PARTICIPATORY APPROACH AND LEVELS OF COMMUNITY ACTIVATION

As this part is still in progress and depends on insights from the implementation phase, the following aspects represent only the introduction into this topic:

- Research concerning community-based approach and community involvement in energy context very limited. That's why we started off with how to build community activation (1. Outreach, Communication, 2. Workshops for awareness raising, information, brainstorming/tools where the path could lead to, 3. Interested people get the chance to become involved, for instance first by participating in a small workshop organized for them where we point out idea, and where we think together where we could go on from this. But context specific → looks different not only from island to island, but from LEC to LEC)
- Community involvement comprising awareness, participation and management
- Include **all** groups of the community → not only giving opinion, but also involving them into financial benefits, into decision-making
- Have local intermediaries of energy push the clean energy agenda to make it more sustainable
- Needs focused → for a sustainable uptake and use in the future
- Elaborate on how this actually looked like during our process: for instance spending a lot of time with partners discussing
- Tailor projects to context of Mayotte and what that meant for us
- HUD gives into the consortium the voices of the people → guide our technical partners (e.g. share insights from the Baseline Assessment and from discussions on site)
- Familiarize people with the technical implementation → community-based
- Not for, but together/with the people, bottom up, people in centre, inclusive, open-minded, adapting to context

3.2. STAKEHOLDER INVOLVEMENT AND FEEDBACK LOOP PROCESS

Community members included in the process of energy transition vary widely and include local authorities, local industry representatives, members of the educational institutions, representatives of civil society organisations and community members themselves. The project consortium experts are also stakeholders engaging in the energy transition process and therefore they play an important part in the dialogue with the community.

- State number of contacted stakeholders (see contact list), then of involved ones, and different types
- We talked to a lot of actors in the field, all the relevant stakeholders and see what they are doing, what their goals are to then co-design and co-create

3.3. LOCAL ENERGY COMMUNITIES

Community energy systems such as Local Energy Communities come along with a number of advantages: First, project implementation is far more effective when conducted with and for the community and when it is adapted to the local context. Second, the level of awareness and acceptance is raised, which is the base for gaining public support in the transition to renewable energy. The Maesha project baseline assessment already pointed out that people would adopt renewable energy technologies if their neighbors did so, underlining the importance of involving citizens in the energy

transition. Local Energy Communities also act as rolemodel for other communities to see what is possible by developing awareness and ownership, people usually reduce their energy consumption automatically. Third, Local Energy Communities (can) reduce energy poverty by helping people getting access to energy and/or water supply, which is especially important in marginalized communities. As already pointed out, one third of households on the island of Mayotte have insufficient access to running water and many are not connected to the electricity grid. For many people on Mayotte, fulfilling their basic needs is more urgent than environmental sustainability. Fourth, the democratic process and the taking part in the decision-making leads to empowerment. Citizens get the opportunity to reclaim and manage the resources on which they depend, becoming prosumers instead of consumers. Fifth, such projects strengthen community building and establish trust into (local) authorities, while offering other options to the monopole system operator EDM. And sixth, they keep the money within the community and contributes to create a more local and circular economy.

3.3.1. Concept and Definition

The European Commission defines energy communities as collective and citizen-driven energy actions that contribute to a clean energy transition and advance energy efficiency within local communities. Moving citizens to the fore, they energy communities contribute to increasing public acceptance of renewable energy projects while potentially providing direct benefits to citizens through energy efficiency, lowering electricity bills and creating local job opportunities. Furthermore, energy communities can help provide flexibility to the electricity system through demand response and storage. They re-structure the energy system by allowing citizens to participate actively ([EC, 2023](#)).

The EU legally introduced Local Energy Communities (LEC) as possibility for citizens to collectively organize and engage in the energy system in 2019 in the European Commission's [Clean Energy Package](#). There are two major characteristics of energy communities: First, they allow open, voluntary and democratic participation and ensure that members are equally involved in decision-making. Second, energy communities provide social, environmental, or economic benefits for local communities, rather than concentrating solely on financial gains. Energy communities often include decentralized and renewable-based systems and are part of social innovations. They are involved in various activities, all linked to the process of energy transition, such as generation, supply, consummation/sharing, distribution, electro-mobility, flexibility, storage, or energy related services (e.g. energy saving or energy efficiency). According to the [JRC Science for Policy Report by the European Commission](#), also other activities such as information and awareness raising campaigns, mobilization and education of citizens ("empowering citizens towards joint action for combating climate change alongside municipalities and local authorities" (p.21)) can be at the core of Energy Communities. Furthermore, the report states that "energy communities can help to implement local sustainability projects that can achieve energy independency, reduce carbon emissions and fuel poverty, as well as contribute to the local economy. They can generate local jobs and avoid the outflow of financial resources from the region" (p.21).

Energy communities can become active also at the household level, advancing energy efficiency and alleviating poverty by reducing consumption. They can pay energy bills together with cooperating municipalities for people who struggle to cover their energy costs. Also housing associations can be considered as energy communities, when they offer benefits to tenants in social housing or address the issue of energy poverty, even in the case that the tenants are not directly involved in decision-making.

