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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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Abbreviations

AB	Advisory Board
BG	Background
CA	Consortium Agreement
EC	European Commission
EPC	European Patent Convention
ER	Exploitable Results
EM	Exploitation Manager
GA	Grant Agreement
FG	Foreground
IM	Innovation Manager
IP	Intellectual Property
IPR	Intellectual Property Rights
TBD	To be determined
WIPO	World Intellectual Property Organisation
WP	Work Package

Executive summary

Sound Innovation and Intellectual Property Rights (IPR) management is essential in order to enable the successful exploitation and market deployment of BECoop's assets. Therefore, the consortium of BECoop places great emphasis in managing innovation and IPR in the framework of the project, with a view to effectively paving the way for the smooth exploitation and sustainability of its results following its completion.

The current report presents the final version of BECoop's *Exploitation and Sustainability Plan*, encompassing the project's Innovation and IPR Management Strategy. This document sheds light on the key terms and procedures pertaining to the management and protection of intellectual property, lays down the main components of the relevant methodology applied throughout the project (IPR Matrix methodology) and describes the final results of its implementation, in terms of Background IP, Foreground IP and Exploitable Results.

Along these lines, an overview of BECoop's assets as envisioned at this final stage of the project is also presented, along with the partners' final plans for their post-project exploitation. In particular, this report includes specific exploitation plans per each identified asset, including the target groups that stand to benefit from their use, as well as individual exploitation plans for each member of the BECoop consortium.

1 Introduction

From the first day of the BECoop project, the partners were committed to produce results that are sustainable after the project's completion, while ensuring that innovative ideas emerging from the project are identified and explored in terms of exploitation potential. To this end, BECoop places great emphasis not only on managing the Intellectual Property Rights (IPR) of the partners' ideas and project results, but also on mapping out the expected uses and benefits of each BECoop asset, with a view to effectively paving the way for smooth exploitation and sustainability of its results, following its completion. With that in mind, the current document constitutes the final version of BECoop's Exploitation and Sustainability Plan, which lays down the strategy and basic principles of the project in this respect.

This final version of the Exploitation and Sustainability Plan serves as the guide for the activities to be implemented towards sound innovation management, exploitation and sustainability of the project's results after the end of the grant. This version also contains the partners' plans and actions towards the exploitation of the BECoop assets.

The final version of the Exploitation and Sustainability Plan comprises 8 chapters, as follows:

- **Chapter 1** provides introductory information about the context in which this report has been elaborated, its relation to other project activities, as well as to its structure.
- **Chapter 2** clarifies the key terms pertaining to IPR management of the project, defines the underlying objectives and explains the main intellectual property protection instruments.
- **Chapter 3** outlines the Innovation and IPR management strategy and its underlying stages in the context of BECoop and describes the methodology to be followed in this respect.
- **Chapter 4** introduces the IPR Matrix and explains the procedures followed in order to identify the BECoop background and foreground IPs as well as the project's exploitable results, as perceived at this stage of the project.
- **Chapter 5** offers a preliminary overview of the project's assets to be co-created during the project, the background and foreground IP from all project partners and the project's exploitable results.
- **Chapter 6** describes the exploitation plans per project asset, including actions that are currently foreseen as necessary in order for the assets to achieve their desired impact.
- **Chapter 7** outlines the individual exploitation plan for each of the members of the BECoop consortium.
- **The final chapter** sums up the report and concludes on the final steps that need to be taken by the BECoop partners towards successfully exploiting the assets of the project and highlights the application of the assets in the Bioenergy Communities formed or expanded operations during this project.

This report is the final version of the BECoop Exploitation and Sustainability Plan, featuring the concluding strategy and methodology of the project in this respect. The report reflects the latest version of the project's assets as well as the consortium's plans aimed at their post-project exploitation.

1.1 Updates of the final version

The final version of the Exploitation and Sustainability Plan represents the updates of the first version of the current document, which was made in M12 of the project. As the IPR matrix strategy had already been defined in the 1st version, along with the main assets and the exploitation plans there are not crucial or numerous modifications here. The most important updates can be summarised below:

- **Two new assets** have been added as key exploitable results of BECoop (chapter 5):
 - The **Guidebook** which is a document that guides the development of renewable energy communities by using a participative approach. This asset has been created by GOIENER and was also used for the purposes of BECoop.
 - The **BECoop synergies** which is a network with sister projects that has been created within BECoop initiatives. This network was created by IEECP for the purposes of our project and contributes significantly to our project activities as well the organisation of common events.
- The updated and final version of the Background Knowledge IP of BECoop. (chapter 4).
- The updated and final version of the Foreground Knowledge IP of BECoop. (chapter 4).
- The updated and final version of the Exploitable results (chapter 5).
- The updated and final version of the Exploitation Plans (chapter 6, 7):
- The final conclusions and the BECoop next steps (Conclusions).

2 IPR Management Overview

The following subsections aim to set the objectives of the IPR management strategy as well as to clarify the main terms concerning the key elements of IPR management, which represent the principal aspects of the IPR management procedures of the project.

2.1 Objectives

BECoop's IPR management objectives embrace the need to protect project's assets in order to handle and manage efficiently all the outcomes that stemmed during the project's life span, with a view to ensure the commercial rollout of the BECoop exploitable results, along with their proper dissemination. To this end, the main objectives of the BECoop's Innovation and IPR Management Strategy are the following:

- Describe the IPR management methodology that was followed within the context of BECoop.
- Identify the assets that emerged from the activities foreseen within the lifecycle of the project, thus determining an assets' portfolio from the early stages of the project.
- Develop a common understanding among the BECoop's partners, concerning terms and issues of the background and foreground IPs and their respective access rights.
- Conceptualise a preliminary framework the IP protection that is employed in each identified exploitable asset of BECoop.
- Define and eventually dissolve any possible conflicts in IPs within the consortium and beyond.
- Establish common guiding routes and actions within the consortium to safeguard the smooth operation of the IPR strategies implemented.

In general, the key concepts to consider for designing the Innovation and IPR management strategy of H2020 projects are the following:

- Background IP knowledge
- Foreground IP knowledge
- Exploitable results
- Dissemination channels
- Access rights

Therefore, the following subsections aim to clarify the main terms concerning the key elements of IPR management, which represent key aspects of the IPR management procedures of the project.

2.2 Background

Background IP can be defined as data, know-how or information including any rights - owned or licensed to a project partner prior to the commencement of the agreement and needed to implement the action or exploit the project's assets¹. The background needed for carrying out the project activities or exploiting the underlying results must be accessible to the other project partners on a royalty-free basis. Under this frame, all project partners identified the background that is pertinent for the project

¹ See Article 24.1 of the BECoop Grant Agreement.

actions and granted access rights to this IP, in principle². The background of a project can be identified and agreed (i) within the consortium agreement, after the internal evaluation of pre-existing knowledge, or (ii) in a separate agreement (“agreement on the background”). In this respect, there are two main aspects to consider when dealing with the background of a project³:

- **Identification of background:** Naming of the assets that each project partner provided to the consortium, and which are imperative for successful implementation and exploitation of the project actions.
- **Definition of Access Rights:** Clarification of the rights to use knowledge under the terms and conditions agreed within the consortium and in alignment with the underlying background rules and obligations set by the EC in order to ensure the smooth implementation of the project.

2.3 Foreground

Foreground refers to the results and assets that are generated through the implementation of the project activities, including pieces of information, materials, and knowledge⁴. These results comprise any tangible or intangible output of the project’s actions, which can be protectable or not. In this respect, foreground IP can arise and be obtained from project partners in order to protect and exploit the underlying exploitable assets of the project. It includes intellectual property rights (e.g. copyrights, industrial designs, patents), similar forms of protection (e.g. rights for databases) and unprotected know-how (e.g. confidential material). It should be noted that results generated outside of the project activities cannot be defined as foreground.

The Grant Agreement of BECoop establishes that the results of the project are owned by the project partner who generates them⁵. Given the collaborative nature of the project, some results are jointly developed by several partners. In this case, joint ownership can arise among the contributing partners and is subject to the agreement on the allocation and terms of the exercise of their joint ownership. Although regulations concerning the frame of joint ownership are embedded in the BECoop Consortium Agreement⁶, it would be best practice for partners to establish during the project implementation a separate joint ownership agreement in order to define the allocation and terms of exercising their ownership. Each joint owner can grant non-exclusive licences to third parties to exploit the jointly owned results unless otherwise agreed in the CA or the joint ownership agreement.

² See Attachment 1 in the Consortium Agreement for a detailed description of the BECoop background and the access rights granted in principle for the consortium.

³ For the detailed definition of the Foreground see: https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/european-ip-helpdesk/europe-glossary/glossary-b_en

⁴ For the detailed definition of the Foreground see: https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/european-ip-helpdesk/europe-glossary/glossary-f_en

⁵ See Article 26.1 of the BECoop Grant Agreement.

⁶ See Article 26.2 of the BECoop Grant Agreement.

