D2.6 Bioenergy RESCoops e-Market environments – Final

APRIL 2023

www.becoop-project.eu

Project Acronym:	BECoop
Programme:	HORIZON2020
Topic:	LC-SC3-RES-28-2018-2019-2020
Type of Action:	Coordination and Support Action
Grant Agreement number:	952930
Start day:	01/11/2020
Duration:	36 months
Contact:	contact@becoop-project.eu

Document information

Document Factsheet	
Full title	D2.6 : Bioenergy RESCoops e-market environments - Final
Work Package	WP2
Task(s)	T.2.3
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Date	24/04/2023

Document dissemination Level

Dissemination Level		
X		PU - Public
		PP - Restricted to other programme participants (including the EC)
		RE - Restricted to a group specified by the consortium (including the EC)
		CO - Confidential, only for members of the consortium (including the EC)

Document history

Version	Date	Main modification	Entity
v0.1	20/03/2023	Draft version distributed for partners' review	CIRCE
V0.2	24/03/2023	Internal quality review	GOI, SEV
V1.0	20/04/2023	Final version	CIRCE
V1.0	24/04/2023	Submission	WR

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About

Over the last years, the EU has witnessed some remarkable steps in Renewable Energy (RE) deployment. However, at the same time, we see an increasingly uneven penetration of RE across the different energy sectors, with the heating and cooling sector lagging behind. Community bioenergy schemes can play a catalytic role in the market uptake of bioenergy heating technologies and can strongly support the increase of renewables penetration in the heating and cooling sector, contributing to the EU target for increasing renewable heat within this next decade. However, compared to other RES, bioenergy has a remarkably slower development pace in the decentralised energy production which is a model that is set to play a crucial role in the future of the energy transition in the EU.

The ambition of the EU-funded BECoop project is **to provide the necessary conditions and technical as well as business support tools for unlocking the underlying market potential of community bioenergy.** The project's goal is to make community bioenergy projects more appealing to potential interested actors and to foster new links and partnerships among the international bioenergy community.

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952930.

Project partners

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1. Executive summary

Note: D2.6 is registered as a website-type deliverable. The BECoop consortium decided to also develop a respective report, as presented herein, providing guidance on the e-Market's user interface and experience. The BECoop e-Market is always accessible by visiting the BECoop project website or by directly accessing: https://becoop.fcirce.es/e-Market/

T2.3 of the BECoop project aims to create an e-Market environment for connecting supply chain stakeholders in a virtual platform. It can work complementarily to the support services offered by the project, supporting the development and operation of community bioenergy and heating projects. In the next steps of the task, an educational and informational vector will be developed and included in the environment, so as to demonstrate to potential bioenergy RESCoops the various stakeholder interactions and activities that have to take place for setting up an effective and sustainable local supply chain and a community bioenergy project. In this regard, the purpose of this document is to provide an explanation of how the environment has been developed, what can be found in it, how it is used and what can be expected from it in the following months of the project. To achieve this objective, the organization of this deliverable is as follows:

- In section 2, an introduction can be found.

- In section 3, the methodology is explained that was followed for the development of the environment, the selection and categorization of the stakeholders that should be included, as well as the registration method, the information needed for it and the invitation process.

- In the fourth section, the environment is described, and all the information needed to take part in it is explained and defined. This section can be used as a guideline for the users. It covers all the sections included in the environment in a step-by-step approach.

- The next chapter explains what are the expected outcomes or results that can be obtained using this platform. What an external user can obtain or how he/she can benefit from the use of this newly developed platform.

- Subsequently, the approach for the educational vector and its web deployment is presented.

- Lastly, a set of conclusions is proposed, regarding the aim of the e-Market environment, its dynamic operation, and the active collaboration between the partners to populate this environment with relevant actors from the bioenergy sector.

With respect to the first version of this deliverable (D2.5. Bioenergy RESCoops e-Market environments – First) published in October 2021, some additions have been made in D2.6. These enhancements are briefly enlisted below:

- **Addition of the educational vector and information regarding its development (*chapter 5*)**

  a) **Methodology for the vector development *(Chapter 5.1)***

  b) **Online implementation *(chapter 5.2)***

- Dissemination campaign (*chapter 6*)

- Tool metrics: online traffic and analytics *(chapter 7)*

2. Introduction

In energy communities, citizens jointly own and participate in renewable energy and energy efficiency projects. Communities like these take collective and citizen-driven energy actions that will move citizens to the forefront of a clean energy transition. Energy communities are one of BECoop's main focus points, and its ambition is to foster a broad deployment of bioenergy technologies in the heating sector across Europe by providing all the necessary conditions and support tools for unlocking the underlying market potential of community bioenergy.

A number of tools will be developed under the BECoop project to improve the situation of this bioenergy sector within the European Community. In this sense, the e-Market is considered to be a valuable tool for aiding the deployment of bioenergy technologies in the heating sector. An e-Market environment is a web portal, in which registered users can post and offer their products and needs. This concept has been adapted to the bioenergy and energy community sector, in order to provide users with a web portal in which they can post their offers or demands for products, across the whole of Europe, and regarding different types of services.

Specifically, the e-Market environment described in this document is a contact platform, which will also include an educational or informational section, that is focused on helping boost local bioenergy supply and demand, mobilizing citizens around existing or new community bioenergy projects or increasing their feasibility by identifying providers of technical, business, financial, or community model solution providers. These objectives will be achieved by helping the relevant actors and stakeholders to keep in touch, providing a network for posting their offers and needs related to the sector, as well as the pilot initiatives identified in the scope of the project and all the related tasks, and by presenting the various stakeholder interactions that should take place for setting up and effective and sustainable supply chain in a graphic way.

By using the BECoop support services and tools, energy communities and authorities will be able to mobilize citizens around existing or new community bioenergy initiatives, boost local bioenergy demand by improving its image and social acceptance, and increase the feasibility of their endeavours by identifying suitable technical, business, and financial solutions, as well as by pooling expertise and partnerships from the wider EU bioenergy ecosystem.

Currently, in the e-market environment, more than 120 participants have already registered. The greater participation, the bigger variety of offers and needs will be broadcasted, answering, this way, to a wider range of necessities and demands around community bioenergy projects. For the platform to reach its maximum impact, a wider promotion of its added value is being carried out by all members of the BECoop project.

In a parallel way, the educational and informative features, also derived from the consortium partners' knowhow, have been included in the web development, in order to provide a visual explanation of the bioenergy and community energy supply chain and the usual interactions among involved stakeholders.

3. Methodology for the development of the e-market environment

The first step in the development of the e-Market environment was to define the concept of the platform in a way that can satisfy the needs of its users, by establishing effective contacts with other members of the supply chain. With this regard, the main objective had to be kept in mind: offer the BECoop cases a virtual environment for biomass heating and supply chains. This environment will be useful not only for the BECoop cases, but for stakeholders in a European level. For this, it has been decided that a platform where registered users can post their offers or necessities was the most suitable solution. This way, when a member of an energy community, cooperative, or RESCoop needs a product or service related to the bioenergy value chain, a post can be created, specifying the particular aspects of their request. In the same way, if they want to offer a product or service, they can publish it in the environment to spread out their activities, so they can be contacted by other members of the bioenergy community that might be interested in them. To summarize, the posts are firstly classified into two types according to this initial differentiation: offers or needs.

It is worth mentioning that the platform is designed in a way that allows users to upload the number of posts desired, but it is not necessary to create an account for each post: An account is created to represent a certain user (company, organization, community, etc.), and from this account, the number of posts created (being needs or offers, indistinctly) is up to the user.

But it is not only restricted for members of an energy community, cooperative or RESCoops; all the members involved in the bioenergy or renewable energy value chain can take part in the environment. The more members of this value chain get to register and participate in the platform, the more valuable this will be. This way, we can create effective interactions among the users and help to spread the activities or products offered by those taking part in it, thus supporting the market uptake and final deployment of bioenergy, renewable energy, or community energy initiatives.

As a way of involving as many users as possible, so that the environment becomes populated with a wide variety of posts (offers and needs), it has been designed to be user-friendly, easy to use and intuitive, while maintaining the aesthetics of the BECoop project. Hence, it is not necessary to have a deep understanding of how the platform works, and the abandonment of its use due to a lack of understanding or very complicated procedures can be avoided, thus achieving a long-lasting platform, suitable for its primary purpose: supporting the market uptake of bioenergy and community energy projects.

It was also decided that for participating in this environment, a registration process should be included to also monitor the people taking part in the platform.

> The main purpose of the e-Market platform is to act as a virtual environment for biomass heating and supply chains for informative and educational purposes.

The next step in the development of the platform was to select the categories of stakeholders that should be engaged, and how they were going to be classified. In this sense, the main goal was to include all the members of the value chain: from the first stages (production, pre-treatment, etc.), through the intermediate ones (storage, distribution, other treatments), to the final stakeholders (mainly focused on end users) as well as those whose activities may be transversal to the whole chain (as, for example research activities, investing or activities related to public entities that can affect different parts of the chain). This way, the final stakeholder categorization, which need to be attracted, is the following:

- Biomass owners

- Biomass Management companies

- Equipment manufacturers

- ESCOs and installers

- Cooperatives / Energy communities / RESCoops

- Investors

- Research Centres / Universities

- Public institutions

- End Users (as consumers of bioenergy)

All the stakeholders taking part in the value chain are represented in the list creating a simple interface that allows to differentiate all the stages of it and thus the stakeholders involved in them simply and effectively.

Continuing with the development of the environment, the necessity of interaction among the participants was also addressed. Towards this aim, the consortium agreed that the platform shall include an internal instant messaging solution. This way, the environment facilitates the direct interaction and communication between stakeholders, creating a new communication channel. It is also possible to customize how notifications are received: only in the web or also via email.

This means of communication inside the platform will also allow the project to monitor the interactions that have taken place – by checking the stakeholders involved in the interaction, but not the content of it. This way, the project will be aware of the status of compliance of certain KPIs, such as *KPI 13 – Stakeholders receiving the BECoop services > 400.*

The final step was to agree on the content of each of the posts. This process followed a similar path to the earlier steps--drafting contents and discussing them with the consortium. The final contents to be included in each post, and the contents required for the company/organization registration are the following:

- Description of the entry (see Figure 1)

  o Type: Offer / Need

  o Date

    o   Active: Yes / No. Here it can be decided if your post is to be visible in the environment or not; this way, your entry can be paused if needed, and it will remain created but other users won't be able to see it.

    o   Name of the post

    o   Description of the post

    o   Email notifications checkbox.