3.3.2. French Setting

The French regulation is declined from European regulation (Directive (UE) 2019/944, June 5th 2019). Energy Communities are part of the so-called [Code de l'énergie](#). There are two types of Energy

Communities: The so-called *Communauté Énergétique Renouvelable* (CER) ([art L291-1](#)) and the *Communauté Énergétique Citoyenne* (CEC) ([art L292-1](#)). The main difference between those two forms is that a CER should have local and small size stakeholders at their core (big companies are excluded). In contrast, a CEC can include big companies but has also more responsibilities (responsable d'équilibre = balancing responsibility).

3.3.3. Examples from other European Contexts

4. LOCAL ENERGY COMMUNITY CREATION STEPS

4.1. OVERALL PROCESS

The first step was to get into contact with people on site and to get an understanding about relevant institutional structures in Mayotte. An extended stay on the island including in person meetings with all identified relevant institutions was crucial on our way of forming Local Energy Communities. With the support of local change ambassadors on site, we conducted a Baseline Assessment including a survey with more than 400 participants and interviews. Based on these insights as well as our findings from the first trip to Mayotte, a list of 15 possible concept ideas for Local Energy Communities was developed and discussed within the MAESHA Consortium.

Thereafter, we checked the concept ideas on site to see what is needed and possible. We contacted about 30 different stakeholders and talked to about 20 of them, which are all active in the field of energy and sustainable development on Mayotte. In these discussions, we examined the different concept ideas with regard to their applicability to respond to needs on site, willing local partners to cooperate with as well as feasibility within the project constraints. New concepts came up, new perspectives of cooperating were established and every meeting with local partners made us understand the situation on site and the structures that lay behind more deeply.

After this second trip to Mayotte, we updated the list of concept ideas and looked more into detail on the potential and risks of every concept idea. The result of this examination was presented to all MAESHA partners during the Consortium Meeting in Mayotte in November 2022. Following the MAESHA internal discussion, we put emphasis on three Local Energy Community concepts to start with.

In so-called Ground Level Panels, all involved stakeholders were brought together to collaboratively map each Local Energy Community as well as its demonstration site and the next steps to take. Numerous meetings, in person and online, followed this kickoff and helped concretizing the cooperation as well as tasks, responsibilities and timeline. Most meetings were kept small and held in local language in order to make sure that everyone feels comfortable in expressing their opinion. For the majority of meetings on site, Hudara was the only MAESHA partner participating, building trustful relationships with the local partners while building a bridge between them and the MAESHA partners on the other side. All meetings took place in different formats and languages and varied depending on what was needed in order to realize the respective LEC's implementation in a collaborative way.

Simultaneously to the start of implementation of the first three LECs, a third trip to Mayotte enabled the creation of further cooperations and with this LEC concepts to be implemented. Hence, each Local Energy Community creation is shifted in time and follows a different implementation process, according to what was collaboratively agreed upon with the local implementing partners.

To maintain a close exchange with the project, a so-called LEC Implementation Committee consisting of the most important MAESHA partners involved in LECs was established with bi-weekly meetings taking place online. Thereby, MAESHA partners were kept updated about the progress in each LEC. Some LECs, for instance the Student Energy Community and the Solar Social Housing Community, required more extensive involvement of other MAESHA partners. Therefore, the bi-weekly LEC Implementation Committee meeting offers the space to discuss the involvement of MAESHA partners and makes sure that every task is followed up upon and closely supervised by all partners.

4.2. GROUND LEVEL PANELS & TRANSITION BOARDS

In order to involve communities in project implementation right from the beginning, differently composed meetings and workshops were used. The following paragraphs explain the general idea of so-called Ground Level Panels and Transition Boards and outline in which way they were used in the MAESHA project to ensure community activation and involvement.

Ground Level Panels are reunions which have at its core the lived realities of people, their perspectives on the energy system and potentially some scenario building tools. The latter includes questions such as “what do I like about my community, how do I envision the future of my neighborhood/community/country etc.”. Questions are formulated in an open way in order to make participation in the discussions as simple as possible. Ground Level Panels are used to build the ground of cooperation: understanding people’s needs, perspectives and dreams for the future to come. The goal is to get to create a safe space and eye-level conversation, where all community members are willing to speak up and outline their opinion. Hence, the involvement of external people not coming from the community itself was kept to a minimum with mostly only one person participating from Hudara.

Multi-sectoral coordination is the role of the transition boards, acting as a medium of communication and dialog between the community and the partners of the project. Transition boards are one crucial step in co-creating Local Energy Communities between the local population and the project partners. It allows an active participation of the population that goes beyond the project’s end. They are composed of more powerful and influential stakeholders in comparison to the Ground Level Panels and include local authorities, members from relevant organizations, companies or funding institutions and motivated representatives of the Ground Level Panels who bring the results of the first meetings to the transition board. Transition Boards are like a task force with all relevant stakeholders for the specific energy community and include relevant partners from the MAESHA Consortium.