2.4 Exploitable Results

Exploitation of project's results means the utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities⁷. Under this scheme, an exploitable result constitutes a result of the project that meets the following two conditions:

- Has commercial/ social/ academic relevance.
- Can be commercialised/ exploited as a standalone result (product, process, service, etc.)⁸.

Therefore, exploitable results can be a combination or part of a foreground result. Not all foreground items may meet the above conditions⁹.

2.5 Access Rights

Access rights refer to user rights for requesting access to a project partner's background and foreground in order to implement its activities under the project or to use its own results. In addition, access rights can be utilised as long as they are needed for exploiting the project's results and assets. The granting of access rights within a collaborative H2020 project follows specific rules pre-defined in the Grant Agreement¹⁰ and the Consortium Agreement¹¹. Depending on their purpose of use, access rights within BECoop can be depicted in the following table.

Table 1 Access Rights

Purpose for Access	Access to Background (Article 25 of BECoop's GA)	Purpose for Access (Article 31 of BECoop's GA)
Project Implementation	<ul style="list-style-type: none"> • Royalty-free • Unless otherwise agreed by participants before accession to the Grant Agreement 	<ul style="list-style-type: none"> • Royalty-free
Exploitation of Own Results	<ul style="list-style-type: none"> • Subject on individual agreement • Granted under fair and reasonable conditions 	

⁷ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/glossary>.

⁸ A patent for licensing is also an exploitable result.

⁹ See European Commission, Dissemination and Exploitation in H2020: http://ec.europa.eu/research/participants/data/ref/h2020/other/events/2017-03-01/8_result-dissemination-exploitation.pdf.

¹⁰ See Article 25 and Article 31 of the BECoop Grant Agreement

¹¹ See Section 9 of the BECoop Consortium Agreement.

2.6 Protection of Results

When considering IP protection, it must be noted that IP assets can be protected by several types of IPR, and consequently, the most appropriate protection strategy must be chosen. The selection of the most suitable form of IP protection depends on the nature and specific characteristics of the results under consideration and the objectives of the IP owner.

There are various types of instruments that may be considered for protecting IP. Under the framework of BECoop, meaningful IP protection instruments that can be used are the following:

- Trade and service marks.
- Patents.
- Utility models.
- Copyrights.
- Trade secrets.
- Confidentiality agreements.

Further details with respect to each of the above-mentioned protection instruments are provided in the subsections below.

2.6.1 Trademarks and Service Marks

Trademarks

A trademark constitutes an exclusive right over the use of a sign in relation to the goods and services for which it is registered¹². Trademarks consist of signs capable of distinguishing the products (either goods or services) of a trader from those of others. The main function of a trademark is to identify the commercial origin of a product. This does not mean that it must inform the consumer of the actual person who has manufactured the product or even the one who is trading in it. It is sufficient that the consumer can trust that a given enterprise, not necessarily known to them, being responsible for the product sold under the trademark.

Service Marks

In modern trade, consumers are confronted not only with a vast choice of goods of all kinds but also with an increasing variety of services, which tend more and more to be offered on a national and even international scale. There is therefore also a need for signs that enable consumers to distinguish between the different services, such as insurance companies, car rental firms, airlines, etc.

These signs are called service marks and fulfil essentially the same origin-indicating and distinguishing function for services as trademarks do for goods. Since service marks are signs that are very similar in

¹² See <https://iprhelpdesk.eu/sites/default/files/2018-12/european-ipr-helpdesk-your-guide-to-ip-in-europe.pdf> for the definition of trade mark in Europe.

nature to trademarks, basically the same criteria can be applied. Thus, service mark protection has sometimes been introduced by a very short amendment to the existing trademark law, simply providing for the application to service marks of the provisions on the protection of trademarks¹³.

2.6.2 Patents

A patent is an exclusive right granted for the protection of inventions (products or processes) offering a new technical solution or facilitating a new way of doing something. The patent holder enjoys the exclusive right to prevent third parties from commercially exploiting their invention for a limited period. In return, the patent holder must disclose the invention to the public in the patent application¹⁴.

A patent does not give its owner the positive right to use the patented invention. Third party rights may have to be requested. Still, a patent owner has the right to decide who may or may not use the patented invention throughout the period during which the invention is protected. Moreover, the patent owner may give permission to other parties, or licence them, to use the invention on mutually agreed terms. The owner may also sell the right to the invention to someone, who then becomes the new owner of the patent. Finally, patents are granted only country by country, some regionally, and may also be used in non-patented territories.

Once a patent expires, the protection ends, and the invention becomes part of the public domain, in the sense that the owner no longer holds exclusive rights to it, and it becomes available for commercial exploitation, free of charge, by others¹⁵.

2.6.3 Utility Models

Also referred to as a “petty patent”, a utility model is an exclusive right granted for an invention that allows its owner to prevent others from commercially using the protected invention, without their authorisation, for a limited period¹⁶. The inclusion of utility models into the intellectual property system in some countries has the primary objective of nurturing the rapid evolution of indigenous innovativeness, particularly in small and medium-sized enterprises and among individuals¹⁷.

¹³ See WIPO Intellectual Property Handbook 2008: Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection, p. 68.

¹⁴ Definition of patents in the European context retrieved from <https://iprhelpdesk.eu/sites/default/files/2018-12/european-ipr-helpdesk-your-guide-to-ip-in-europe.pdf>.

¹⁵ See WIPO Intellectual Property Handbook 2008: Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection, p. 17.

¹⁶ Definition of utility models in the European context retrieved from <https://iprhelpdesk.eu/sites/default/files/2018-12/european-ipr-helpdesk-your-guide-to-ip-in-europe.pdf>.

¹⁷ See WIPO Intellectual Property Handbook 2008: Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection, p. 40.

2.6.4 Copyrights

Copyright (or author's right) is the term used to describe the rights that creators have over their literary, scientific, and artistic works. There is not an exhaustive list containing the works that can be protected by copyright. However, there are several works usually covered by copyright at international level¹⁸:

- literary works such as novels, poems, plays, newspaper;
- articles;
- computer programs, databases;
- films, musical compositions, and choreographies;
- artistic works such as paintings, drawings, and photographs;
- sculptures;
- architecture; and
- advertisements, maps, and technical drawings

Copyright protection also includes moral rights, including the right to claim authorship of a work, and the right to oppose changes to it that could harm the creator's reputation. The creator - or the owner of the copyright in a work - can enforce rights administratively and in court by inspecting premises for evidence of production or possession of illegally made "pirated" goods related to protecting works. The owner may obtain court orders to stop such activities as well as seek damages for loss of financial rewards and recognition. Finally, it is important to note that Copyright only protects the expression of ideas represented in a physical embodiment, not the ideas themselves, provided the expression is original¹⁹.

2.6.5 Trade Secrets

Any confidential business information providing a competitive advantage to an enterprise can be considered a trade secret. The type of information that can be protected as a trade secret is therefore highly diverse. It can include know-how, technical knowledge (potentially protectable as a patent), but also business and commercial data such as lists of customers, business plans, recipes or manufacturing processes²⁰.

2.6.6 Confidentiality Agreements

¹⁸ Definition of copyrights in the European context retrieved from <https://iprhelpdesk.eu/sites/default/files/2018-12/european-ipr-helpdesk-your-guide-to-ip-in-europe.pdf>.

¹⁹ See WIPO Intellectual Property Handbook 2008: Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection, p. 40.

²⁰ Definition of trade secrets in the European context retrieved from <https://iprhelpdesk.eu/sites/default/files/2018-12/european-ipr-helpdesk-your-guide-to-ip-in-europe.pdf>.

Confidentiality is an extremely important issue for participants in innovation projects, from the setting-up to the implementation and exploitation phases. Exchanging valuable information with other partners is generally a necessity that regularly occurs in collaborative initiatives or undertakings. Accordingly, confidentiality issues and measures should be taken into consideration in order to safely exchange information, facilitating the project development and ensuring the non-disclosure of sensitive technology, business, or commercially confidential information. Confidentiality agreements provide protection and more security to an organisation that is about to share or make available information to another organisation by ensuring that confidential information will be used only for the permitted purposes agreed between the signatories of the agreement and will not be used or revealed to third parties without consent. Therefore, the signature of a confidentiality agreement can be seen as a very important step to keep confidential information secret in order to maintain a competitive edge²¹.

²¹ See Chapter Non-Disclosure Agreement of European IPR Helpdesk.

3 IPR Management Strategy

Under the framework of BECoop, key IP and innovation management have been employed, with a view to set a common understanding concerning the background, foreground, ownership (including joint ownership), access and usage rights, dissemination, and exploitation during and after the project development. In this respect, the BECoop IPR management strategy applies a comprehensive framework that separates the IP management processes of the project in the following stages:

- Grant Agreement preparation stage.
- Project implementation stage.
- Post-project stage.

In this respect, the following figure illustrates the IPR management stages as considered within BECoop. More details about these stages are presented in the sub-sections that follow.