Figure 1. Needed description for uploading a post

- Figure 2):

    o   Area of action: Countries where the user offers or needs the activities posted

    o   Type of stakeholder: selection of the stakeholders to which the entry is directed

    o   Categories: Type of solutions offered or needed

Figure 2. Categorization of the post

- Contents required for company/organization registration (see Figure 3):

    o   Main data

        i)   Name of the company/organization

        ii) Name of the contact person

        iii) Position in the company

        iv) Address

        v)   Country

        vi) Email

        vii) Password and password confirmation

        viii) Generate a new password button: This was proposed initially in order to provide a random password to users, but has been agreed to be taken off, so it won't be present in the final uploaded version.

- o Social media: Here, the user can include all the relevant social media where its company is active.

        i)   Website

        ii) Facebook

        iii) Twitter

        iv) LinkedIn

- o Description of the company

        i)   Logo: logo of the company, a photo can be uploaded here.

        ii) Brief description of the company's activities: Quick overview on what the profile owner activities are.

        iii) Detailed description: A more detailed description regarding the activities of the owner of the post.

Figure 3. Profile information of the users

3.1 Employed methods to promote the platform.

The next step in the development of the e-Market environment was to build the methodology to reach as many participants as possible. This purpose was established to achieve a wide deployment and use of the environment: the more participants engaged in the platform, the richer this will be, and consequently the more useful it will result to the users in it, as it would offer more and more varied solutions in the value chain. If the platform is useful and gets to widespread use, the more interested stakeholders will be to take part in it, this way making it richer in a virtuous cycle. So, with this purpose in mind, it was agreed with the stakeholders to proceed as follows:

In the first round of contacts, it was agreed that a registration template would be created, in order to get to pre-register some stakeholders interested to take part in the environment. These registrations were made before the launch of the web environment, so once this is deployed, it will already be pre-populated. What is to be achieved with these actions, is an early impact, guaranteeing that the platform is being used and useful from the very beginning.

 In the first stage, before the environment deployment, the template has been distributed through the contacts network of the members of the project and the contact network of the BECoop project itself. Thus, by the time this deliverable will be written, a total number of 63 registrations will have already been achieved. The registered users and their categories are shown in Annex.

The initial idea was to get the interested users to register by themselves in the environment, as has been shown previously, but since the environment is not deployed yet, this solution was not possible. In that sense, a *Google Forms* template had been created, to be distributed among the network of the partners, as has been commented before. To achieve a wider reach, the template has been translated to the pilot languages of the project (Polish - WUELS, Greek – ESEK, Spanish - GOI and Italian - FIPER) to facilitate the registration of the users. Once the users got to register in their pilot languages, the responsible partner for the translation, translated back their entries to English In the future, it will be considered whether the whole environment should be translated to the pilot languages or whether entries should be accepted in those languages, if this is deemed necessary for wider use of the platform.

The information gathered by the *Google Forms* template is the same as the one mentioned in the section before but is grouped in only one template instead of various sections (offer/need + organization information).

The full template can be found in the following link and is shown in Annex II.

https://forms.gle/tWw4jqBnYjpYhR5j8

Currently, the users are able to get registered to the platform themselves.

By disseminating the platform in social media, workshops/events, and by word of mouth, it is expected to reach much more stakeholders that will be interested in participating in the tool, and thus registering in it. Regardless, the spreading out of the platform will be continued by the partners among their contact networks.

By the time this report is written, more than 500 total contacts were made by all consortium partners, achieving the number of more than 120 registrations mentioned before.
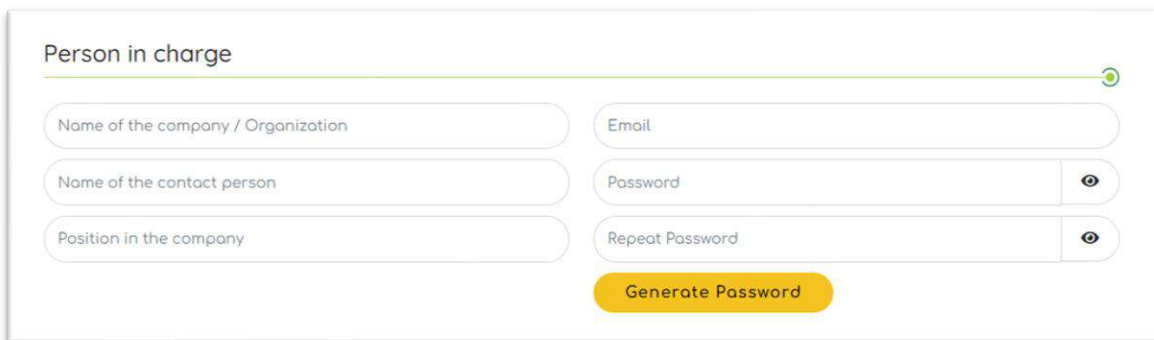
4. e-Market environment overview – a user guide

In the following lines, a quick overview of how the tool has been designed, what are the sections composed of and how a user can navigate through it are provided.

4.1. User zone:

- New user
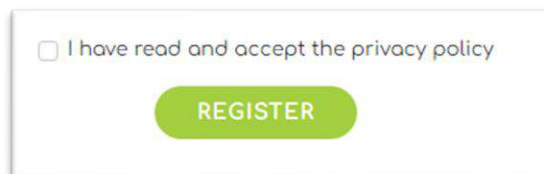
From the registration form, it is needed to fill in all the form fields and accept the GDPR declaration.

Figure 4. Data for registration of a new user
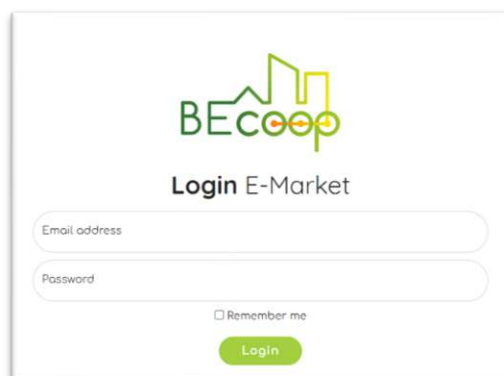
Once the entire form has been filled in and clicked on the register button:

Figure 5. Privacy policy checkbox and register button

An email is sent to the email address configured in the account, with the user account activation link. Once the link is clicked, the user is activated on the platform. Once activated, log in is possible.

Figure 6. Login page

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4.2. Platform overview

Once logged in, the main home page loads, which shows direct access to the different sections of the platform:

- e-Market

- Suggestions

- Messages

- Profile
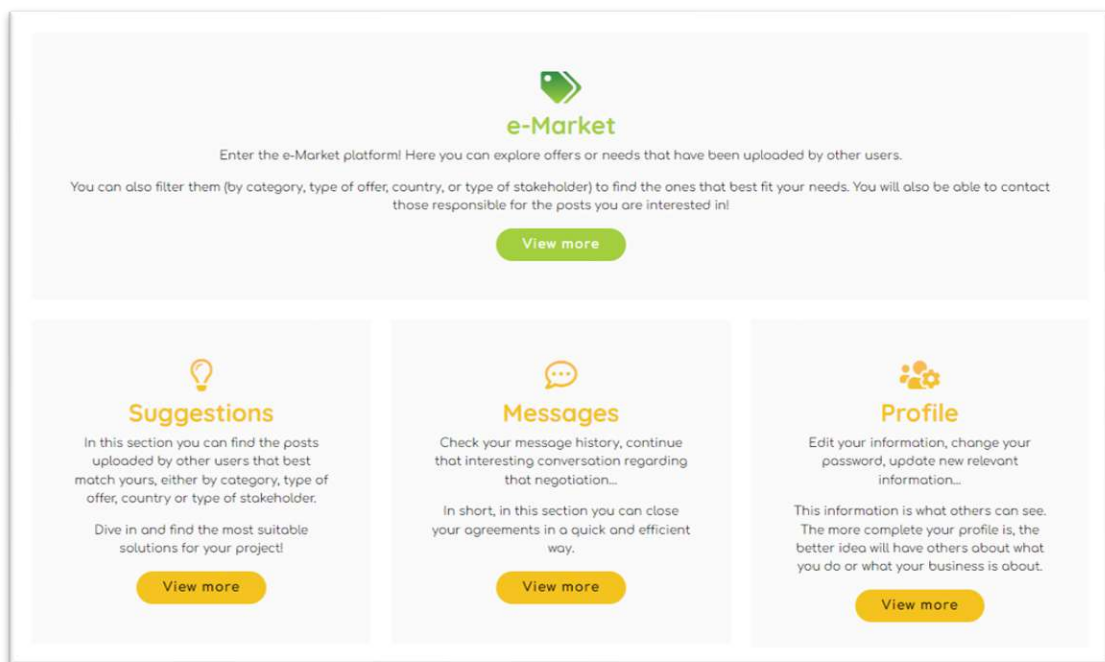
Figure 7. Main page in the platform

These sections are also placed in the top menu. Also, throughout the platform, in the top right corner, a quick access button to add an entry can be found. In the case of the fourth button (name of the user), the "my entries" section can be accessed.
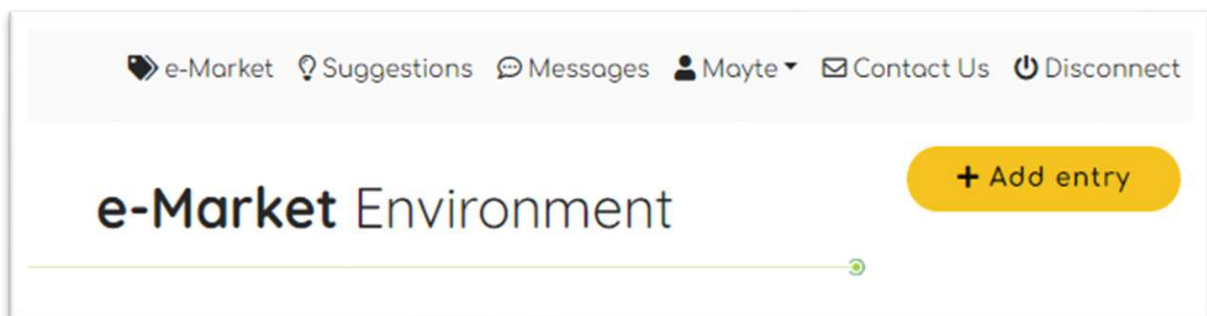
Figure 8. Top menu

4.3. Needs and offers display: the e-Market

In this section a list of all the offers and needs available on the platform can be explored.

Figure 9. List of offers and needs, and filter button

The "more information" button is helpful if the offer/need is interesting. By clicking it, it will give access to the complete entry file.