We realized that there is a big variety of different needs on the island of Mayotte, making solutions equally varying and context specific. Hence, instead of one big, several small Ground Level Panels and Transition Boards, differently shaped depending on the Energy Community, were used to discuss the creation of Energy Communities. On Mayotte personal meetings on site play a fundamental role for building trustful relationships. It is a small island and therefore most people know each other, at least if they are working in a similar sector. Online meetings proved to be not always possible and language barriers imposed the spoken language to be French. Hudara facilitated the meetings which mostly took place on site and in French, while also being the intermediary between people on site and MAESHA partners.

4.3. LOCAL ENERGY COMMUNITY IMPLEMENTATION COMMITTEE

A Local Energy Implementation Committee was created to support the holistic implementation of actions on site. It consists of all relevant MAESHA partners, while keeping this group as small as possible to ensure efficient and interactive discussions. The aim of this LEC Implementation Committee is to strengthen MAESHA internal cooperation and to find overlaps of different tasks and partners’ competencies to ensure a fast and efficient implementation of Local Energy Communities

on Mayotte. Starting in November 2022, the meetings take place bi-weekly and therefore allow a close follow-up of tasks and responsibilities.

4.4. MAESHA INTERNAL WORKSHOPS AND SITE VISITS

- Site visit to the social/temporary housing demonstration sites with MAESHA partners during Consortium Meeting in November 2022 (include pictures)
- Workshop on LEC creation in November 2022
- Workshop on all LECs involving solar panel installation around List of tasks, responsibilities, and deadlines (include pictures)

5. IMPLEMENTING LOCAL ENERGY COMMUNITIES

The following sub-chapters are structured as follows: Each sub-chapter starts with an introduction into the topic the Energy Community deals with and why it is important. Then follows an overall description of what this LEC comprises, including its goals and all stakeholders involved. Thereafter, the specific creation process is outlined, as well as challenges and learnings that evolved alongside this process. Each sub-chapter ends with a summary and an outlook on how this project is going on in the long run.

5.1. STUDENT ENERGY COMMUNITY

We discovered that knowledge about climate change and the energy transition is very low on Mayotte. The island has one university center, which is not eligible as full University yet, but cooperates with the University on La Réunion. It hosts more than 10 000 students coming from all over the island with different backgrounds. We see the big potential here

The idea of this project is to train students to become local ambassadors and conduct awareness raising workshops for their colleagues and public.

- Facilitation of awareness raising Climate Fresk workshops at University offered to interested students
- Build up group of interested students who participated in one of the workshops and would like to get further engaged
- Train this group of engaged students to become facilitators of Climate Fresk Workshops and form this Energy Community, then coach them in their first workshops and let them pass on their knowledge
- Let newly trained facilitators translate the Climate Fresk materials into local languages and support them to facilitate workshops for the public/for other Local Energy Communities

What has been done so far:

- So far three Workshops held at University
- Various advertising activities at University for upcoming workshops (target students more specifically)
- Feedback form developed
- Group with interested students to be trained

Next steps:

- Organize Climate Fresk Facilitator training (Romain)
- Develop flyer (in cooperation with EQY)
- Cooperation with other LECs and external partners (e.g. OAA) to conduct Climate Fresk Workshops outside of CUFR

Include introduction about Climate Fresk (since when, developed by whom, with what goals, how widespread already and then explain how it is structured and what it is about (if necessary, insert photos of the cards and the correct arrangement, see link).

- <https://app.mural.co/t/katharinadasklimapuzzle4776/m/katharinadasklimapuzzle4776/1650571231812/ffe168b49896640f79f0d2f5ad7de63b5e95110a?sender=4feaab55-c29c-45a2-a100-61010309b09e>
- Goal: increase understanding of climate change topic
- builds on collective intelligence (so everybody speaks, but more knowledge), Ziele: Have learned some stuff, have a good time, eager to take action

Voices from the field:

- First real intervention on site on 23.11.2022, 1,5h: “We had a small kick-off workshop this morning with different students and involved people and staff from the University on Mayotte, discussing 1,5h about climate change and the energy transition on Mayotte. Romain from Euroquality facilitated a part of it as he is voluntary involved in sensibilisation workshops with a French association called Climate Fresk. It was a lively intervention and discussion and got people interested and motivated to get deeper into the topics. Moli, a former student from University who helped Hudara out with a few tasks already, is now keen to take it on and also bring these aspects into his work as a teacher at school. We are currently organizing the next intervention with a few more people on site.”



Figure 4: First intervention at CUFR

- “Very exciting discussion with students on general climate issues. Vegetarian/vegan was completely new for them and what impact it has. They were super interested in it and simply didn't know a lot of things, but then come up with exciting other ideas (e.g. seasonal is not such a problem here because there are only seasonal fruits/vegetables anyway). Could have gone on for ages, the discussion!”