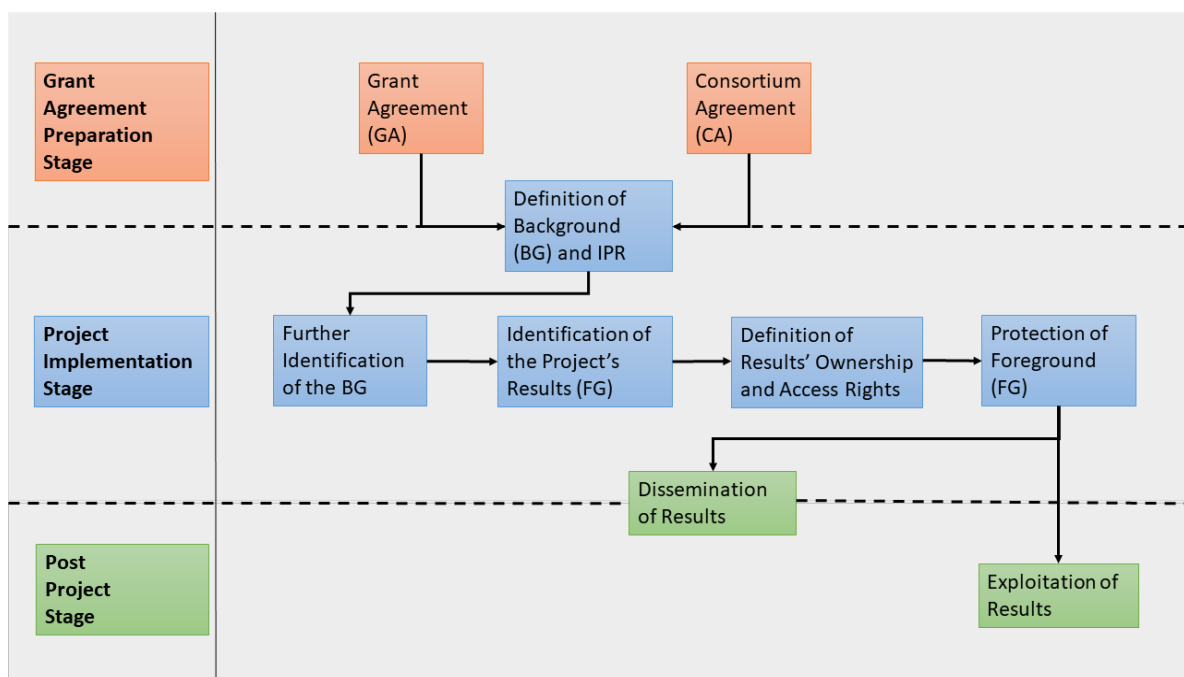


Figure 1 BECoop IPR Management Stages

3.1 Grant Agreement preparation stage

Both the Grant Agreement and the Consortium Agreement constitute documents that include a description of several issues related to IPR. Their unique provisions represent a reference point for IPR issues among the project partners. In this respect, any further advancements regarding IPR actions to be put in place by project partners will be facilitated under the underlying provisions.

3.1.1 Grant Agreement

The Grant Agreement constitutes a contract that sets out the key rules and conditions of the project and is conducted between the EC and the BECoop partners. It represents the main contractual basis

for BECoop while its main points and sections referring to IPR are included in Section 3 “Rights and obligations related to Background and Results”²². Under this scheme, the management of the BECoop IP is regulated, whereas access rights and obligations related to the background are set. In addition, the GA defines issues concerning the ownership and protection of the project’s generated results, as well as their exploitation and dissemination outcomes. Finally, transferability and access rights to results are also defined in the BECoop GA.

3.1.2 Consortium Agreement

The Consortium Agreement constitutes a contract among the partners of the BECoop consortium that aims to define rights and obligations within the partnership for the purposes of carrying out the project’s foreseen actions and activities²³. The CA minimises the probability of later disputes as it provides rules and responsibilities during the project as well as defines the access rights to be granted to the partners concerning the project. In addition, rights and responsibilities are outlined among the consortium members concerning issues of the IP.

The BECoop Consortium Agreement main points and sections referring to IPR are contained in:

- **Section 8 “Results”**, that sets out provisions on ownership and joint ownership of results, as well as on their transfer and dissemination.
- **Section 9 “Access Rights”**, which clarifies the access rights governing principles along with the access rights for the exploitation and dissemination purposes. It also states specific provisions for access rights to the software.
- **Attachment 1 “Background included”** that presents the initial list of usable background.

3.2 Project implementation stage

During the implementation stage of the project, IP handling procedures were foreseen to be applied among the BECoop partners in order to properly organise results/ assets management of the project. In this respect, as the project evolved, the was on foreground identification, assets’ ownership, access rights, and protection, as well as the exploitation and commercialization of the project’s results. The BECoop IPR management emphasises on establishing robust handling procedures of the IPR issues that are of strategic importance to the project in order to facilitate exploitation of its results.

Therefore, partners should focus on two different points:

- Providing access rights to their knowledge for other partners to carry out their work on the project.
- Establishing early asset identification procedures with a view to protecting, disseminating, and exploiting the project’s assets, all while fostering long-term cooperation among partners and efficient project management.

In this respect, key IP related issues in the BECoop implementation phase include:

²² In particular, see Articles 23a – 31 of the BECoop Grant Agreement.

²³ See IPR helpdesk for the definition of Consortium Agreement.

3.2.1 Background identification

Since the first stages of BECoop, the relevant knowledge, know-how, and data of partners have been defined as complementary to those outlined in the consortium agreement, which constitute the background of the project. Under this framework, the underlying background can be attached to the generated assets of the project, which, eventually, will help in the determination of access rights, ownership issues and IPR.

3.2.2 Foreground identification

A core process of the BECoop IP management is the project assets' identification with a view to creating a concrete mapping of the project's assets and enhancing the BECoop IP portfolio. Therefore, all IP valuable assets within the project have been identified, listed, named, described, and analysed in a systematic way.

3.2.3 Results' ownership

Partners were asked in the first version (through the BECoop IPR Matrix – See Section 4) to elaborate further on the provisions of the CA with regards to results' ownership. Special attention must be paid to handling joint ownership issues. One option would be to link the main assets of the project with the tasks within which they were developed, so that contributing partners of each asset can be preliminarily easily identified.

3.2.4 Protection of results

Effective exploitation of the innovative concepts and assets developed under the framework of BECoop depends on the protection of the project's results. In particular, the project's results must adequately be protected if²⁴ :

- The project's results can reasonably be expected to be commercially exploited and;
- Protecting them is possible, reasonable, and justified (given the circumstances).

In this respect, when considering IP protection, BECoop partners must consider their own interests along with the interests of the whole consortium. Project partners must safeguard the identified exploitable BECoop results with adequate protection schemes that will offer a decent protection period within a suitable geographical territory. The table that follows, illustrates the different protection instruments that can be applied to a variety of subjects.

²⁴ See https://ec.europa.eu/easme/sites/easme-site/files/ip_in_h2020_european_ipr_helpdeskmd09112017.pdf

Table 2 *Protection instruments of results*

Subject Matter	Patent	Utility Model	Copyright	Trademark	Confidential Information
Invention	X	X			X
Software	X*	X	X		X
Scientific Article			X		
Technology Design			X	X	
Name of Technology				X	
Know How	X	X			X
Website			X	X	X

*Software patentability is still a debated issue given its exclusion as subject matter as by Article 52(2)(c) and (3) of the European Patent Convention (EPC). Source: **IPR Helpdesk**.

IP protection constitutes a tool to create value through the licensing, sale, or commercialization of IP in the form of products and services. Moreover, its utilisation is vital for prospective commercial or industrial exploitation, as it can contribute to supporting the branding of products and services both to customers and investors. It should be noted that the IP protection of an asset is not always mandatory.

3.2.5 Exploitation of results

The identified exploitable results and assets of BECoop will be effectively exploited for commercial or any other relevant use as foreseen within the BECoop GA²⁵. In particular, the BECoop consortium will seek exploitation opportunities for the project's results in (i) further research activities, (ii) developing, creating, or marketing a product or process, (iii) creating and providing a service, and (iv) using them in standardisation activities.

In parallel to the successive phases of IP identification, determination of claims for ownership and exploitation, as well as the definition of IP protection measures, further actions will be taken, including:

- Outlining of potential exploitation routes anticipated for each of BECoop's assets beyond the end of the project.
- Market analysis and business modelling using the Business Model Canvas methodology and aiming at producing a set of commercially viable and sustainable business models for rolling out the commercially relevant assets of the project.
- Validation and improvement of the business models, while also establishing relationships that may result in early-stage adoption of BECoop's commercially exploitable results.
- Elaboration of the BECoop Exploitation Plan to serve as the road map for the roll-out of the commercially exploitable results of the project after the end of the Grant.

²⁵ See Article 28.1 of the BECoop Grant Agreement

3.2.6 Dissemination of results

BECoop partners are set to select the appropriate means for dissemination of project results (e.g. scientific publications, publication on websites, conferences, etc.), according to the conditions set forth in the CA²⁶ and in other specific confidentiality agreements that might arise in order to maintain confidentiality during and after the end of the project. All partners should be aware that they first ensure the protection of a project's exploitable result and then proceed to dissemination actions for this or any other underlying result.