There is also a drop-down tab, by which a filter can be applied: type, area of action, stakeholder, categories. One or several options can be selected.
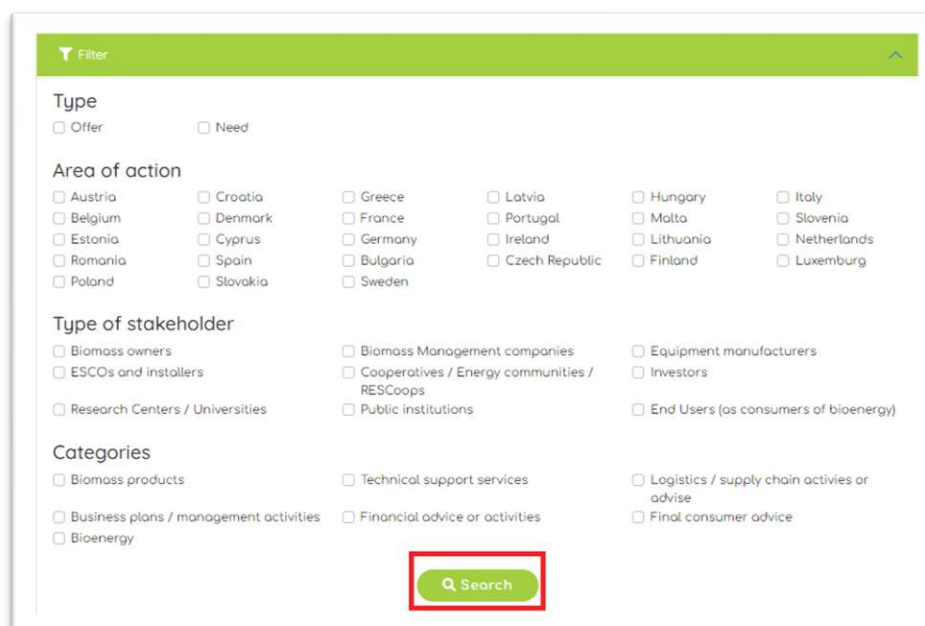
Figure 10. Filter categories and search button

4.4. Add / Modify entries

From the "add entry" section, new entries in the environment can be created directly:

- Selection of type of entry: Offer / Need
- Date of creation
- Active: Yes / No (This field refers to whether the user wants its entry to be paused or be directly available in the environment)
- Name of the entry
- Description
- Checkbox: if the creator of the offer wants to be notified of messages received for that entry

Figure 11. Needed information for the creation of a new entry

It is needed to tick at least one of the options for: areas, stakeholder, and categories.

Figure 12. Categories of the entries

4.5. Entry tab

Once in the e-Market, a complete list of the posts that respond to the selected filters are shown, as explained before. Clicking in the "more information button", that can be seen in Figure 9, the full description of the post can be explored, as well as all the categories to which it belongs. This full description can be seen in Figure 13.

Figure 13. Information of the selected need/offer

On the right side, the information of the company that has added that entry can be found.
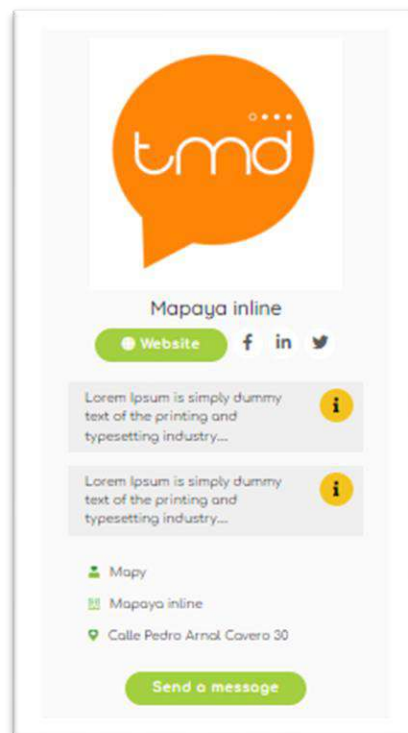
Figure 14. Information of the company owner of the post

In case the entry is of interest to the user, a message can be sent directly to the originator of the entry by clicking on the "send a message" button.
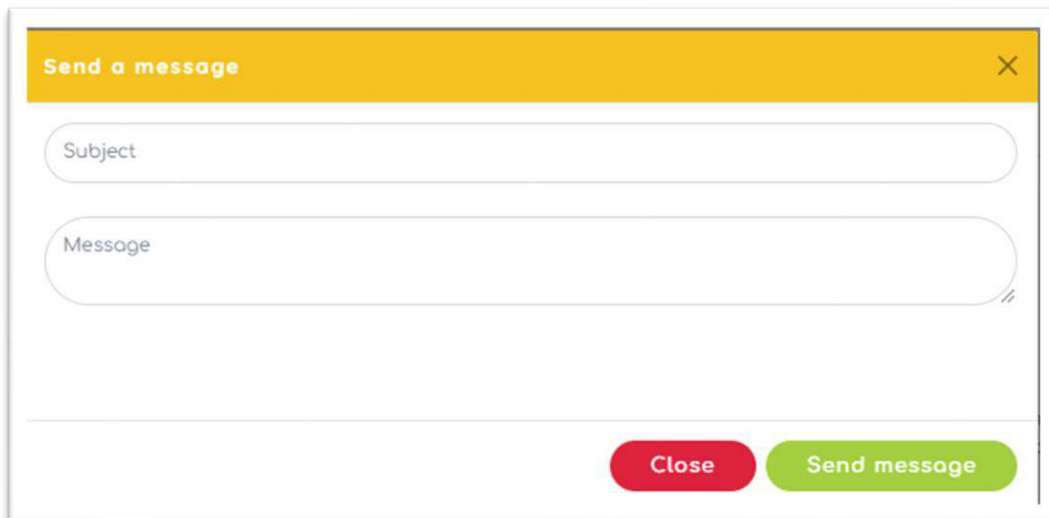
Figure 15. Send a message box

At the bottom of the tab, a list of entries from the same organisation can be found:
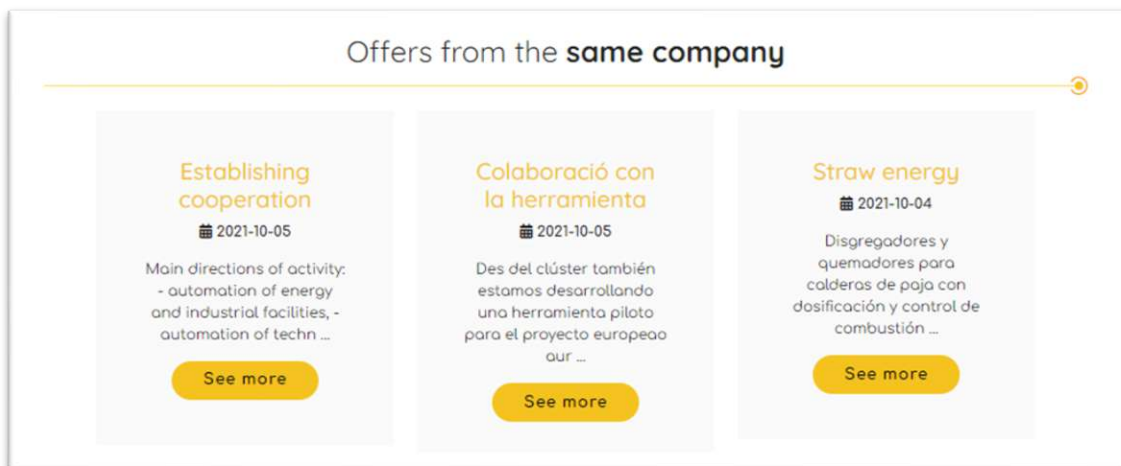
Figure 16. Other posts from the same company

4.6. Suggestions

In the list of suggestions, a list of user entries may be found. These suggestions are based on the categories that are common to the user's post. Below it, a drop-down menu will appear if an entry from another company matches that of the user. If the drop-down menu is opened, all of the entries will become visible (Figure 17). With the "view more" button, the file of that entry will be accessed, and from the orange button (with the message icon), a quick message to the originator of that entry will be sent.
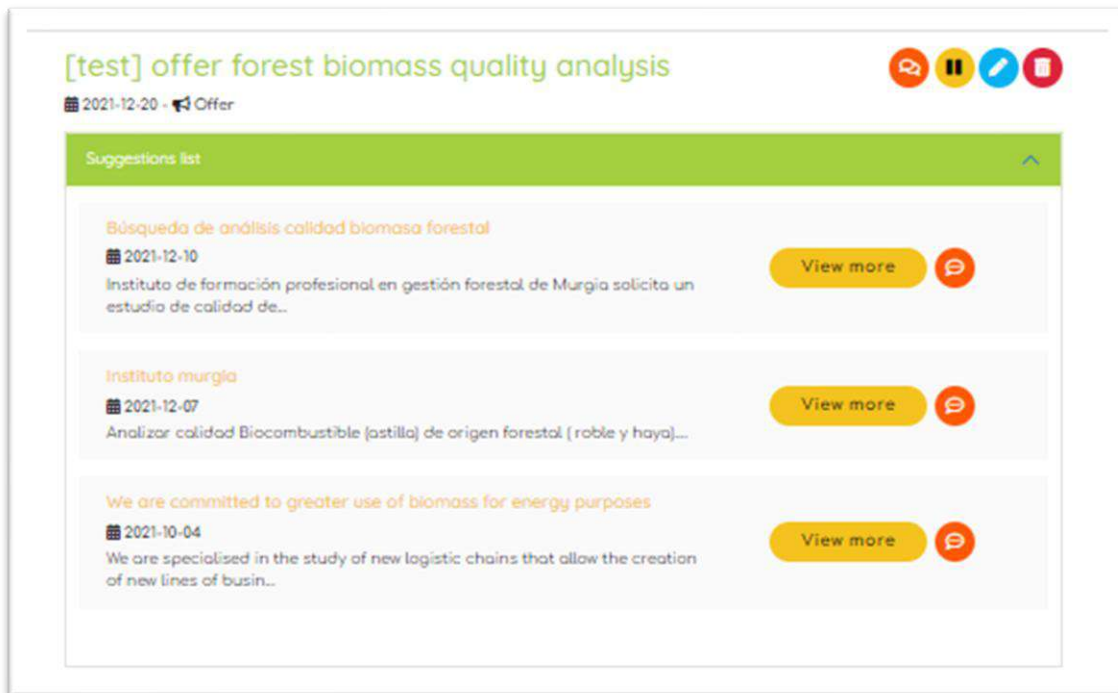
Figure 17. List of suggestions for a selected post

Another set of buttons can also be seen in the right of the title of the users' entry. These buttons have different functions:

Figure 18. Options set of buttons

- Orange icon: View the list of conversations for this entry.
- Yellow icon: Pause or re-activate the entry (it will stop being shown, but the entry will not be deleted). There can be a need to hide an entry without deleting it, for example, if it is not needed at the moment, but may become necessary in the future.
- Blue icon: edit data for the selected entry
- Red icon: delete entry