- Second intervention on 02.12.2022 3h: “The workshop at the University facilitated by Romain started with 45+ min of delay (organisational issue on the university's side), they were more than planned therefore I had to facilitate 3 tables of 7 at once which is sport. The students were quite exhausted from the beginning, but it went very well with a good third of them I would say. The level of the students (in first year after high school) is definitely lower than in continental France, especially regarding the general culture on environment but some notions are supposed to be acquired from junior and high school but were not. We had a good discussion about the MAESHA project at the end of the workshop.”



Figure 5: Climate Fresk Workshop at CUFR

- Third intervention on 17.03.2023: Facilitated by Hudara and Emiilie (local ambassador): small group of 9 students + 3



Figure 7: Third intervention at CUFR



Figure 6: Students participating in Climate Fresk

- Outside the workshops also process of bringing the topic into the courses (that the teachers/professors in their lectures and courses address and work on it from their respective perspective, for example from the legal/economic/... side). Communication and dissemination activities are ongoing because we have initiated the topic and placed it so high up there with the director and talk to people about it...
- Initial idea was to build up cooperation between the two universities, but difficult because of the language barrier

5.2. ELECTRIC VEHICLE MAINTENANCE COMMUNITY

The current mobility of the inhabitants of Mayotte is characterized by three main modes of transportation:

- Non-motorized travel for short distances
- Use of shared taxis, which serve as public transportation, both in cities (urban taxis) and in villages (intercity taxis or "bush taxis")
- Personal vehicle use: the majority of intercommunal home-to-work trips are made by private car.

There is no organized public transportation on the territory, except for school transportation and the barge transportation system between Petite and Grande Terre. Mayotte residents bear the full cost of their transportation.

The car is the main mode of transportation and the number of vehicles is increasing rapidly (12% per year). The increase in living standards, the high number of young people in Mayotte, and the still low rate of household vehicle ownership (29% in 2017 compared to 81% in mainland France) will result in an increase in the vehicle fleet, which could further saturate an already congested and deteriorating road network.

Energy demand is constantly increasing on the territory. To meet this demand, production using fossil fuels has increased rapidly while the share of renewable energy has decreased to reach 5.3% of the energy mix, compared to 94.7% of energy produced from hydrocarbons in 2018.

The consumption of imported petroleum products is steadily increasing and represents more than 141,000 m³ in 2018, with 58% for electricity production and 42% for transportation.

It is therefore essential to move towards a different model of transportation organization. Mayotte must transition to softer, energy-saving, and lower CO₂ emission mobility.

General LEC outline:

- Mob’Helios (start-up with e-bikes/e-scooters) in need of local technicians to develop e-bike market on Mayotte
- We cooperate with the association called Apprentis d’Auteuil to recruit interested young people “in difficulty” who mostly did not have the chance to go to school and get proper education
 - Cooperation to recruit interested young people
- We train of 4 young people to become e-bike technicians in metropolitan France in June 2023 who get the possibility to be hired by Mob’Helios upon their successful completion of the training
 - Training as part of French governmental program (financed by French ministry of ecology) called “techniciens cycles” lasting 3 weeks plus 1 week of internship



Figure 8: Future (E-) Bike Technicians visiting Mob'Helios

Challenges:

- Training on Mayotte is not possible because it is too expensive and there are not enough young people (there must be at least 12) because they need a job afterwards but the bicycle market on Mayotte is not developed (Mob'Helios can only take on a maximum of 4, but needs them urgently).
- Training in France, technicien cycle: free of charge until the end of 2022, but time was too short, so it has to be financed
- Then the technician from Mob'Helios was supposed to train the young trained people and integrate/integrate them into Mob'Helios, but he doesn't like it on Mayotte, means he wants to go back and so Mob'Helios has to look for a new technician with experience
- OAA: change in person in charge → new person has not so much experience in project management, does not speak English etc.
- Training in March then finally fully booked, and the place for the four was not reserved, which means that the next one will now only take place in June → but not so bad, because then enough time for recruiting new interested people
 - Training booked out again - first find all financiers, then ok from them, then book training and recruit people...
- OAA contact person changed and in the meantime funding unclear because financier had jumped off

Kick-off of this Energy Community was on 23.05.2023 with a presentation of the project and all partners, then all got to know each other, the most important modalities got discussed, and there was a press release as well. Then, we organized a bike tour for the four selected young people and all partners involved to the beach Badamiers on Petite-Terre including a BBQ on the beach.

A published article in a local newsletter about the project can be found here:

<https://lejournaldemayotte.yt/2023/05/25/mobilite-quatre-futurs-techniciens-velos-en-partance-pour-toulouse/>



Figure 9: Kick-off EV Maintenance Community

The group left on 02.06. to travel to metropolitan France. The training takes place from 05.06. – 30.06.2023. We created a Whatsapp Group to stay in close contact with the four participants over their whole trip.

5.3. REPAIR WORKSHOP COMMUNITY

Cycling is not widely practiced in Mayotte, and few children have the opportunity to own a bike. The "learn to ride a bike" program of the National Education system is not widely implemented in the department, and traditional gender roles do not encourage girls to ride bikes.