When assets are disseminated by means of publications, they will be deposited either with green open access (i.e. the author, or a representative, archives the published article or the final peer-reviewed manuscript in an online repository before, at the same time as, or after publication), or with gold open access (an article is immediately published in open access mode and the payment of publication costs is shifted away from subscribing readers) according to the ["Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020"](#).

3.3 Post Project Stage

As the project approaches its conclusion, the current final version of the Exploitation and Sustainability Plan will be submitted, outlining the use that BECoop consortium intends to make of its exploitable results and the related plans and time frame for their exploitation. This Plan describes the further activities that need to be implemented in order to ensure the use and sustainability of BECoop results. In addition, it will include the final findings concerning IP issues as well as the final update of the IPR Matrix (See Section 4), detailing the intellectual property rights applied and registered. This deliverable, therefore, will envisage the final strategy for exploitation, management of intellectual property rights, and sustainability after project end, including also the concrete chosen commercialization streams.

3.4 Role of the Exploitation Manager

The Exploitation Manager (EM) is responsible for defining the project's Innovation and IPR Management Strategy, preparing the respective reports, and ensuring that innovative ideas that arise during the project will be thoroughly examined and assessed for potential exploitation, while at the same time all background and foreground intellectual property of the project is managed. To this end, the EM is in close communication with the Project Coordinator and the Steering Committee to ensure continuous feedback from escalating project activities from the start until the project's completion.

²⁶ See Section 8.4 of the BECoop Consortium Agreement.

The Exploitation Manager and the Project Management Office (PMO) are responsible for the organisation and management issues of the BECoop Innovation and IPR strategy implementation. With that said, it is considered good practice for a partner to inform and consult the EM and the PMO accordingly before deciding whether to protect the results stemming from its underlying activities or not – particularly if the partner is considering a potential joint IP scheme.

Finally, the EM also assumes a mediation role in case of IP conflicts (see Section 3.6), monitors project activities, and feeds the development of the subsequent versions of this report in the context of BECoop.

3.5 Knowledge Management of the Project

The management of the IP constitutes an integral part of the overall BECoop project management structure, and thus it is important to establish a permanent IP monitoring scheme during the project. In this respect, an efficient IPR management methodology has been defined, from the early stages of the project, the procedures under which newly generated/ identified results have been handled within the lifespan of BECoop.

Efficient management of IP in BECoop is achieved through adopting a process able to identify IP results as well as determine their adequate handling and protection. In this respect, it is essential to establish mechanisms that guarantee that IP information is reliable and timely captured. The WP Leaders should identify a new asset that is generated under their respective WP activities, and the Exploitation Manager must be informed accordingly.

The BECoop EM and the PMO constitute the parties that handle the screening and the management of any newly identified assets and their corresponding IP issues that arise during the project's lifespan. The EM directs the consortium partners to commonly establish the most adequate and efficient IPR strategy based on the nature of the newly identified asset and the purposes of the BECoop consortium concerning the exploitation of this asset. To facilitate this process, the BECoop IPR management strategy foresees creating and updating a living IPR Matrix (See section 4) to be revised and extended with new pieces of project results as the project's implementation advances.

3.6 IP Conflicts

In order to proactively avoid IP conflicts, project partners are well-informed about IP rules and guided through the exploitation process not only via the IPR Matrix but also with the help of the Exploitation Manager. In this respect, project partners identified their IPR assets, formulated their ownership and exploitation claims, and if deemed necessary, transferred any relevant results to BECoop's exploitable results according to the principal rights and obligations defined in the Consortium Agreement of BECoop (Section 8 of BECoop CA). The Exploitation Manager provides assistance for the following indicative (and not exclusive) issues:

- Is there a possible misunderstanding about the definition of the exploitable result and therefore of the object of claims?
- Are there exploitation claims that should be further specified so that the partners can check the compatibility of their claims?
- Are the foreseen exploitation claims compatible with the ownership claims of the partners (related issue of access rights)?
- Are there any confidentiality issues, e.g. on new knowledge of strategic importance for a partner and consequently the need for a confidential agreement?
- Are there any possible IP conflicts between the partners, both related to ownership and the related need for access rights and to exploitation claims?

In terms of IP conflict, the Exploitation Manager will encourage conflicting parties to get in contact and proactively find solutions, making written agreements whenever necessary. In case no agreement will be achieved, internal mediation process will be kicked off following the provisions of section 11.8 of the BECoop Consortium Agreement.

4 IPR Matrix Methodology

The BECoop IPR management approach foresees the utilisation of an IPR Matrix in order to define the main IPR issues concerning the BECoop Innovation and IPR Management Strategy. This approach supports all project partners in identifying and managing the background, foreground knowledge, and exploitable results of the project and also of potential co-innovators, in order to have a full overview of IP protection and necessary agreements to enable successful exploitation of the project's offerings.

The IPR Matrix methodology is comprised of 4 distinct but interconnected steps, as follows:

- **Step 1:** Identification of the background IP and definition of access rights among partners within the project.
- **Step 2:** Identification of the assets and results, which constitute the foreground IP of the project and are foreseen to be generated under the BECoop activities.
- **Step 3:** Identification of the project's exploitable results/assets (as defined at this early stage of the project) and the corresponding interest in their further commercialisation along with the contributing partners to each result/asset.
- **Step 4:** Definition of a preliminary framework of IPR protection for the defined BECoop assets, which will enhance their further exploitation and commercialisation.

The objective of the Innovation and IPR Management Strategy of BECoop is to define the main assets and results on one hand and identify, to the extent possible, the background and foreground IPs as well as the exploitable results of the project, along with their corresponding access rights on the other hand. Under this framework, the structure of the IPR Matrix that is used through our project is summarised below.

Table 3 Structure of the IPR Matrix

Background (BG)	Foreground (FG)	Exploitable results (ER)
● BG#	● FG#	● ER#
● Partner's Background	● Project Result	● Exploitable result
● Short Description of BG	● Related WP	● Main partner
● Type of Protection	● Contributing Partners	● Further contributing partner(s)
● Conditions to Use within BECoop	● Short Description of FG	● Related FG#
● Conditions to use outside BECoop	● Related BG#	● Related BG#
● Interest in further exploitation through BECoop results	● Type of Protection	● Proposition for the ER-owner
	● Conditions to Use within BECoop	● Short description of the ER

Background (BG)	Foreground (FG)	Exploitable results (ER)
	<ul style="list-style-type: none"> Interest in Further Commercialisation of Project Results 	<ul style="list-style-type: none"> Relevance for IP Protection
	<ul style="list-style-type: none"> Conditions to use after the end of the Project 	<ul style="list-style-type: none"> Exploitation pathways

4.1 Identification of Background IP

In the first part of the IPR Matrix, the background IP that was used during the project's implementation was identified, as illustrated in the following table.

Table 4 IPR Matrix Background

[illegible]

In the 2nd column of this part of the IPR Matrix, the project background assets are listed. In the 3rd column, the name of the partner who owns this background is indicated. For each identified background required for the creation of the result, a specific background number per partner was assigned. In column 4, the corresponding background number was indicated, while column 5 should include a short description of the background. In column 6, partners indicated relevant IP protection types for the background in terms of patents, copyright, etc. In the 7th column, the conditions to use the background within the project (e.g. free to use or subject to charges, etc.) indicated by each partner, whether there are any restrictions to use the background or not. In the 8th column, the background's condition to use outside BECoop was also indicated, while in the last column partners mention if they have any interest in exploitation/ commercialisation of the relevant background through the project results.

The background IP was registered by the project partners by **M12**. The results are presented in **Section 5**.

4.2 Identification of Foreground IP

In the second part of the IPR Matrix, the foreground IP of the project is registered, as presented in the following table.

Table 5 IPR Matrix Foreground

[illegible]

In the first four columns, the BECoop results were developed, along with the corresponding WP, are listed. In the 5th column, the main partner responsible for the foreground was indicated. In the 6th column, the further contributing partners for the foreground knowledge were indicated as well. In the 7th column, the related background number is attached to the underlying FG. In the 8th column, a short text describing the identified FG was included by the responsible project partner. In the 9th column, a FG number was attached to each result per each contributing partner. In the 10th column, partners indicated relevant IP protection type for the FG, in terms of patents, copyright, etc. In the next column, the conditions to use the FG within BECoop (e.g. free to use or subject to charges, etc.) were indicated by each partner whether there are any restrictions to use the FG or not. In the 12th column, the project partners described if they have an interest in commercialisation of the project result. Finally, in the last column, the conditions (e.g. free to use, licence fee, etc.) to use after the end of the project were indicated by the project partners.

The results of the Foreground IP identification, as defined at this stage of the project, are presented in **Section 5**.

4.3 Identification of Exploitable Results

Based on the identified foreground IP, the BECoop consortium defined the exploitable assets along with the underlying IPR management procedures, such as protection, the definition of access rights, and exploitation pathways.