If an entry is paused, it will appear in the list coloured in yellow and will appear as "PAUSED", and the yellow button will change its colour to green and its icon to a usual "play" icon, as shown:

Figure 19. Paused offer

4.7. Messages

This section contains the history of messages, in which all the conversations held between a certain suer and other participants are shown. It has a quick search engine to find messages, and a button to access the complete conversation:
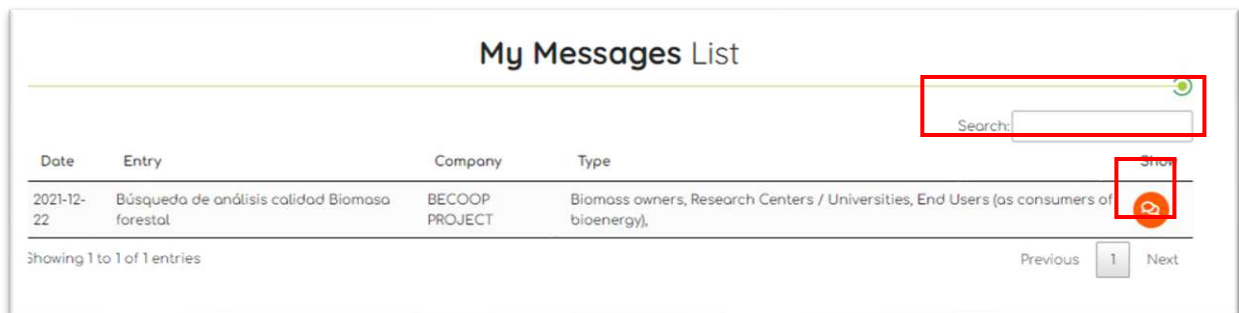
Figure 20. Message history

In the full conversation, the name of the entry, the name of the company with which the chat has been created, and the entire conversation can all be seen, while in the bottom part, new messages can be written.
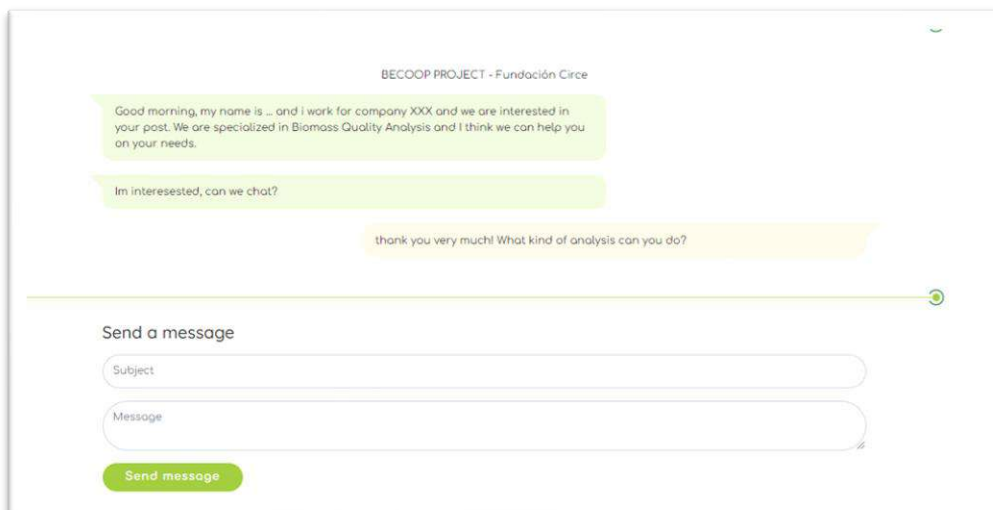
Figure 21. Example of a messages exchange

4.8. Profile

It is possible to change data from the user entered in the registration process in the profile section. The information of the company can also be completed.
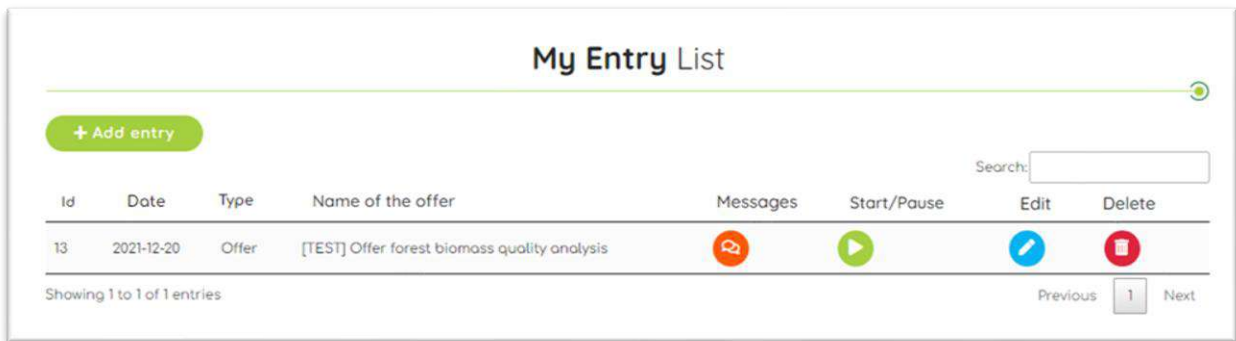
Figure 22. Main profile data

Figure 23. Description of the company's activities, logo and detailed description

4.9. My entries

List with all the entries that have been registered, whether they are offers or needs, from where they can be managed. A search engine is available to filter the entries.

Figure 24. Example list of the entries in a profile

The buttons that are shown in Figure 24 are the following:

- Orange icon: View the list of conversations for this entry.
- Yellow icon: Pause or re-activate the entry (it will stop being shown, but the entry will not be deleted)
- Blue icon: edit data for the selected entry
- Red icon: delete entry

5. Educational vector

The "educational vector" section of the task pertains to an informational infographic that has been developed. This section will visually and schematically describe to users and members of the bioenergy and energy community supply chain - as well as those who are not involved in these fields or lack deep knowledge of the sector - what types of interactions are necessary and with which types of stakeholders to effectively establish such projects. The main objective of this part of the task, according to "description of the action, DoA", is the following: *To demonstrate to potential bioenergy RESCoops the various stakeholders' interactions and activities/services that need to take place for setting up an effective and sustainable local supply chain and a community bioenergy project.*

The information included in the educational vector is the following:

- **Overview of the supply chain:** The members of the supply chain have been identified, defined, and classified based on their contribution at each stage of the process (including resource obtaining and treatment, supply and processing, energy conversion, and storage). In addition, a chart has been created to illustrate the various interactions between multiple players at each stage of the supply chain.

- **Stakeholders who are part of the supply chain and their interactions:** based on the stakeholder classification performed during the development of the e-Market ecosystem, their roles in the supply chain will be further outlined, as well as the stages in which they might consider themselves engaged. Moreover, models for energy communities have been developed to cater to every type of stakeholder, enabling an overview of the level of involvement that different individuals can attain, as well as the emergence of various initiatives.

- **BECoop cases:** In order to help users identify the roles of stakeholders and explore different possibilities for establishing meaningful interactions, the BECoop cases have been included. By presenting four realistic examples of the community energy creation process, the user can quickly and easily see which stakeholders are involved, as well as their specific roles in the project.

5.1 Methodology for the development

For the development of the educational vector, several steps have been followed.

Firstly, the project consortium, in agreement with the DoA, decided which information would be included. It was determined that an overview of the supply chain was necessary, as well as the inclusion of the BECoop cases to demonstrate stakeholder involvement. With this purpose, a set of materials were prepared and shared with the project partners, which provided their feedback in order to adjust the contents of the vector. This feedback was then taken into account and included in the final development.

Hereafter, when all the materials were developed, they were shared with the Advisory Board of the project in order to obtain their feedback and opinions. No major comments were received, so it was concluded that the approach was adequate.

The different sections that were agreed to be included are the following:

A first landing page, where a graphical summary of the involved stakeholders is included and a description of each one of the BECoop demo cases, depicting the specific particularities of each one of the accompanied energy communities.

In the involved stakeholders' section, the user will be able to understand the identified stakeholders, and the roles in which they can be involved. For this purpose, the stakeholders in the community energy were identified and categorized. This list of stakeholders has been identified following the same criteria as was stated for their definition in the e-Market environment, in the first stage of the task. The reader will be able to understand how the stakeholders can interact among them and with the potential energy community, thus helping them to stablish relationships depending on which their needs are. The final list of the stakeholders and their description can be found below:

Identification and categorisation of energy community value chain stakeholders

- **RESCoop:** RESCoops or Renewable Energy Services Cooperatives are a business model where citizens, institutions and companies jointly own and democratically control an enterprise that works on renewable energy or energy efficiency projects. We also refer to RESCoops as citizen or renewable energy communities.
- **Group of citizens / General public:** A group of citizens with common interests (biomass availability, needs to renew heating system, etc.) and ideally closely situated can collaborate and establish an Energy community. A good example could be a small hamlet in which part of its citizens are farmers and have biomass availability throughout the year. This way, an energy community can be created where biomass is locally sourced and collected from some of the community members, to be exploited and provide heat to the whole village.
- **Technical stakeholders:** They provide different support to the community: Adapting biomass properties for its valorisation in the boiler systems or installing and operating boilers. The different types of communities should have different necessities, as each community has its own conditions: some may need to dry and chip their wood, others will need to source it, or others may only need to install and operate their boilers.
- **Biomass owners:** Biomass owners are usually farmers that can provide different types of biomass: agricultural (straw, prunings…), forestry or agro-industrial (olive pits, almond shells,

sunflower husks…). But also different agents, such as municipalities or biomass logistic distribution companies, can provide biomass thanks to the management of forests, parks, etc.

- **Biomass management companies:** Biomass management companies are usually involved in the logistic supply of biomass and biomass processing operations, i.e., different treatments to adjust biomass properties (moisture, particle size, etc.). They can act as biomass providers, but they can also help to carry out these biomass treatment operations mentioned above, to adjust them to the necessary boiler requirements.

- **Equipment manufacturers** are companies which produce and sell a set of devices useful for the whole biomass supply chain: from machinery for harvesting the biomass to boilers or CHP systems that can obtain the heat from it. In this sense, they can help providing the most adequate machinery for biomass harvest and treatment or providing the boilers or the auxiliary equipment for biomass utilisation.

- **ESCOs & Installers:** An ESCO is a company that offers energy services which may include implementing energy-efficiency projects (and also renewable energy projects) and, in many cases, on a turn-key basis. This way, ESCOs & Installers can help designing and providing solutions for biomass utilization, maintenance and operation, facility management, energy supply or heat retailing.

- **Business stakeholders:** Business model stakeholders can provide different means of support to energy communities, for example, helping them to allocate calls for funding (public institutions, associations), providing places to hold meetings (local authorities), establishing contacts with other stakeholders or providing financing options (ethical banks, public institutions, local authorities).