Many young people who do own bikes have "built" them using parts recovered from out-of-use bikes. The resulting bikes allow them to travel and have fun, but often under unsafe conditions due to incomplete equipment (such as brakes on only one wheel), faulty parts, and non-compliant assembly.

In addition, it is generally observed that the population of Mayotte has a low awareness of the issues related to climate change. Many young people are unaware of where the fuel used in cars comes from, how electricity supplied to the grid is generated, the disadvantages of using fossil fuels, and what virtuous behaviors they can adopt at their level to limit their usage.

We plan to organize workshops for teenagers in Petite Terre who own a bicycle. The young people will be sensitized to the issues of energy transition and eco-responsible mobility. They will then be able to proceed with the refurbishment of their bike, supervised by qualified bicycle technicians, using professional equipment and new parts, in order to leave with a bike that meets the minimum safety standards for riding on public roads: tires in good condition, operational brakes, compliant lighting and signaling, bell, fluorescent vest, helmet. Road safety awareness will also be provided during these workshops so that young people know the regulations applicable to cyclists. The goal is for these young people to pass on their knowledge about the issues of global warming and energy transition to the local population and to lead by example by using an eco-responsible means of transportation.

In agreement with the Rectorate, young people will be informed by their sports teachers in secondary schools in Petite Terre: Lycée de Petite Terre, Collège Bouéni M'Titi, and Collège Zéna M'Déré. The teachers will present the project to them and invite bike owners to participate.

Together with the young people we will carry out a diagnosis to identify all the necessary interventions to restore the bike to working condition. The bike will then be identified and registered in the national Bicycode® database, aimed at preventing the risk of theft by linking the bike to its owner.

Each session will last between 3.5 and 4 hours and will be jointly organized by MAESHA in cooperation with Mob'Helios and the Regional Cycling Committee. The schedule for each workshop, which will bring together 6 young people, will be as follows:

15 minutes: Welcome and verification of the bicycles' Bicycode and the planned repairs, presentation of the half-day's organization.



Figure 10: Mahorais with Bike



Figure 11: Event for Repair Workshop Community

15 minutes: Safety instructions for the repair workshop (tools/products used/protection equipment), presentation of the tools and parts that will be used for the different repairs.

15 minutes: Cleaning the bike before working on it.

15 minutes: What checks to perform on a bike?

- ✓ Chain wear
- ✓ Play in the steering
- ✓ Play in the wheels
- ✓ Play in the bottom bracket
- ✓ Condition of the tires
- ✓ Functioning of the brakes

2 hours: Carrying out repairs on the participants' bikes, with a demonstration beforehand by the technicians from the Mob'Helios workshop and the Regional Cycling Committee, and then the young people carrying out the repairs under the supervision of the technicians.

- ✓ Changing a tire and choosing the right inner tube
- ✓ Changing brake pads and/or adjusting brakes
- ✓ Changing and/or adjusting the derailleur
- ✓ Lubricating the chain
- ✓ Installing accessories (lights and signals, bell)

10 minutes: The golden rules before riding

- ✓ Wheels centered on the ground
- ✓ Stem tightened
- ✓ Pedals tightened
- ✓ Correct tire pressure
- ✓ Saddle height adjusted
- ✓ Foot placement on the pedals

10 minutes: Cyclist protection and the highway code

- ✓ Regulations applicable to cyclists



Figure 12: Showing children how to repair bikes

At the end of the workshop, each participant will receive a fluorescent vest and an approved helmet.

Furthermore, we plan to do a half-day of awareness and exchange on the challenges of energy transition and eco-responsible mobility in Mayotte.

This event will include a general presentation enriched with exchanges with young people on the following topics:

- Where does the energy we use come from?
- What are the drawbacks of fossil fuels?
- What are the advantages of renewable energies?
- What is global warming?
- What are its current and future consequences?
- What actions can we take at our level to limit it?
- How do we move around in Mayotte today?
- What are the problems posed by our current modes of transport?

- What eco-responsible mobility solutions could be implemented?

Also, at the end of all the workshops, we will organize a gathering in early 2024 bringing together all young people interested for a collective bike ride, followed by a diploma presentation by representatives of the MAESHA project, attesting to the young person's participation in the entire operation (ambassador conference, repair workshop, collective bike ride).



Figure 13: Bike Tour around Mayotte

Current State of this Energy Community: we jointly developed the elaborated plan together with people on site and are in the process of discussing responsibilities and timelines to then start with the kick-off on site.

5.4. SOLAR SOCIAL HOUSING COMMUNITIES 1-3

Despite officially being part of the European Union, there are big socio-economic differences compared to mainland Europe: about $\frac{3}{4}$ (70-84 %) of people in Mayotte live below the poverty line. Island is extremely poor, but most prosperous region among its neighbors → It is estimated that around half of Mayotte's residents do not hold a valid legal status. One of main problems is the lack of reliable and affordable access to electricity on the island. One out of three households has insufficient access to running water, 40% live in sheet metal houses, often without clearly defined property rights and without connection to the main grid. There is a growing number of illegal connections and energy theft.