At this step, the third part of the IPR Matrix was elaborated, which defined the Exploitable Results (ER), indicating also the main contributors these results. The main aim of this part of the IPR Matrix is:

- to **identify IP ownership and exploitation claims**, as well as proactively indicate possible conflicts for each exploitable result; and

- to **support decisions on issues pertaining to IP protection** in order to timely make the needed steps in this regard, including any potential IP agreements (e.g. for joint ownership, providing access rights, or even an NDA for confidentiality).

With the above in mind, the following table provides an illustrative overview of this part of the IPR Matrix.

Table 6 IPR Matrix Exploitable Results

[illegible]

In the first two columns, the number and a short name of the identified exploitable results are listed. In the 3rd column, a short text of the identified ER is included. In the following column, the main partner(s) responsible for the ER are listed. In the 5th column, other relevant contributing partner(s) for the ER are indicated as well. In the 6th column, the related FG number is indicated, whereas in the 7th column the relevant background number is stated. In the 8th column, a proposition about the IP ownership of the ER is indicated by the main partner contributing to the creation of the ER. In the next column, the responsible partner indicates the relevance of possible IP protection. In the next 5 columns, the exploitation claims are divided into five different categories:

- **M:** Making a product and selling it.
- **U:** Using the project result internally for further development, for instance:
 - to develop something else for sale; or
 - for R&D departments (public or private) to use the results in new research projects.
- **L:** Licensing the project result to third parties.
- **S:** Providing a **S**ervice, such as consultancy, etc.
- **O:** **O**thers

The responsible partner for the ER chooses which exploitation paths are appropriate in consultation with the contributing partners, the Project Coordinator and the Exploitation Manager. Finally, in the last column, the responsible partner indicates which exploitation claim would be the most promising.

5 BECoop's Assets, Background IP, Foreground IP & Exploitable Results

5.1 Identified Assets of BECoop

The main assets of BECoop, as identified by the consortium at this stage of the project, along with their description are presented in the table that follows.

Title	Brief description
New bioenergy communities	New bioenergy communities that have been or will be set up in our pilot and replication cases and will facilitate the market uptake of bioenergy technologies.
Knowledge on the community bioenergy	BECoop's novel knowledge on the community bioenergy market potential, along with an inventory of community bioenergy lighthouse examples.
Assessment tool	BECoop assessment tool for bioenergy communities to evaluate their current status and future potential.
Inventory of tools and resources	BECoop inventory of tools and resources (including a virtual e-market environment for bioenergy communities) for supporting the development and operation of bioenergy communities.
Technical and business catalogues	The BECoop technical and business catalogues offering a wide range of suitable bioenergy technical, business and financial models for the community level.
Technical, business and financial services portfolio	A set of validated technical, business and financial services portfolio for optimising bioenergy communities' development and functioning.
Knowledge Exchange Platform	The BECoop Knowledge Exchange Platform (KEP) that supports mutual knowledge exchange and partnerships among bioenergy actors.
Replication Handbook	The BECoop Replication Handbook for applying the project outcomes to additional regional settings.
Policy Roadmaps	Evidence-based national and EU level policy roadmaps.
Network of Interest	Network of Interest of community bioenergy stakeholders.
Guidebook	A document that guides the development of renewable energy communities by using a participative approach.
BECoop synergies	A synergising network with sister projects that has been created within BECoop initiatives. See deliverable 6.6.

Table 7 Identified Assets of BECoop

5.2 Background IP

The project partners were able to preliminarily identify the background IP to be used so as to achieve the objectives of BECoop. This is presented in the following Table 8.

Table 8 BECoop Background IP

Relevant Background	Contributing Partner	BG number	Short description of BG	Type of protection	Conditions to use within BECoop	Conditions to use outside BECoop	Interest in further exploitation through BECoop's results
Experience and knowhow	CIRCE, WUELS	BG1	Knowhow and methodology for biomass value chain assessment acquired in different FP7 and H2020 projects (Europruning, Greengain, Up-running and Agrobioheat). Especially extensive knowledge of biomass from pruning and agro-residues and their contexts for valorisation.	None	Only by CIRCE and WUELS in project tasks.	Not to be used outside the project.	Enrich and complement knowledge on Biomass value chain, especially biomass from agro-residues and pruning in particular.
Experience and knowhow	CIRCE, WUELS	BG2	Methodology and knowledge of the development of a Smart System for the Optimization of Logistics Performance of the Pruning Biomass Value Chain within the framework of the EUROPRUNING project.	None	Only by CIRCE and WUELS in project tasks.	Not to be used outside the project.	Enrich and complement knowledge on Biomass value chain, especially biomass from agro-residues and pruning in particular.

Relevant Background	Contributing Partner	BG number	Short description of BG	Type of protection	Conditions to use within BECoop	Conditions to use outside BECoop	Interest in further exploitation through BECoop's results
Experience and knowhow	CERTH, WUELS	BG3	Knowhow and methodology for biomass value chain assessment acquired in different H2020 projects (Up-running, Eurpruning, AGROinLOG, Agrobioheat, BIOmasudPlus). Especially extensive knowledge of biomass from pruning and agro-residues and their contexts for valorisation and exploitation, mainly by energy means.	None	Only by CERTH and WUELS in project tasks.	Not to be used outside the project.	Enrich and complement knowledge on biomass value chains exploiting coffee residues, urban prunings and forest residues.
Experience and knowhow	GOI	BG4	Methodology for providing guidance during the co-creation process of energy communities.	None	Available for internal use.	Available (upon request) to RESCoops, citizens and public administrations on discretionary conditions.	Enrich and complement this methodology with knowledge and information about bioenergy, offer it as a service to citizens, associations and public administrations on discretionary conditions.

Relevant Background	Contributing Partner	BG number	Short description of BG	Type of protection	Conditions to use within BECoop	Conditions to use outside BECoop	Interest in further exploitation through BECoop's results
Experience and knowhow	WR	BG5	Knowhow and methodology for surveys, consultation workshops, and in-depth research related to social perceptions and market insights.	None	Only by White Research in project tasks	Not to be used outside the project.	No

5.3 Foreground IP

Table 9 Foreground IP

WP	#	Project result (PR)/ Achievement	Specific project result	Main Partner	Contributing partner(s)	Rel. BG	Short description of FG	FG num.	Type of protection	Conditions to use within BECop	Comm. of PR	Use after the end of project
1	1.1	Knowledge on community bioenergy	State-of-play of community bioenergy across Europe: market size, applications and best practices	CBS	WR, GOI, CIRCE, CERTH, Q-PLAN, FIPER, WUELS, SEV	N/A	Case studies of community energy best practices and insights from an online survey on the potential for bioenergy market expansion in existing RESCoops	FG 1.1.1	Copyright	Free to use	No	Free to use
			Regional and EU framework and value chain conditions affecting community bioenergy uptake	WUELS	All partners	BG1	An analysis of the regional /national contexts of our pilot areas as well as at the EU level in terms of investigating the current framework conditions that could act as a barrier or an enabler for the uptake of community bioenergy heating	FG 1.1.2	Copyright	Free to use	No	Free to use
			Stakeholders' perceptions, acceptance levels and	WR	Pilot partners (GOI, ESEK,	BG5	An online survey results on the stakeholders' bioenergy heating perceptions and needs	FG 1.1.3	Copyright	Free to use	No	Free to use

WP	#	Project result (PR)/ Achievement	Specific project result	Main Partner	Contributing partner(s)	Rel. BG	Short description of FG	FG num.	Type of protection	Conditions to use within BECoop	Comm. of PR	Use after the end of project
			needs on bioenergy heating		FIPER, OBS)							
			Definition of community bioenergy heating uptake needs and challenges	GOI	All partners	BG4	An analysis of the community bioenergy heating uptake challenges and needs both at the pilot and EU level	FG 1.1.4	Copyright	Free to use	No	Free to use
2	2.1	Assessment tool	BECoop assessment tool	CIRCE	WR, GOI, ESEK, CERTH, Q-PLAN, FIPER, CBS, OBS, WUELS, SEV	BG1 & BG2	An evaluation methodology and an online tool for entrepreneurs of new cooperative bioenergy projects	FG 2.1.1	Copyright	Free to use for registered users	No	Free to use for registered users
	2.2	Inventory of tools and resources	BECoop toolkit	CIRCE	WR, GOI, ESEK, CERTH, Q-PLAN, FIPER, CBS, OBS, WUELS, SEV	BG1 & BG2	An online repository of already existing tools in supporting the development and operation of community bioenergy and heating projects.	FG 2.2.1	Copyright	Free to use for registered users	No	Free to use for registered users