- **Local authorities & Public institutions:** Local authorities, such as municipalities, town halls, or other local governing institutions, can help energy communities. They can inform about calls for funding, provide institutional support or facilitate meeting spaces for the Bioenergy Community. In this sense, they can play an essential role in not only decarbonization strategies, but also in democratic models and fighting against energy poverty. They will also be benefited, by creating local jobs, managing biomass supply chains, or obtaining rural development. Municipalities can also be in charge of managing the facilities of the RESCoop/Bioenergy Community.

- **Investors:** Investors, especially green and ethical banks, can provide the capital for developing this kind of project. This way, the recently created Bioenergy Community will be benefited by getting the money in beneficial conditions, and the investors will explore new business opportunities, with very controlled risks while improving their image.

- **Associations:** Associations can be of different types: local development associations, biomass or renewable energy associations or clusters, citizen associations, etc. They can help in various ways the Bioenergy Communities: a biomass association can help allocate biomass, or establish contact with relevant stakeholders in the area; a local development association can coordinate and traction the interest of the locals towards a real deployment of these solution etc.

- **Research centres / Universities:** Research centres and universities are typically experts in the technical aspects of the biomass supply chain. However, they can also provide consultancy support for business modelling. Technical activities related to these stakeholders include biomass allocation, biomass properties, and the design and performance of heating systems. The most crucial activities, however, are research-oriented, as well as the implementation of

new developments. From a business model perspective, research centres and universities can also offer consultancy expertise, providing support for aspects that are as important as technical considerations. Examples of relevant actions in this area include designing the business model, estimating costs, coordinating stakeholders, and engaging with the public. These actions can be driven through different calls for funding at the local, national, or European level, for which these types of stakeholders are often experts in allocating and requesting.

Steps for the creation of an energy community

It is important to emphasize the steps required to create an energy community. As such, an additional section in the vector "RESCoop section" has been created, which is displayed in Figure 25. This information has been included based on that used in Task 5.2 of the BECoop Handbook.

Figure 25. Overview of the steps suggested for creating an energy community

Moreover, a description of each one of the steps is presented when the mouse is hovered over each one of the steps. The user will be able to find the following description:

- **Team:** It is important to build a strong team, with a clearly defined internal organisation structure. For this to happen, it is necessary to have a whole image of who these stakeholders are, and what they will provide in the decision-making process that can improve the reliable and accountable development of a bioenergy RESCoop. For a successful implementation and development, strong and constant stakeholder engagement is also required. In general,

engaged community members perceive fewer barriers to local energy projects, thereby facilitating their implementation.

- **Raw material:** One of the keys to developing a successful community energy project is the adequate assessment of available resources. It is just as important to have sufficient resources as it is to have the right quality ones. This is the reason why one of the first steps in establishing a community bioenergy project is to carry out an assessment and evaluation of the type of available resources, as well as the actors that can be involved in their procurement. Mapping them, their availability and location, or the distance to the point of use/consumption can make the difference between a profitable and successful community and one that is not.

- **Activity:** There are several activities in which the RESCoop can take part: biomass logistics and supply chain, direct or district heating or solid biofuels production, among others. It is critical to decide which activity the RESCoop is going to perform, in order to involve the correct stakeholders and stablish an adequate action plan and strategy.

- **Investment:** Financial support is important for the development of every RESCoop and in most cases becomes crucial and the most important aspect. An investment scheme must be defined as a type of investment which fulfils several objectives directly linked to the nature and identity of a RESCoop project. The choice of the type of financial support is just as important as the actors that will provide the capital: from private investors to public funding.

- **Business plan:** A business model describes the rationale of how an organisation creates, delivers, and captures value, in economic, social, cultural, environmental and other contexts. The Business model service will improve RESCoops through direct engagement with stakeholders. It also allows us to confirm the effectiveness of the solutions proposed with the business model with potential customers and to assess the value the beneficiaries themselves attribute to it. It also investigates how to finalize the marketing strategy and test the business model with industry experts.

- **Make it happen:** Once all the steps and the stakeholders involved have been defined, the final stage would be to stablish and start the operation of the RESCoop. With this purpose, it is recommended to stablish a roadmap to have a clear strategy and action areas, as well as a clear image of which stakeholders can help the RESCoop to achieve its objectives.

BECoop cases

To provide comprehensive information on energy communities, it has been decided to include the development of energy communities carried out by the BECoop project. This will give users a clear understanding of how energy communities are structured. In this sense, the same contents have been included for each one of the BECoop accompanied cases (identification and categorisation of community energy value chain stakeholders and the steps taken for the creation of the specific energy communities). As each case has its unique characteristics, the stakeholders that are currently involved have been specified in each one of the web sections corresponding to each specific case with a visual and simple system. A green checkmark indicates the stakeholder's involvement, a red cross indicates their lack of involvement, and a yellow question mark indicates that their involvement has not been decided yet. The visual representation of the graphic system is depicted in Figure 26.
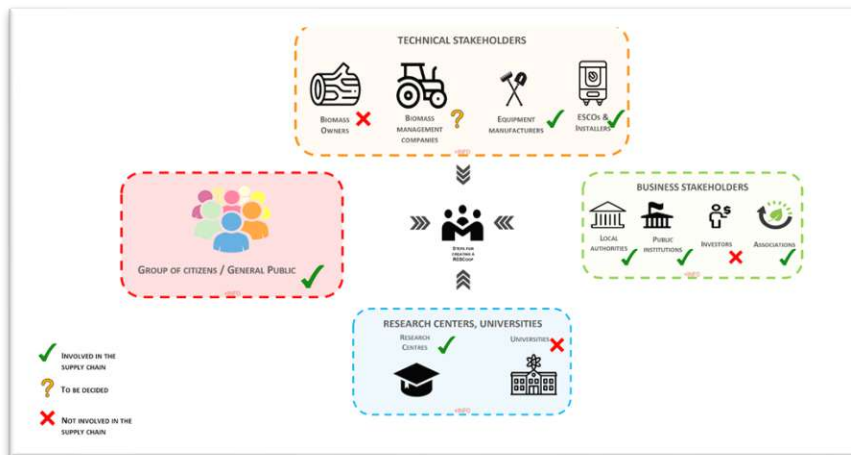
Figure 26. Visual description of the involvement of stakeholders in the BECoop cases

The information that has been included, according to the inputs of each one of the partners for the pilot regions is the following:

- General description: Including a general description and geographical information of the concept of the energy community and which is the purpose; how is it going to be articulated and which are its specificities.
- Type of stakeholders involved: From the initial list of stakeholders, they are grouped in technical stakeholders, business model, group of citizens / general public and research centres / universities. In each one of the categories, the subcategories mentioned previously are also included. Finally, when clicking the +INFO button, the user will be able to see a more detailed explanation of the role of each specific stakeholder in each specific pilot case.
- The specific stakeholders are shown with a green check mark if they are currently involved, a red cross mark if they aren't, and a yellow question mark if it is yet to be decided.

The specific information included for each pilot case is gathered in Section 0– Annex III – Educational vector information for each pilot case.

5.2 Online implementation

The online implementation was agreed to be performed as an infographic that describes the interactions needed for the creation of an energy community. This way, mostly visual information has been included, with several descriptions as it has been stated in the previous section.

To access the educational vector, the user needs to access the e-Market, as it has been described in previous sections. Once there, it is really easy to access it. A button has been included, over the login button. The rationale behind this, is that there is no sense on making this tool under registration request. This is some valuable information obtained during the development of T2.2 – BECoop toolkit. So, it was agreed to make it accessible to all the interested public and for, so it has been ubicated outside the e-Market section, but in the same page, as Figure 27 shows:
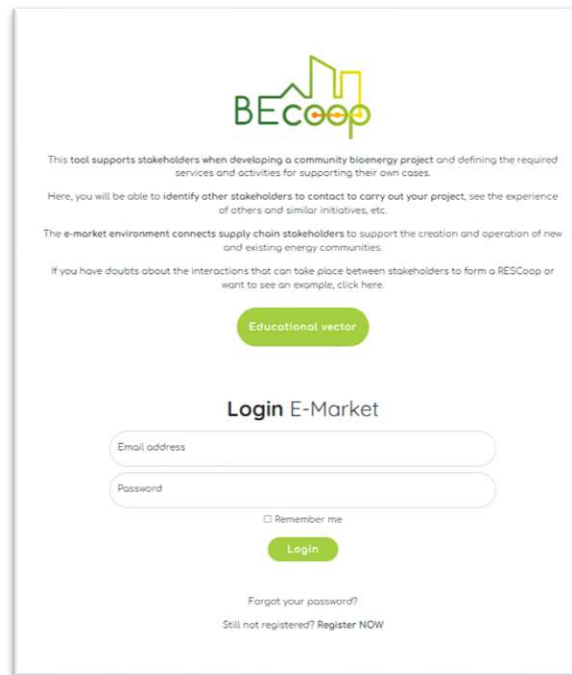
Figure 27. Access to the educational vector

Once the user enters the educational vector, the first infographic is shown, where the first categorization is done, and the general case is depicted. The user will also be able to access the BECoop cases in the lower part of the page, as it is shown in Figure 28. This infographic includes the stakeholders group surrounding the central icon, which represents the energy community. In each one of the groups and in the energy community, a +INFO button is included in order to explore and detail the information of each one of the groups.
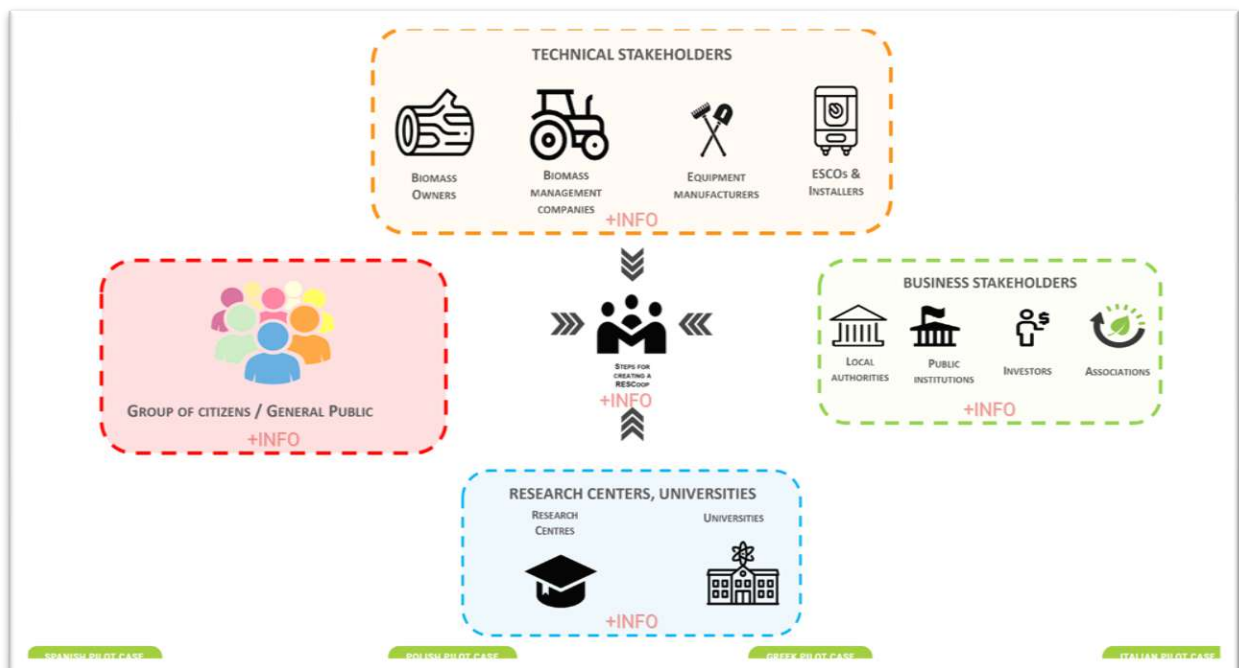
Figure 28. Landing page of the educational vector