When setting priorities related to the energy transition, they differ drastically depending on the socio-economic background of the participants (the issue of climate change is given much less importance by communities who struggle to meet their basic needs) → actual objective: access to energy. What we need: Demonstration sites focusing on better provision of energy to residents, especially those who find themselves in precarious living conditions. Such demonstration sites help establishing trust into local authorities and are key for the further adoption of RET and ultimately for combating climate change and energy poverty.

The city of Koungou is currently carrying out a resettlement program, to relocate marginalized communities from sheet-metal settlements to low-cost houses (see picture). People who move there can stay for 2-3 years and get trainings for job applications and so on.

Our plan is to equip these houses with solar panels for collective self-consumption. We aim to do this on three sites, namely Talus de Majicavo I, Hamachaka and Massimouni, all situated in Majicavo Koropa. Thereby, the electricity bills of inhabitants are reduced, who were relocated from slums to these houses and mostly do not have a job.

This is a step towards introducing marginalized communities to Renewable Energy Technologies and helps building capacities for active energy citizenship. At the same time, it empowers vulnerable communities to harvest the potential economic and social benefits of innovative technologies.

This is accompanied by sensibilization work for the inhabitants.

Current status of sites: Talus de Majicavo I & Hamachaka ready to be worked with, while Massimouni will be constructed by July 2023 (possibility to cooperate with Solidarité Internationale for solar water pumps).

We had different site visits together with the City of Koungou, as well as the construction companies of the buildings and the partners managing partner

Site 1: Talus de Majicavo I



Figure 14: Talus de Majicavo I as first demonstration site

Site 2: Hamachaka



Figure 15: Hamachaka as second demonstration site

Site 3: Massimouni → built by September 2023



Figure 17: Site visit where Massimouni will be built



Figure 16: Planning Massimouni buildings

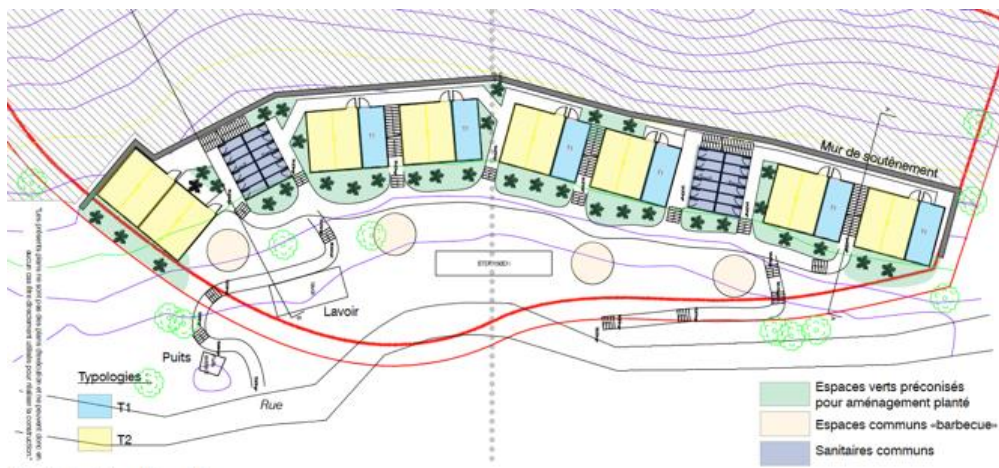


Figure 18: Massimouni construction plan

Current Status of this LEC: We set up a Gantt Chart with all tasks related to this project, as well as responsible partners and deadlines. We are currently organizing to commission a “Bureau D’Etude Structure” on site to conduct a feasibility study, This involves a mechanical check by a local partner to validate that the roofs of the houses on the three sites can withstand the physical stresses (weight of the PV panel, wind resistance, etc.) that an installation of solar panels brings.

5.5. ENERGY EFFICIENCY COMMUNITY 1-2

Since knowledge about energy consumption is not widespread on Mayotte, the goal of this LEC is to assist inhabitants to reduce their energy consumption and to understand why it is important. To do so, we plan to support the families with different actions:

- Compare their energy bills every month, to know if the sensibilization is relevant,
- Guide them to declare their consumption to EDM
- Give them advice about the utilisation of their electric equipment’s

To increase the inhabitants’ knowledge, and enable them to gain more independence, we are planning to conduct workshops to the inhabitants.

1. Workshop: Understand the topic of energy: This workshop includes a quiz to evaluate the participants knowledge level. It includes simple questions such as: what is energy? Where does it come from? How is it produced? Etc. Explanations will be given by means of videos and drawings. The goal is to explain how energy is produced on Mayotte, what its impact is on the environment and what potential renewable energy sources have for the island.
2. Workshop: Control and reduce our energy consumption: several games will be used to show participants their consumption habits, etc. The goal is here to identify the elements in the house which consume the most energy and understand the impact of their habits on the electricity bill.
3. Workshop: How to not waste energy: Here we plan to conduct a treasure hunt with the participants. The overall goal is to reinforce the acquired knowledge during the precedent sessions and to identify the eco-friendly habits to adopt in the houses
4. Workshop: Eco-friendly construction of houses: in this workshops the goal is to understand what impact materials of house construction have on the climate in houses on Mayotte
5. Climate Fresk: Here we plan to let the Student Energy Community jump in and conduct a workshop on climate change and the energy transition for the inhabitants of the houses.