WP	#	Project result (PR)/ Achievement	Specific project result	Main Partner	Contributing partner(s)	Rel. BG	Short description of FG	FG num.	Type of protection	Conditions to use within BECoop	Comm. of PR	Use after the end of project
			e-market environment for bioenergy communities	CIRCE	CERTH, WUELS, GOI, ESEK, OBS, FIPER	N/A	A virtual (e-market) environment for connecting biomass heating stakeholders and supply chains with educational and informative purposes	FG 2.2.2	Copyright	Free to use for registered users	No	Free to use for registered users
	2.3	Technical and business catalogues	Technical support services catalogue	CIRCE	CERTH, WUELS, Q-PLAN, WR, SEV	BG1 & BG2	A catalogue on the most suitable technological solutions for community bioenergy projects	FG 2.3.1	Copyright	Free to use for registered users	No	Free to use through the project deliverable
			Business and financial support services catalogue	Q-PLAN	CBS, CIRCE, CERTH, WUELS, FIPER, SEV, WR	N/A	A catalogue on the most suitable business models and business and financial services for the uptake of community bioenergy projects	FG 2.3.2	Copyright	Free to use	No	Free to use through the project deliverable

WP	#	Project result (PR)/ Achievement	Specific project result	Main Partner	Contributing partner(s)	Rel. BG	Short description of FG	FG num.	Type of protection	Conditions to use within BECoop	Comm. of PR	Use after the end of project
3	3.1	New bioenergy communities	New bioenergy communities	GOI, ESEK, FIPER, OBS WUELS	All partners	N/A	New bioenergy communities set up in BECoop pilot regions and replication cases across the EU that will facilitate the market uptake of bioenergy technologies	FG 3.1.1	N/A	Free to use	No	Free to use through the project deliverable
4	4.2	Technical, business and financial services portfolio	Technical services portfolio	CERTH	CIRCE, WUELS, GOI, ESEK, OBS, FIPER, SEV	BG3	A set of validated technical services portfolio for optimising bioenergy communities' development and functioning	FG 4.2.1	Copyright	Free to use	No	Free to use through the project deliverable
			Business and financial support services	Q-PLAN	CBS, GOI, ESEK, OBS, FIPER, SEV	N/A	A set of validated specialised services and business models for fostering business and financial capabilities of bioenergy RESCoops	FG 4.2.2	Copyright	Free to use	No	Free to use through the project deliverable

WP	#	Project result (PR)/ Achievement	Specific project result	Main Partner	Contributing partner(s)	Rel. BG	Short description of FG	FG num.	Type of protection	Conditions to use within BECoop	Comm. of PR	Use after the end of project
5	5.1	Knowledge Exchange Platform	Knowledge Exchange Platform	Q-PLAN	All partners	N/A	A repository of knowledge, tools and services in the field of community bioenergy heating, an observatory/atlas of bioenergy community cases, technologies and service providers, a digital space for fostering cross-regional networking, dialogue and knowledge exchange among community bioenergy stakeholders	FG 5.1.1	Creative Commons License	Free to use for registered users	No	Free to use for registered users
	5.2	Network of Interest	A virtual community of technical experts, EU RESCoops, policy makers and authorities, industry actors, investors and SMEs	Q-PLAN	All partners	N/A	Network of Interest of community bioenergy stakeholders.	FG 5.2.1	N/A	Free to use for registered users	No	Free to use for registered users

WP	#	Project result (PR)/ Achievement	Specific project result	Main Partner	Contributing partner(s)	Rel. BG	Short description of FG	FG num.	Type of protection	Conditions to use within BECoop	Comm. of PR	Use after the end of project
	5.3	Replication Handbook	BECoop Replication Handbook	WR	All partners	N/A	A set of practical guidelines for the replication of the BECoop concept, tools and services, providing blueprints and recommendations to RESCoop initiatives and local authorities for the development of community bioenergy heating initiatives	FG 5.3.1	Copyright	Free to use	No	Free to use
	5.4	Policy Roadmaps	National policy roadmaps	IEECP	All partners	N/A	Policy recommendations for national strategic plans towards the uptake of the community bioenergy concept for the countries of the BECoop pilot cases (Spain, Italy, Greece, Poland).	FG 5.4.1	Copyright	Free to use	No	Free to use
	5.5		EU policy roadmap		All partners	N/A	Policy recommendations for an EU strategic roadmap for the uptake of the community bioenergy concept	FG 5.5.1	Copyright	Free to use	No	Free to use

5.4 Exploitable Results

Table 10 Exploitable Results

ER #	Exploitable Result	Short description of ER	Main partner	Contrib. Partner	Rel. FG num.	Rel. BG num.	ER Owner	Potential IP protection	M	U	L	S	O	Most promising M-U-L-S-O
1	State-of-play of community bioenergy across Europe: market size, applications and best practices	Case studies of community energy best practices and insights from an online survey on the potential for bioenergy market expansion in existing RESCoops	CBS	All partners	FG1.1.1	N/A	CBS	Copyright		X			X	O
2	Regional and EU framework and value chain conditions affecting community bioenergy uptake	An analysis of the regional /national contexts of BECoop pilot areas and at the EU (current framework conditions, barriers or enablers for the uptake of community bioenergy heating	WUELS	All partners	FG1.1.2	BG1 & BG2	WUELS	Copyright		X			X	O
3	Stakeholders' perceptions, acceptance levels and needs on	An online survey results on the stakeholders' bioenergy heating perceptions and needs	WR	Pilot partners (GOI, ESEK, FIPER, OBS)	FG1.1.3	BG5	WR	Copyright		X			X	O

ER #	Exploitable Result	Short description of ER	Main partner	Contrib. Partner	Rel. FG num.	Rel. BG num.	ER Owner	Potential IP protection	M	U	L	S	O	Most promising M-U-L-S-O
	bioenergy heating													
4	Definition of community bioenergy heating uptake needs and challenges	An analysis of the community bioenergy heating uptake challenges and needs both at the pilot and EU level	GOI	All partners	FG1.1.4	BG4	GOI	Copyright		X			X	O
5	BECoop assessment tool	An evaluation methodology and an online tool for entrepreneurs of new cooperative bioenergy projects	CIRCE	All partners	FG 2.1.1	BG1 & BG2	CIRCE	Copyright		X			X	O
6	BECoop toolkit	An online repository of already existing tools in supporting the development and operation of community bioenergy and heating projects.	CIRCE	WR, GOI, ESEK, CERTH, Q-PLAN, FIPER, CBS, OBS, WUELS, SEV	FG 2.2.1	BG1 & BG2	CIRCE	Copyright		X			X	O

ER #	Exploitable Result	Short description of ER	Main partner	Contrib. Partner	Rel. FG num.	Rel. BG num.	ER Owner	Potential IP protection	M	U	L	S	O	Most promising M-U-L-S-O
7	E-market environment for bioenergy communities	A virtual (e-market) environment for connecting biomass heating stakeholders and supply chains with educational and informative purposes	CIRCE	CERTH, WUELS, GOI, ESEK, OBS, FIPER	FG 2.2.2	N/A	CIRCE	Copyright		X			X	O
8	Technical support services catalogue	A catalogue on the most suitable technological solutions for community bioenergy projects	CIRCE	CERTH, WUELS, Q-PLAN, WR, SEV	FG 2.3.1	BG1 & BG2	CIRCE	Copyright		X			X	O
9	Business and financial support services catalogue	A catalogue on the most suitable business models and business and financial services for the uptake of community bioenergy projects	Q-PLAN	CBS, CIRCE, CERTH, WUELS, FIPER, SEV, WR	FG 2.3.2	N/A	Q-PLAN	Copyright		X			X	O
10	New Bioenergy Communities	New bioenergy communities set up in BECoop pilot regions and replication cases across the EU that will facilitate the market uptake of bioenergy technologies	CBS, WUELS	All partners	FG 3.1.1	N/A	All partners	N/A		X		x		O

ER #	Exploitable Result	Short description of ER	Main partner	Contrib. Partner	Rel. FG num.	Rel. BG num.	ER Owner	Potential IP protection	M	U	L	S	O	Most promising M-U-L-S-O
11	Technical services portfolio	A set of validated technical services portfolio for optimising bioenergy communities' development and functioning	CERTH	CIRCE, WUELS, GOI, ESEK, OBS, FIPER, SEV	FG 4.2.1	BG3	CERTH	Copyright		X			X	O
12	Business and financial support services	A set of validated specialised services (incl. business models) for fostering business and financial capabilities of bioenergy RESCoops	Q-PLAN	CBS, GOI, ESEK, OBS, FIPER, SEV	FG 4.2.2	N/A	Q-PLAN	Copyright		X			X	O
13	Knowledge Exchange Platform	A repository of knowledge, tools and services in the field of community bioenergy heating, an observatory of bioenergy community cases, technologies and service providers, a digital space for fostering cross-regional networking, dialogue and knowledge exchange among stakeholders	Q-PLAN	All partners	FG 5.1.1	N/A	Q-PLAN	Creative Commons License		X			X	O

ER #	Exploitable Result	Short description of ER	Main partner	Contrib. Partner	Rel. FG num.	Rel. BG num.	ER Owner	Potential IP protection	M	U	L	S	O	Most promising M-U-L-S-O
14	A pool of technical experts, EU RESCoops, policy makers and authorities, industry actors, investors and SMEs	Network of Interest of community bioenergy stakeholders.	Q-PLAN	All partners	FG 5.2.1	N/A	Q-PLAN	N/A		X			X	O
15	BECoop Replication Handbook	A set of practical guidelines for the replication of the BECoop concept, tools and services, providing blueprints and recommendations to RESCoop initiatives and local authorities for the development of community bioenergy heating initiatives	WR	All partners	FG 5.3.1	N/A	WR	Copyright		X			X	O
16	National policy roadmaps	Policy recommendations for national strategic plans towards the uptake	IEECP	All partners	FG 5.4.1	N/A	IEECP	Copyright		X			X	O