In the figures: Figure 25, Figure 29, Figure 30, Figure 31 and Figure 32, the contents of each one of the sections are shown.
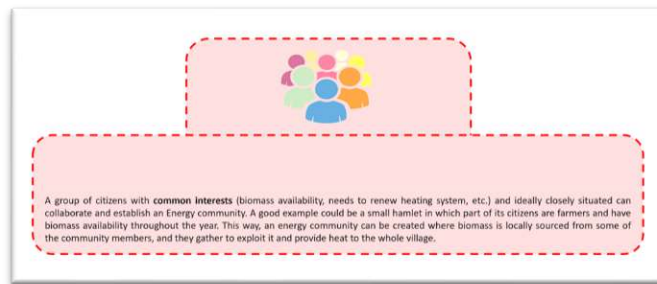
Figure 29. Description of the Group of citizens/general public stakeholder type
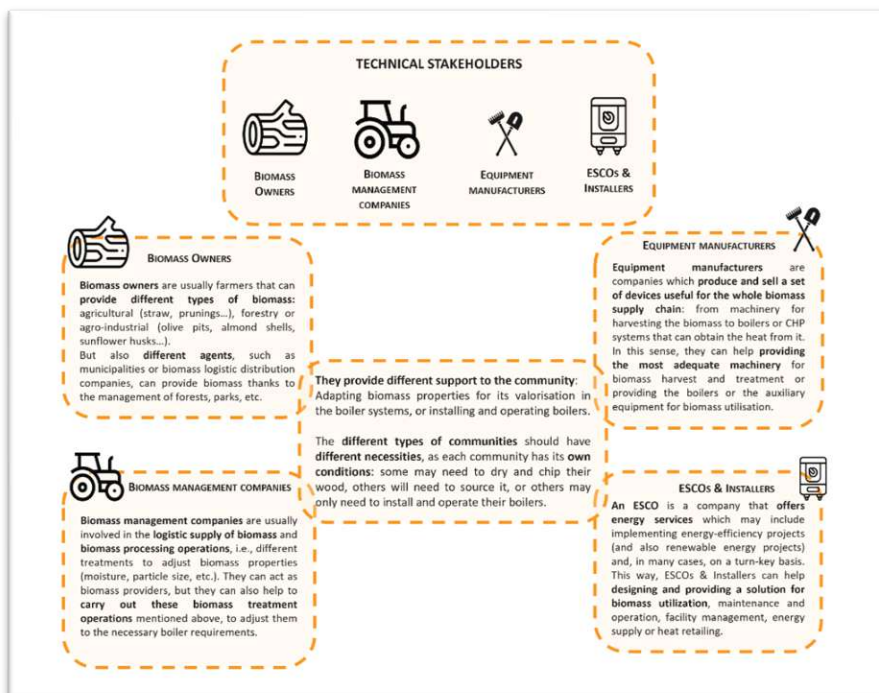
Figure 30. Description of the technical stakeholders
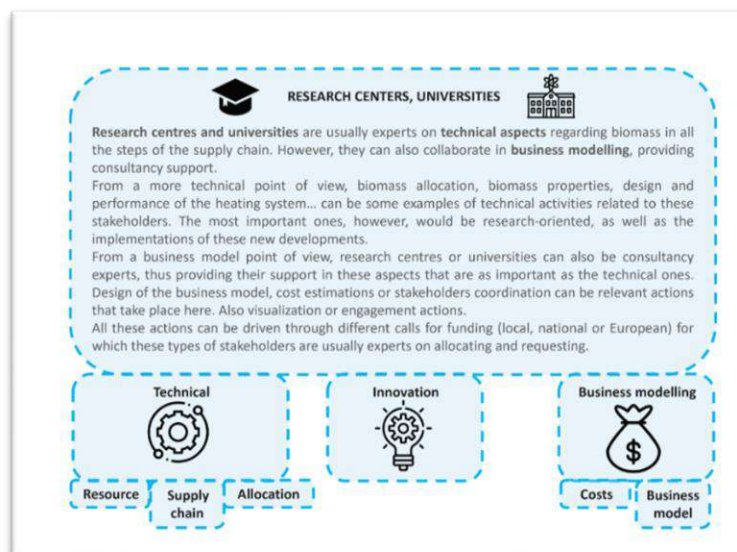
Figure 31. Description of the research centres and universities stakeholders
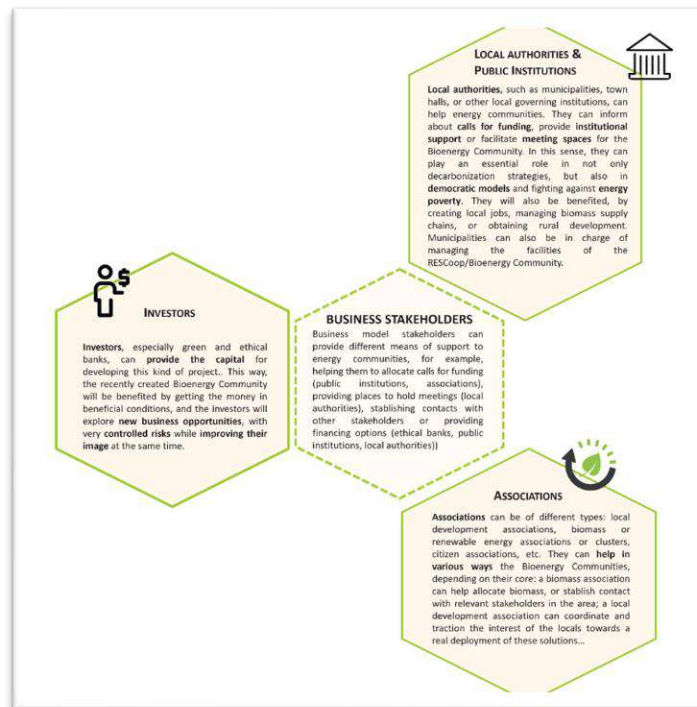
Figure 32. Description of the business model stakeholders

When clicking in the BECoop cases shown in Figure 28 (Spanish, Polish, Greek or Italian pilot case) the user will arrive in a similar environment as the landing page, with the main difference that in this case, the stakeholders included are specific for each one of the cases, as shown in Figure 33.

Figure 33. Spanish pilot case specific involved stakeholders

When clicking in the +INFO button in each one of the stakeholder groups, the user will be able to access to the specific information included for each one of the groups. This is shown in Figure 34 and Figure 35.

Figure 34. General description of the Spanish BECoop pilot case

Figure 35. Technical stakeholders of the Spanish BECoop pilot case

6. Dissemination campaign

In order to promote a wider deployment and use of the e-Market environment, a dissemination campaign has been designed together with the project partners. In fact, a series of relevant actors in the bioenergy and community energy sector have been identified and contacted via email – taking

advantage of previous contacts of the members of the consortium in some cases-, in order to let them know the existence of this tool and try to involve them in its deployment. They have been invited to get registered in the tool, as well as promoting it to their associates and contacts through newsletters, and posts in their social media.

The final contacted stakeholders are the following:

Table 1. Contacted stakeholders.

Area	Entity
Europe	Bioenergy Europe
Europe	RESCoop
Europe	EUBIA
Poland	Biomassa Pl
Denmark	DI Bioenergy
Denmark	INBIOM
Denmark	Danis District heating association
Denmark	Lem district heating cooperative
Greece	HellaBiom / Hellenic Biomass Association
Greece	Electra Energy
Spain	Som Energía
Spain	TEDER
Spain	Sakana
Greece	Sustainable Engineering Ltd.
Europe	European Technology and Innovation Platform on Renewable Heating and Cooling
Greece	Inaso Paseges
Balkan	Balkan Green Energy News
Poland	Polbiom
Poland	Polish pellet council
Poland	Polish biomethane association
Italy	Italian biomass association (ITABIA)
Italy	Italian Agroforestry Energy Association
Denmark	Biogas Danmark
Denmark	Partnerskab for Termisk Forgasning
Greece	Hellenic Association of Biogas Producers
Italy	Consorcio Italiano Biogas
Poland	Union of producers and employers of biogas industry
Spain	AEBIG
Poland	The Polish Economic Chamber of Renewable and Distributed Energy
Poland	Polish Biomethane Organization
Poland	Polish Agricultural biogas producers association

Indicative letters were prepared in order to contact the relevant stakeholders. This are shown in Section 0 – Annex IV.

Apart from this dissemination campaign performed, a series of actions were undertaken taking advantage of different events performed by the project or sister projects:

- Presentation in the BECoop tools webinar (performed on February 8th). This event is allocated under the T3.2 of the current project and was developed together with QPLAN.

  Link to the event: https://www.youtube.com/watch?v=6MbbT9s5-bQ

- Presentation of the BECoop tools in the training sessions performed in the Spanish cases, which took place in the municipalities of Llodio (Basque Country) and Irurtzun (Navarre - Figure 36).

Figure 36. Presentation of the BECoop tools in the Irurtzun training session (T3.2)

- Presentation of the BECoop tools in the sisters' project webinar "From setting up energy communities to making them thrive: what are the tools available?" on April 26th, 2022, organized by IEECP and several European projects.

Link: https://www.youtube.com/watch?v=KC52d4_Vnow

- Publications in the BECoop web page: https://www.becoop-project.eu/project-news/activating-a-community-energy-market-for-bioenergy-a-new-e-market-environment-connects-biomass-heating-supply-chain-stakeholders/

Finally, the expected reports and events where this and the other developed tools will be presented, are the following:

- The BECoop Replication Handbook.
- Presentation and use by our follower cases.
- Presentation in the BECoop's final dissemination event.
- Presentation in the Spring gathering in Athens.
- Presentation in the POWERPOOR event (June 5th).