6. Workshop as closing session with community building activities and lunch

Current State of this Energy Community: We are still in discussion about the specific planning, as well as responsibilities and the timeline of implementation.

5.6. AGRICULTURAL ENERGY COMMUNITY

Through a cooperation with the municipality of Kani-Keli, we got into contact with a community of around 30 people living in Choungui, next to the Mont Chungui. The goal of this project is to support this community of people in Choungui to get access to electricity and water and to therefore kick-start any following (agricultural, processing, culture and tourist) activities on their properties. We started of this process by several Ground Level Panels to better understand the needs, ideas and dreams all community members have and to give them the opportunity to express their opinion. We are now in the phase of finding out what system could support their needs. For this, we asked them to name representatives, so that we can organize meetings with our technical partners from the MAESHA project. The next steps are therefore to concretize their plan and to commission a feasibility study.



Figure 20: Ground Level Panel



Figure 19: Ground Level Panel with future community

Current State of this Energy Community: we had several Ground Level Panels, but the community did not decide on their representatives yet, to continue with the planning of what exactly will be built up.

5.7. SOLAR MAMA COMMUNITY

The aim of this energy community is to build capacity concerning solar PV knowledge to enable consumers to become prosumers and actively engage in the energy system on Mayotte. A community of 3 women are trained on constructing and maintaining solar home systems. Material for such solar home systems is shipped to Mayotte to be built together by the so-called Solar Mamas, who then sell the solar home systems to people from their neighbourhood. The Solar Mamas are able to undertake all reparation works needed in case some parts break or are not functioning properly anymore and have replacement parts at hand. The further plan is to set up an “Energy Kiosk” where the Solar Mamas, who just came back from their training in March 2023, can work and repair and sell the solar home systems.



Figure 22: Solar Mama Training

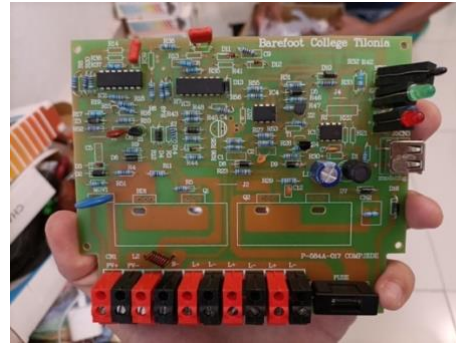


Figure 21: Basis for Solar Home System



Figure 23: Three Solar Mamas from Mayotte

5.8. DEMAND RESPONSE COMMUNITY

This community is about providing flexibility to the electricity system on Mayotte, involving consumers' air conditioners to be controlled remotely in its temperature range. This means that if the grid is overloaded the air conditioner drops temperature, and the other way around. This Local Energy Community therefore involves all participants in this trial set up on the island. More information will be included in line with the progress of this task within the MAESHA project.

5.9. PV & EV CHARGING POINT COMMUNITY

The idea is to form a Local Energy Community around the installation of solar PVs in combination with the 20 semi-rapid chargers which will be installed on the island of Mayotte within the MAESHA project to charge electric vehicles. EDM is currently coordinating all contractual needs with the respective participants on site, including municipalities.

More information will be included in line with the progress of this task within the MAESHA project.

5.10. TWO DIRECTIONAL CHARGING COMMUNITY

This Local Energy Community will be linked to the trial of setting up bi-directional chargers for electric vehicles for grid flexibility purposes. More information will be included in line with the progress of this task within the MAESHA project.