ER #	Exploitable Result	Short description of ER	Main partner	Contrib. Partner	Rel. FG num.	Rel. BG num.	ER Owner	Potential IP protection	M	U	L	S	O	Most promising M-U-L-S-O
		of the community bioenergy concept for the countries of the BECoop pilot cases (Spain, Italy, Greece, Poland												
17	EU policy roadmap	Policy recommendations for an EU strategic roadmap for the uptake of the community bioenergy concept	IEECP	All partners	FG 5.5.1	N/A	IEECP	Copyright		X			X	O

6 Exploitation plans per asset

In this section of the Exploitation and Sustainability Plan the main assets of the BECoop project are described, along with the main contributors to their development. It is also addressed who their intended users are, what the expected benefits are from exploiting that asset as well as how that exploitation is expected to happen. In parallel, the main creator of each asset indicates any foreseeable action that may be needed in order to facilitate the intended exploitation of the asset. More specifically, in this section the main creators of the BECoop assets indicate what needs to be done, when and by whom.

The above information is presented in two tables for each asset:

- One table summarising the exploitation plan of that asset.
- A second table summarising any actions needed for the exploitation of that asset.

Each asset is presented in a different sub-section of this chapter.

6.1 New bioenergy communities

Table 11 Exploitation and valorisation plan for the new bioenergy communities

Asset description	New bioenergy communities set up in the BECoop pilot regions and replication cases across the EU that will facilitate the market uptake of bioenergy technologies.
Creators of Asset	All partners contributed to the creation of new bioenergy communities. The pilot partners, namely GOI (Spain), ESEK (Greece), FIPER (Italy), OBS (Poland) had a pivotal role in the development of this asset contributing with their experience and providing insights to avoid barriers and overcome hurdles for the establishment of new bioenergy communities in their region and valuable lessons for the replication cases across the EU.
Intended users and expected benefits from exploiting the asset	<p>The main target users were the citizens that join the new communities, especially in rural areas where there is great potential for bioenergy from farming, livestock and other natural resources.</p> <ul style="list-style-type: none"> • Local citizens, planners, local and regional authorities, energy providers as well as representatives of local businesses and civil society. • groups who hold a stake in the respective regions are also targeted. • vulnerable and economically disadvantaged populations that face the risk of energy poverty (minorities, women etc). <p>The main benefits that citizens stand to gain from joining an energy community are affordable energy, participation in decisions, and a boost in the local economies with the creation of jobs in their regions.</p> <p>Participating energy communities have the opportunity to expand their influence in society and increase their market share in the long run.</p>
Intended exploitation route	Partners responsible for each bioenergy community led and maintained the operation of the bioenergy communities established during BECoop along with the support of local stakeholders engaged during the course project with the objective to initiate new projects that can support the increased uptake of community bioenergy in local markets. The Pilot cases and the follower cases supported will further boost the uptake of community bioenergy technologies tapping on local resources and, ultimately, accelerating the energy transition.

Table 12 Actions needed for the exploitation and valorisation for the new bioenergy communities

	What?	By Who?	When?
IPR	No actions in terms of IP protection are required. The partners are clearly referring to the BECoop project as well as the funding it has received from the EU in line with the relevant dissemination guidelines for projects funded under the H2020 programme.	-	-
Development of the asset	<p>The establishment of new bioenergy communities and replication cases comprised by a series of actions and activities that included:</p> <ul style="list-style-type: none"> ● Raising awareness on bioenergy potential and bioenergy communities possibilities, and on improving bioenergy perceptions and image. ● Stakeholder mobilisation around the BECoop concept and tool. ● Capacity building for key actors to enable them to take action. ● Roadmaps for the establishment of bioenergy communities. ● Development and deployment of technical, business and financial services (incl. the introduction of new business models). 	All partners	Completed by M30
Validation and fine-tuning	BECoop deployed a monitoring and evaluation methodology by using the BECoop assessment tool and indicators to assess the impact of concept, approaches, and outcomes in the four supported Cases (GOI - Spain, ESEK Greece, FIPER - Italy, OBS - Poland. The lessons and evidence at case level provided valuable knowledge on the socio-economic and environmental impact as well as on the public acceptance.	CERTH	Completed by the end of the project

Communication and dissemination	A number of communication and dissemination activities were implemented to raise awareness, mobilize stakeholders and engage actors.	All partners	Completed by the end of the project
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6.2 Knowledge on the community bioenergy

Table 13 Exploitation and valorisation plan for the Knowledge on the community bioenergy

Asset description	<p>BECoop's novel knowledge on the community bioenergy market potential along with an inventory of community bioenergy lighthouse examples. The knowledge includes a systematic mapping of community energy and accompanying methodologies and tools that are employed on bioenergy heating initiatives, lighthouse community bioenergy case studies, an overview of the wider untapped market potential for bioenergy highlighted by cases studies that demonstrate a high potential for bioenergy integration, description of the socio-economic and regulatory contexts at the local (our pilot areas), national and EU level, an in-depth analysis of the community bioenergy stakeholders in the BECoop pilot areas and the EU level (perceptions, acceptance levels, awareness and preferences towards bioenergy heating and bioenergy communities). Stakeholders and authorities through consultation activities validated the findings and provided insights on the challenges and application areas upon which the BECoop actions and interventions will be developed and employed.</p>
Creators of Asset	<p>All partners contributed to the activities of the creation of this asset with various roles (desk research, identification of stakeholders, conduction of interviews, support of online surveys etc). The leading role was on WUELS, WR, and GOI in developing the final reports.</p>
Intended users and expected benefits from exploiting the asset	<p>The main target users were stakeholders of the bioenergy value chain, particularly bioenergy communities in rural areas where there is great potential for bioenergy from farming, livestock and natural resources.</p> <ul style="list-style-type: none"> • Local citizens and communities. • Public Authorities and policy makers. • Business community. • Academic and research institutions and experts. <p>As there is still limited available information on bioenergy techs, energy community potential and the process of planning and developing a bioenergy community this asset sheds light on a series of major issues (the available sustainable bioheat technologies, sustainable biomass outputs and bioenergy production, setting up an entire local biomass supply chain, selection the appropriate business model, financing options, etc.). Furthermore, policy making is able to build a more conducive to investment framework and alleviate the existing barriers, while raising awareness about bioenergy community benefits for local economies, the energy transition and climate change. Finally, Academia and the Research community is able to update training curricula and form new research agendas to facilitate the community bioenergy uptake. Participating energy communities have also the opportunity to expand their influence in society and increase their market share in the long run.</p>
Intended exploitation route	<p>This asset will enable all BECoop partners to tap on the prospects of community bioenergy and develop new services, research programs, capacity building activities and in general take advantage the energy transition opportunities.</p>

Table 14 Actions needed for the exploitation and valorisation of the Knowledge on the community bioenergy

	What?	By Who?	When?
IPR	The main IPR protection measure, which is considered as necessary, for BECoop publications is copyright.	WUELS, WR, and GOI and contributing partners.	Upon approval and publication of the relevant deliverables by the EC.
Communication and dissemination	Uploading the assets to the Knowledge Exchange Platform web platform and website. Promotion and dissemination of material through the BECoop communication channels (BECoop website, social media, newsletter, press releases), presentations by partners to various events and conferences and through BECoop partners networks.	Q-PLAN, IEECP and BECoop partners	All completed by the end of the project

6.3 Assessment tool

Table 15 Exploitation and valorisation plan for the Assessment tool

Asset description	The BECoop assessment tool comprises of an evaluation methodology and tool along with a set of indicators, metrics and definitions for assessing the current status and future potential of a community bioenergy project.
Creators of Asset	CIRCE was responsible for the development of the tool with the contribution of WR, GOI, ESEK, CERTH, Q-PLAN, FIPER, CBS, OBS, WUELS, SEV.
Intended users and expected benefits from exploiting the asset	The self-assessment tool, has been designed for RESCoops and local/regional authorities to enable them to reveal and better understand their gaps, maturity level regarding the adoption of bioenergy heating, their current level of community engagement, as well as the complexity of the existing framework for procurement and policy design.
Intended exploitation route	The tool will be used to facilitate and guide the design and deployment of market uptake support services to community bioenergy heating projects. The tool will be available through the Knowledge Exchange Platform along with other material and resources for bioenergy and bioenergy communities. For ensuring post project sustainability we will investigate partnering KEP with existing EU platforms or pursue a standalone presence supported by those partners that will be willing to maintain it.