When the opportunity rises, the BECoop tools will be presented wherever they fit, according to the topic of the events or the targeted audience.

7. Tool metrics

The tool has been visited **1200 times**, with a total of **171 independent users** that have already been registered (data from September 1st, 2022, to April 19th 2023).

These numbers show that the dissemination campaign that has been, and actually is being, performed has been quite successful. Furthermore, efforts should continue in order to increase the number of interactions among participants of the e-Market.

As expected, the countries with most participation in the e-Market are the ones in which the BECoop cases are located (Spain, Greece, Poland and Italy). This means that the efforts of the project have been well directed. The next countries with most participants are countries located in the surroundings of the BECoop cases, which is also interesting to promote new interactions among stakeholders.

8. Expected outcomes

Regarding the expected outcomes and the future objectives of the e-Market environment, it has been decided that it should include not just the pilot initiatives involved and developed within the scope of the project, but also serve as a strong tool that engages all the European stakeholders involved in the bioenergy, biomass supply chain and energy communities. This way, it will support them during and after the end of the project (as stated in D6.7 – BECoop exploitation and sustainability plan). Thus, the tool will not only serve as a contact point for the pilot communities by helping them find the stakeholders that can be potential partners in their projects or potential beneficiaries of their activities, but also all the participants of these biomass supply chains or biomass-based heating systems. These outcomes are enlisted in the following paragraphs:

- The first and more obvious outcome expected from the environment is to give support to the BECoop RESCoops that have been created or supported by the BECoop project. It helps finding those stakeholders that can complement their activities or provide solutions in the aspects that the cases should need extra assistance, establishing new contacts and cooperation activities and this way achieving, on the one hand, a wider diffusion and deployment of the projects among related stakeholders, and on the other hand, providing of a contact network that can be capable of providing technical, financial, business or community management solutions to the extent necessary.
- The environment should serve as a contact platform among the stakeholders taking part in the biomass supply chain. Also, with those involved in already existing or new energy communities or renewable energy cooperatives, so that it can fulfil the mission of establishing new contacts and collaborations, to continue with existing projects or start developing new ones. In this sense, the environment helps finding those stakeholders that can develop a project, providing technical, business, financial, community management solutions or even finding new final users or consumers of bioenergy or biomass.
- At a general and sectorial level, the environment serves as a reference contacting point for all the European actors that are involved in the bioenergy and energy community sector and the biomass supply chain.

- The last part of the task includes an educational vector that has been designed to explain, schematically and visually the interactions needed by the participants of the bioenergy sector to implement in an effective way a new biomass supply chain, always related to bioenergy or renewable energy communities. This part of the task has been developed and implemented during the last period and is the main innovation presented in this report.

For fulfilling these objectives, all of the interested actors can get to register freely in the environment and start uploading their entries (whether they are needs or offers for services/products). Having achieved this step, the system suggests existing entries that best fit them (by establishing relationships among the categories of entries). Users will then be able to choose the ones that suit them best and start conversations with participants so that they can come up with a potential solution for the posted topic.

It is necessary for reaching these objectives to create a populated, and thus a useful environment; this way, more entries will be available inside the environment, and this will create a wide offer of opportunities and solutions that will help to find the most suitable solution for a varied range of offers or necessities. So, a strategy for diffusion has been also deployed. It includes actions such as workshops performed by the members of the BECoop projects, presentations in BECoop or other European projects webinars, or the diffusion among their contact networks, to get as many people as possible to register and post their needs offers in the environment, this way creating a rich platform full of solutions, and is more thoroughly explained on section 6. It can be concluded that this objective has been achieved, as the number of registrations has doubled since the first period of the project. This information is complemented in section 7.

9. Conclusions

This task focuses on developing an e-Market environment that can be used to connect supply chain stakeholders as a virtual platform that offers stakeholders the opportunity to learn about a community bioenergy project. Furthermore, it will serve as a point of contact for all stakeholders involved in the bioenergy and energy communities supply chain, thereby facilitating interaction between these stakeholders throughout Europe. It acts as a strong educational and informational vector, for demonstrating to potential bioenergy RESCoops and non-experienced users the various stakeholder interactions and activities/services that must take place for setting up an effective and sustainable local supply chain and a community bioenergy project. It has been developed as an easy access interface (web portal) and allows users to enter and register their different necessities or offers. A method for user testing and interaction has also been provided to the partners, to obtain their feedback and solve any potential issues that can be identified. The developed environment, along with the activities and results of the project, can support these communities during and after the end of the project (as stated in D6.7 – BECoop exploitation and sustainability plan), for the definitive deployment and uptake of this new form of organizations.

Despite the fact that the task has been completed, **the tool will continue to be available online and with open access** to be used by all users who wish to do so.

Annexes

Annex I – Number of registrations per stakeholder type

Table 2. Number of registrations per stakeholder type in the initial contacting phase

Biomass owners	**6**
Biomass management companies	6
Equipment manufacturers	12
ESCOs and installers	13
Research centres/ universities	19
Cooperatives / Energy communities / RESCoops	12
Investors	3
Public institutions	2
End users	6

Annex II – Pre-registration template

Type of stakeholder *

Please select here the type of stakeholder where you belong from the list below. If you do not see yourself represented in any of the identified stakeholders, please select the one you feel most closely resembles them or reflects your role:

- Biomass owners
- Biomass Management companies
- Equipment manufacturers
- ESCOs and installers
- Cooperatives / Energy communities / RESCoops
- Investors
- Research Centers / Universities
- Public institutions
- End Users (as consumers of bioenergy)

Do you want to post an offer or a need/interest? *

○ I want to offer my services/products

○ I want to post a requirement/need to be fulfilled by other company

Name of the company / Organization / Interested person / Contact person *
Please provide the appropriate information

Tu respuesta

Website / social media
Please write here your website or other relevant social media where your company is active (if applicable).

Tu respuesta

Contact information *
Please write here your contact details: include, at least, name of the contact person, e-mail, and your position in the company (if applicable).

Figure 37. Information required for pre-registration

Annex III – Educational vector information for each pilot case

<u>**Spanish pilot case:**</u>

General description of the Spanish BECoop pilot case: small village of 133 inhabitants distributed in 56 houses dependent on the city council of Vitoria-Gasteiz (Basque Country, ES). They enjoy some degree of autonomy thanks to a local administrative board. Thanks to local allotments, the inhabitants have forest wood availability. Furthermore, some of them are farmers, so they also have some straw availability throughout the year. They have decided to join efforts and share their biomass in order to provide a renewable fuel to a future district heating that will be installed. To coordinate all the actions, they have decided to create a Renewable Energy Community. The members are not yet decided, but the local council will be one of the constituent parties. The energy community will be, anyways, autonomous and independent from the council. The owners of the facility will also be part of the community. Thus, the council, inhabitants, farmers, and new or existing enterprises related to any step of the value chain will be part of the BioEnergy community. GoiEner as a RESCoop is accompanying and helping throughout the whole process: Stablishing and building up the community, supply chain establishment, interaction with different stakeholders, etc.

- **Technical stakeholders:**
  - Biomass owners: In this case, the biomass is provided by the members of the community: forest wood sourced from sustainably managed local forests, thanks to allotments, and straw provided by farmers belonging to the village.
  - Biomass management companies: For collection, treatment and transformation of the biomass, three options are being explored: to subcontract a forestry services company, to extract, produce biofuel and/or distribute it; to perform these activities through the created Bioenergy Community; or a mixture of both of them.
  - ESCOs & Installers: Finally, the heat retailing can also be done by the community itself, or by an ESCO. In any case, the facility installation and design will be done by an ESCO/Installer.
- **Business stakeholders:**
  - Local authorities and public institutions: In this case, the city council, the rural development department, and the Energy department of Vitoria-Gasteiz are involved in the creation of the RESCoop. They have supported the whole process, accompanying the initiative since the start of it. They are also collaborating in the allocation and contact with external stakeholders, the organization of demo activities and the visualisation of the initiative.
  - Investors: No investors are involved in this RESCoop for the moment.
  - Associations: Different local associations are collaborating with the initiative, although the main interested on the replication in other municipalities is the local administration of Gasteiz, the main city in the area. Specially, some of them are really interested in the development of the initiative in order to replicate it in their municipalities – specifically, the Sakana association, which is a nearby area which has been selected as a BECoop follower case in T5.2, and will receive high-level support by the project. In this sense, they are really interested in the model replication and formative actions that BECoop project is developing in the area to gather as much information as possible to transfer it to the interested stakeholders.
- **Research centres, universities:** CIRCE as a research centre has provided support in technical-related activities: Feedstock potential and characterization, biomass properties and potential,

needs for the district heating, supply chain development, etc. Furthermore, involved in the contact with external stakeholders, to determine the feasibility of outsourcing the processing operations. Visualisation and spreading out the message of the RESCoops/Bioenergy Communities, hand in hand with GOIENER, in different workshops and training sessions to different relevant stakeholders and members of the local community.

Italian pilot case:

General description of the Italian BECoop pilot case: The Italian BECoop community operates in a mountain area in northern Italy, in the province of Sondrio, in Lombardia region. In Valtellina there is a huge potential of forestry biomass and long-lasting expertise on biomass district heating (e.g., Tirano and other TCVVV DH plants). An agreement is in progress for the realization of a cogeneration district heating system fueled by local woody biomass. Tovo Sant'Agata is the most interested municipality in developing the district heating system and has been able to involve two other municipalities: Mazzo di Valtellina and Lovero (the Mortirolo municipalities), counting about 2100 inhabitants all together. The district heating system plant could be settled in Tovo - which is the central town on the line between Lovero and Mazzo – with a modular project that could start from Tovo and as a second step, could reach the other two municipalities. The project involves as well "Ambiente Valtellina ETS", a forestry association which has an important role in promoting sustainable use of forests and woods and "Melavì cooperative", which represents about 200 apple producers and one of the most important energy and heat user in the valley". The district heating plant will potentially provide heat and electrical energy for all the citizens of the three towns and to the factories of the valley. One of the most important is the agricultural cooperative Melavì.