6. LOCAL ENERGY COMMUNITIES WITHIN THE MAESHA PROJECT

6.1. USE CASE

6.2. KEY PERFORMANCE INDICATORS FOR COMMUNITY-BASED APPROACH

6.3. EXAMPLE OF SELF-CONSUMPTION

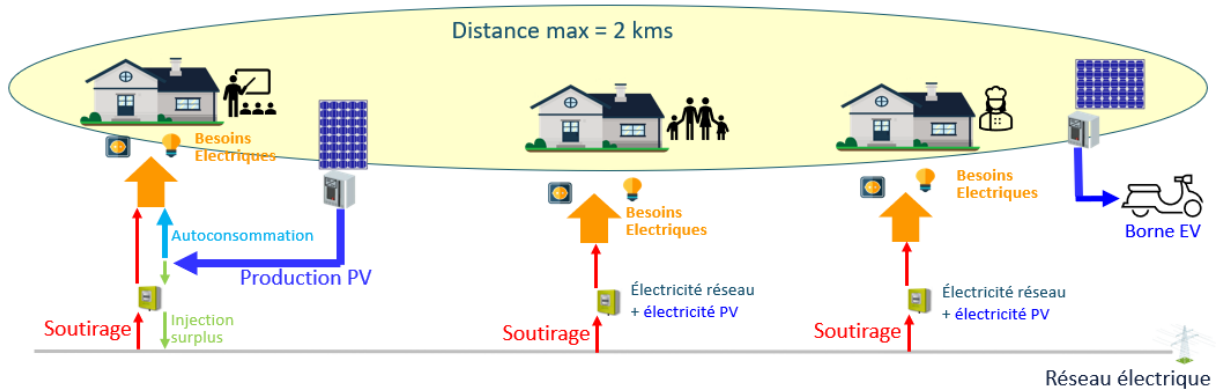


Figure 24: Self-Consumption Example

7. REPLICABILITY

7.1. LIMITATIONS

7.2. CHALLENGES

- Innovation process → learning by doing → the process changes constantly along the way.
- We didn't come with fixed ideas beforehand, but on the spot we needed to focus on them, which makes the process difficult overall, or you have to adapt and adjust flexibly (for example, it wasn't clear that we would build solar cells on the roof for the LECs, and we don't necessarily have these skills, so we have to see how we can implement this technically, organizationally and financially).
- Administrative challenges, for instance for the student energy community everything depends on the OK of the director: mobilizing many people in a short time is not easy, internet problems, language barrier, and sparse participation in first workshops
- Participatory approach is very challenging in other cultural contexts: how do you participate equally in a society where many people do not have a residence permit and therefore do not want to express themselves/get involved because they are afraid of deportation?
- It would be best to be on the ground permanently. Most progress is around the time that Hudara is on site.
- From idea to implementation: there have been umpteen ideas for each partner along the way, and many people agree and are interested, but there are problems with the actual implementation, a lot of things come to nothing in Mayotte.
- Example university how the process has changed again and again: At the beginning discussions with director, then joint course idea/Erasmus idea, but it fails because of language. Then Student Energy Clubs, but finally started with loose events, until at some point many people at the university know about it and word gets around, and you can identify a motivated group of people who want to get more intensively involved and do things.
- Safety Issue on Mayotte → always comes up again and again and makes some concepts impossible to implement
- Solar panel installation: companies on Mayotte are only interested in hiring roofs, not in building large scale projects for others... → we first need to find companies that are willing to cooperate for our project
- Legal framework for sustainability: who can manage it locally in the future?

- Dependent on local people and their cooperation
- Include regulatory, technological and business barriers

7.3. LEARNINGS

- Ideally such community involvement is managed by a person who lives on site over the whole length of a project
- Role as a facilitator sometimes difficult to make clear → it is their community in the end
- Incentives needed for local partners to cooperate → everyone acts out of their own interest
- Spreading process → Mindmapping, through discussions with stakeholders we identified the stakeholders that were actually the most important for us. The connection and individual trustful relation to people was the most important (everyone knows everyone)
- Propositions were informed by the needs that were identified
- Still same need of mobility, but it gets more specific when talking and talking to all involved stakeholders, then ending up to be bike technicians
- Learning from LEC at the university: it needs the ok from the top (the director) and then an executing person in management, it needs enough time in advance to mobilise people. Many things here don't make sense (e.g. course cooperation with university in Germany won't work because of language barrier).
- Procedures have changed within the consortium, e.g. introduction of a bi-weekly implementation committee ☑ Efficiency is the challenge with so many partners.
- Purchasing process takes a lot of time on an island that is that far away
- Community work takes time, as it needs a lot of meetings to build trustful relationships
- Reliable local partners are key

8. CONCLUSION

8.1. SUMMARY

8.2. OUTLOOK

REFERENCES

Please use APA 7 referencing style. You can use a citation generator with the DOI number such as MyBib's one, or a Word add-on such as Zotero.

Please provide a list (following this example) of all literature sources you used.

Kalnay, E., Kanamitsu, M., Kistler, R., Collins, W., Deaven, D., Gandin, L., Iredell, M., Saha, S., White, G., Woollen, J., Zhu, Y., Chelliah, M., Ebisuzaki, W., Higgins, W., Janowiak, J., Mo, K. C., Ropelewski, C., Wang, J., Leetmaa, A., ... Joseph, D. (1999). The NCEP/NCAR 40-year reanalysis project. *Bulletin of the American Meteorological Society*, 77(3), 437–471. <https://doi.org/fg6rf9>

Khan, A., Huynh, T. M. T., Vandeplas, G., Joish, V. N., Mannent, L. P., Tomassen P., van Zele, T., Cardell, L.O., Arebro, J., Olze, H., Forster-Ruhrmann, U., Kowalski, M. L., Olszewska-Ziaber, A., Fokkens, W., van Drunen, C., Mullol, J., Alobid, I., Hellings, P.W., Hox, V., ...Bachert, C. (2019). The GALEN rhinosinusitis cohort: Chronic rhinosinusitis with nasal polyps affects health-related quality of life. *Rhinology*, 57(5), 343-351. <https://doi.org/10.4193/Rhin19.15>