- **Technical stakeholders:**
  - Biomass owners: The woody biomass could come from the forests that grow on the mountains above Tirano and the surroundings, that need to be harvested and managed. About 50% of them are public (property of the municipalities) and the other 50% belongs to the inhabitants, who often do not take care of them. About 87% of wood owners living in Tovo, Mazzo and Lovero declare to be interested in selling their own wood to supply the future DH plant functioning needs.
  - Biomass management companies: 40 forestry companies are active in the province of Sondrio, working on forests which are 160.000 hectares wide. The companies cut about 72.000 cubic meters/year of wood for energy production purpose.
  - Equipment manufacturers: FIPER (Italian BECoop partner) has several contacts of technology suppliers (Boiler, Organic Rankine Cicle module, network). The main district heating component companies are in Italy or in Europe.
  - ESCOs & Installers: Mayors have several local suppliers for the operation and maintenance of public utility heating systems. No ESCOs were involved at the moment because they are still at the pre-feasibility stage of the project.
- **Business stakeholders:**
  - Local authorities and public institutions: The majors of the three towns have been participating into the pre-feasibility study process and presented the project to their citizens in some public occasions and with several interviews and press releases. They strongly aim at being the protagonists of the upcoming RESCoop.
  - Investors: At the moment no investors are involved in the RESCoop, but the majors are working on a governance and financing evaluation process to make a decision in the next months.

- Associations: Ambiente Valtellina ETS is cooperating in the project, by organizing awareness raising events and by giving technical support in the forest management field. It will be important, in the future, in order to work with the biomass owners to coordinate them and involve them into the project.
- **Research centres, universities:** Politecnico di Milano was involved to support Fiper in the project. It has a central role in the evaluation aimed at the pre-feasibility study and for the technical aspects of the project.

Greek pilot case:

General description of the Greek BECoop pilot case: Karditsa is a relatively small town in the center of Greece located in the region of Thessaly. Due to its unique geography, the prefecture of Karditsa has access to municipal, agricultural and forest residual biomass. Energy Community of Karditsa (ESEK) was established in 2010 and the main purpose was to foster renewable energy in the region. Nowadays, its has more than 400 members (an estimated 8% rate is comprised by municipalities, SMEs, associations etc.). Along with local farmers, forest cooperatives, coffee houses, local authorities and citizens, ESEK manages to exploit the residual biomass, process it and produce refined solid biofuels in pellet form. It is an available, storable, local, renewable alternative, allowing local economies to thrive. Several municipal structures impacted by the energy prices can benefit from this form of bioenergy, for instance by reusing their residues to supply energy to their own buildings.

Under the frameworks of BECoop, ESEK expands its network and its activities by treating new residual streams such as city prunings, forest residues and spent coffee grounds and mixing them in order to produce new "alternative" pellets. Its role is being expanded from a solid biofuel producer to also a bioenergy ESCO for installing and maintaining biomass boilers in municipal buildings and selling heat.

- **Technical stakeholders:**
  - Biomass owners: In this case, the new streams of biomass are provided by various stakeholders. The municipality of Karditsa, which is a member of the community since 2019, provides residual municipal biomass (city prunings). Coffee houses of the city provide residual coffee and forest cooperatives provide forest residual biomass coming from the mountainous area.
  - Biomass management companies: Forest cooperatives perform the tree harvesting of forests and transfer the residual biomass to the biofuel production plant. Respectively, the municipality is responsible for the collection of city prunings. In specific, they perform tree-cutting and transport the prunings to the biofuel production plant of the community. Finally, ESEK collects coffee residues from coffee houses which end up in the communities' facilities. After this, they process, standardize and produce solid biofuels.
  - Equipment manufacturers: Energy community has identified potential equipment manufactures for biomass boilers, suitable for using alternative biofuels.
  - ESCOs & Installers: Energy communities can play the role of an ESCO, by being responsible for fuel transportation, biomass boilers' installation in municipal buildings, cleaning and maintenance of boiler. The first pilot case is already in place, a pellet boiler installed in a municipal kindergarten in the prefecture of Karditsa.
- **Business stakeholders:**
  - Local authorities and public institutions: All six municipalities of the prefecture of Karditsa are members of the energy community and co-decide the most suitable solutions for the

exploitation of the residual biomass as well as examine heat demands to be covered by bioenergy. In the municipality of Karditsa, city prunings and residual coffee are exploited, while in the mountainous municipalities, they exploit forest residuals. Public institutions such as Municipal Development Agency and chambers of commerce are members of the community as well and contribute to the stakeholder engagement.

- Investors: No investors are involved in this energy community at the moment.
- Associations: Different local NGOs can potentially cooperate with the community in both the collection and exploitation of residual biomass. These collaborations gradually create a local ecosystem of stakeholders that exploit effectively local resources and produce bioenergy. At this moment, several NGOs support the activities of the energy community.

- **Research centres, universities:** CERTH, as a research center, has provided support via technical consultancy in the activities of the energy community: Allocation of biomass, biomass properties and biomass potential examination, definition of thermal needs, supply chain development, emissions testing with the new "alternative" biofuels etc. Furthermore, contacting external stakeholders to determine the feasibility of the new activities of the energy community and forming alliances. Finally, visualizing and spreading out the message of the RESCoops/Bioenergy Communities, hand in hand with ESEK, in various workshops and training sessions to relevant stakeholders and members of the local community. Local Universities are involved and consulted for the new activities of the energy community.

Polish pilot case:

General description of the Polish BECoop pilot case: The commune of Oborniki Śląskie, apart from the town itself, is a typical agricultural region with a large dispersion of households, including those engaged in agricultural activity. There is no heating network in the commune, and houses and other buildings are heated primarily with individual heating units. In addition, more than about 75% of households are heated indirectly or directly with coal, and about 20% with natural gas. As a result, a serious problem is the high environmental pollution resulting from coal combustion and the use of old and inefficient heating devices.

At the same time, there are resources of forest and agricultural biomass in the region which, after appropriate processing, could be used for heating purposes by residents. Due to the possibility of replacing old coal-fired boilers with new automatic boilers powered, for example, with biomass pellets, and the potential for the construction of a technological line producing pellets by a local entrepreneur (e.g., the owner of a sawmill), the idea of creating a dedicated logistics chain was born, the goal of which is to create conditions for heating houses with local biomass.

In practice, local farmers and institutions dealing with forest management could sell biomass to a local pellet production plant, from which, in turn, the residents of the commune (or other companies and institutions) would buy ready fuel (biomass pellets) for heating their households, businesses or other facilities public utility.

Such a solution should allow to reduce heating costs, and thus the phenomenon of energy poverty, but also to stimulate social activity and local cooperation between stakeholders. An added value would also be to increase energy security and to reduce pollutants emission to the environment (reduction of coal consumption).

The Oborniki Śląskie commune, as a partner of the BECoop project and a local government unit in the region, became not only the initiator of such an action, but also a potential beneficiary, due to the

management of many communal buildings/apartments and other public utility facilities (schools, commune office, cinema, sports facilities, rural community centres, etc.).

- **Technical stakeholders:**
  - Biomass owners: In this case, the biomass is provided by the farmers/members of the community: forest wood sourced from sustainably managed local forests, and straw provided by local farmers cultivating the fields.
  - Biomass management companies: For collection, treatment and transformation of the biomass, different options are being explored: farmers collect and deliver straw to the pellet producer, to subcontract a forestry services company, to harvest and deliver a biomass to the pellet producer, fuel distribution by the pellet producer, final users pick up the pellets from producer.
  - Equipment manufacturers: The pellets from biomass are produced by the local company (i.e. sawmill). In any case, the facility installation and design will be done by an ESCO/Installer.
  - ESCOs & Installers: Finally, the heat retailing can also be done by the community itself, or by an ESCO. In any case, the facility installation and design will be done by an ESCO/Installer.
- **Business stakeholders:**
  - Local authorities and public institutions: In this case, the municipal office is involved in the creation of the RESCoop. They have supported the whole process, accompanying the initiative since the beginning (sharing information, warm-up events, residents and stakeholders engagement). They are also collaborating in the allocation and contact with external stakeholders, the organization of demo activities and the visualisation of the initiative.
  - Investors: No investors are involved in this RESCoop for the moment.
  - Associations: Many Associations are interested to learn how to start activity related to RESCoop creation, how to engage local society, the barriers, the legal aspects etc.
  - But they are not engaged in the BECoop creation in OBS Commune.
- **Research centres, universities:** Wroclaw University of Environmental and Life Sciences (WUELS) as a teaching and research institution has provided support in technical-related activities: allocation of biomass, biomass properties and potential, needs for the direct heating, selection of the biomass boilers for individual household heating systems, supply chain development, etc. Furthermore, involved in the contact with external stakeholders, associations, manufacturers to determine the technical options. Visualisation and spreading out the message of the RESCoops/Bioenergy Communities, hand in hand with Oborniki Śląskie Commune (OBS), in different workshops and training sessions to different relevant stakeholders and members of the local community.

Annex IV – Letter distributed for the dissemination campaign.

The message sent to all of the identified actors that seemed suitable for being involved in the e-Market environment was the following:

"Dear Sir or Madam,

My name is Jaime Guerrero, and I am a research technician at CIRCE Technology Centre. I am contacting you because we have detected that you may be interested in participating in the Horizon 2020-funded project BECoop (2020-2023).

The BECoop project aims to promote the wide deployment of bioenergy technologies in the heating sector. Using BECoop's support services and tools, communities and energy authorities will enable to mobilise citizens around existing or new EU bioenergy initiatives, boost local demand for bioenergy by improving its image and social acceptance, and increase the viability of their efforts by identifying appropriate technical, business and financial solutions, as well as sharing knowledge and partnerships from the wider EU bioenergy ecosystem. It also aims at putting communities in charge of their local renewable (bio)energy generation. BECoop is unlocking and activating the underlying market potential of community bioenergy, by providing the necessary conditions, technical as well as business support tools. The project aims to make community bioenergy projects more appealing to potential interested actors and to foster new links and partnerships among the international bioenergy community. To this end, the project has developed a tool, the **e-Market environment**, to connect the different actors involved in a bio-based value chain. The user-friendly, easy to use and intuitive tool, unique in this sector, allows entrepreneurs to identify and contact stakeholders taking part in the supply chain of biomass heating solutions, to carry out their projects, learn from the experience of others and from similar initiatives. It connects supply chain stakeholders to support the creation or operation of new and existing energy communities, including the project pilot energy communities. As your organisation has been identified as relevant in the sector, we have decided to invite you to participate in this tool. To do so, it is only needed to complete a free, simple registration in the following link:

https://becoop.fcirce.es/e-Market/

In addition, we would also like to ask for your help in **disseminating the tool to other members of your organization and sector**. We believe that the BECoop project can benefit many renewable energies cooperatives in our community, and we would appreciate your help in spreading the word about this initiative. We are excited to offer this valuable resource to your members. We have thought that it would be a good idea to disseminate it in a **newsletter, or through a brief press release**, as we have done in some local media up till now, as you have been identified as a relevant actor in the sector.

We greatly appreciate your participation and collaboration with the project. If you have any questions during the process, please do not hesitate to contact us. In the same way, if you have any suggestions on **other means of disseminating the tool**, or **other organizations** that may be interested in participating/helping to disseminate it, it would be much appreciated.

Many thanks in advance.

Yours sincerely, The BECoop project"