Table 16 Actions needed for the exploitation and valorisation of the Assessment tool

	What?	By Who?	When?
IPR	The main IPR protection measure, which is considered as necessary, for BECoop publications is copyright.	CIRCE	Upon approval and publication of the relevant deliverables by the EC

Communication and dissemination	Promotion and dissemination of material through the BECoop communication channels (BECoop website, social media, newsletter, press releases), presentations by partners to various events and conferences and through BECoop partners networks.	Q-PLAN, IEECP and BECoop partners	Completed by M36
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6.4 Inventory of tools and resources

Table 17 Exploitation and valorisation plan for the Inventory of tools and resources

Asset description	BECoop inventory of tools and resources for supporting the development and operation of bioenergy communities both technical and business. It is an online repository of existing open-source tools that complement the BECoop support services, which required during the entire community bioenergy project deployment process. The inventory was customised to include assessment and full profiling of the tools, alongside with empirical examples in project development actions. It also includes technical assistance tools, business and entrepreneurial tools, and community management and Digital Social Innovation Tools.
Creators of Asset	All partners contributed to the identification and collection of the tools.
Intended users and expected benefits from exploiting the asset	<p>The main target users for this asset were:</p> <ul style="list-style-type: none"> ● RESCoops in various stages of development. The self -assessment function enables them to identify the suitable tools and resources saving time and ensuring proper support to facilitate their development. The e-market environment offers them also access too. ● Authorities (municipalities, regional authorities etc) that consider promoting or participating or leading bioenergy communities. The inventory ensures that they have access to all relevant information and resources to inform their specific purposes. ● Bioenergy Industry is able to have access to the Community energy market and stakeholders' insights, to search for potential synergies with bioenergy cooperatives and be informed about emerging markets and procure or provide services and products. ● Citizens and Civil Society Organisations have access to specialised support and information for launching grassroots bioenergy communities and/or alleviate common misconceptions about bioenergy and energy communities.
Intended exploitation route	The BECoop inventory of tools and resources will facilitate easier project development, through identifying the required technical, business, and financial support of the projects and will be available online through the Knowledge Exchange Platform and the project website for a period of two years. During the two years period the partners will seek partnerships to prolong the availability of the tools. If no partnerships are found during the two years other options will be assessed (e.g. g. uploading the material in open repositories and knowledge bases i.e. Knowledge4Policy - K4P)

Table 18 Actions needed for the exploitation and valorisation of the Inventory of tools and resources

	What?	By Who?	When?
IPR	The main IPR protection measure, which is considered as necessary, for BECoop publications is copyright.	CIRCE	Upon approval and publication of the relevant deliverables by the EC.
Communication and dissemination	Promotion and dissemination of material through the BECoop communication channels (BECoop website, social media, newsletter, press releases), presentations by partners to various events and conferences and through BECoop partners networks.	Q-PLAN, IEECP	Completed by M36

6.5 Technical and business catalogues

Table 19 Exploitation and valorisation plan for the technical and business catalogues

Asset description	The BECoop technical and business catalogues offered a wide range of suitable bioenergy technical, business and financial models for the community level. The catalogues identified the ideal solutions (technical, business, financial) and defined the necessary services that must be offered for supporting the implementation of their bioenergy communities' roadmaps. The catalogue was developed by a review of solutions applied to other RES with transferability potential of their success factor to bioenergy as well.
Creators of Asset	<p>The technical catalogue was developed by CIRCE with the support of CERTH, WUELS, Q-PLAN, WR, SEV.</p> <p>The business catalogue was developed by Q-PLAN with the support of CBS, CIRCE, CERTH, WUELS, FIPER, SEV, WR.</p>
Intended users and expected benefits from exploiting the asset	<p>Potential and existing bioenergy communities will benefit from the comprehensive list of technical, business, governance and financial solutions that will enable them to easily navigate among appropriate solutions that are applicable and effective for their case.</p> <p>Business and SME's are benefit by the definition of services required by the bioenergy communities enabling them to reform their services portfolio to fit an emerging market such as the bioenergy communities.</p>
Intended exploitation route	The technical and business partners will have these services in their portfolio and will seek new partnerships and projects to expand their business and research activities. If no partnerships are found during a period of two years in which the catalogues will be available online through KEP and the projects' website other options will be considered (e.g. uploading the material in open repositories and knowledge bases i.e. Knowledge4Policy - K4P)

Table 18 Actions needed for the exploitation and valorisation of the technical and business catalogues

	What?	By Who?	When?
IPR	The main IPR protection measure is copyright.	CIRCE and Q-PLAN	Upon approval and publication of the relevant deliverables by the EC
Communication and dissemination	Upload the technical and business catalogues to the Knowledge Exchange Platform web platform and BECoop website.	Q-PLAN, IEECP	Completed by M18

6.6 Technical, business and financial services portfolio

Table 20 Exploitation and valorisation plan for the technical, business and financial services portfolio

Asset description	A set of validated technical, business and financial (incl. business models) services portfolio for optimising bioenergy communities' development and functioning.
Creators of Asset	<p>The technical services portfolio was developed by CERTH with the support of CIRCE, WUELS, GOI, ESEK, OBS, FIPER, SEV.</p> <p>The business and financial support services portfolio was developed by Q-PLAN with the support of CBS, GOI, ESEK, OBS, FIPER, SEV.</p>
Intended users and expected benefits from exploiting the asset	<p>Bioenergy communities were benefited by the technical, business and financial services portfolio that included:</p> <ul style="list-style-type: none"> Assistance for the selection of suitable heating equipment/ technology. Provision of contacts with manufacturers and installers. Recommendations regarding the implementation of a reliable supply chain. Hands-on technical consultancy including the entire spectrum of bioenergy heating technical aspects. Feasibility analysis of each case. Business modelling and planning services for replicating suitable business models. Investment planning, and financial services for assisting RESCoops in the introduction and testing of innovative self-financing models, finding alternative financing mechanisms. Applying to further EU and national funding opportunities. Networking and investment readiness support to effectively collaborate with industry or finance actors. Peer to peer mentoring program with community bioenergy experts across the EU.
Intended exploitation route	The BECoop technical, business and financial services portfolio (as the equivalent catalogues) are part of the resources that are available through KEP and the project website ensuring a widespread access to all interested entities and persons. Furthermore, the Bioenergy technology expert partners (CIRCE, CERTH) and the business partners (Q-PLAN, CBS) will use them to enrich their services, FIPER will provide access to its members, OBS to its constituents and

	the pilot partners (GOI, ESEK, OBS, SEV) will be using them to facilitate the expansion of their activities and finetuning of their operations. The technical (CERth, CIRCE) and business (Q-PLAN, CBS) partners will have these services in their portfolio and will seek new partnerships and projects to expand their business and research activities. If no partnerships are found during a period of two years in which the catalogues will be available online through KEP and the projects' website other options will be considered (e.g. uploading the material in open repositories and knowledge bases i.e. Knowledge4Policy - K4P)
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Table 21 Actions needed for the exploitation and valorisation of the technical, business and financial services portfolio

	What?	By Who?	When?
IPR	The main IPR protection measure is copyright.	CIRCE and Q-PLAN	Upon approval and publication of the relevant deliverables by the EC
Communication and dissemination	Upload the technical, business and financial services portfolio to the Knowledge Exchange Platform web platform and BECoop website.	Q-PLAN, IEECP	Completed by M30

6.7 Knowledge Exchange Platform

Table 22 Exploitation and valorisation plan for the Knowledge Exchange Platform

Asset description	The BECoop Knowledge Exchange Platform (KEP) supports mutual knowledge exchange and partnerships among bioenergy actors
Creators of Asset	The Knowledge Exchange Platform (KEP) has been developed by Q-PLAN with the support of all partners.
Intended users and expected benefits from exploiting the asset	<p>The main target users for this asset are:</p> <ul style="list-style-type: none"> • RESCoops in various stages of development. The self -assessment function enables them to identify the suitable tools and resources saving time and ensuring proper support to facilitate their development. • Authorities (municipalities, regional authorities etc) that consider promoting or participating or leading bioenergy communities. The inventory ensures that they have access to all relevant information and resources to inform their specific purposes. • Bioenergy Industry is able to have access to the community energy market and stakeholders' insights, to search for potential synergies with bioenergy cooperatives and to be informed about emerging markets and procure or provide services and products. • Citizens and Civil Society Organisations have access to specialised support and information for launching grassroots bioenergy communities and/or alleviate common misconceptions about bioenergy and energy communities.
Intended exploitation route	The Knowledge Exchange Platform includes all material produced and collected by BECoop and aspires to become a focal point for the bioenergy community in Europe well beyond the end of the project. To ensure the sustainability of operations investigations will be made for partnering KEP with existing EU networks and platforms (e.g. RESCoop.eu network, Energy Communities Repository) or further developing KEP as part of similar projects. Q-PLAN will be responsible for the operation and maintenance of KEP for two years after the end of the project, or earlier, if a partnership with another platform is found and agreed and a new project is launched. If no partnerships are found during this period other options will be considered (e.g. uploading the material in open repositories and knowledge bases i.e. Knowledge4Policy - K4P)

Table 23 Actions needed for the exploitation and valorisation of the Knowledge Exchange Platform

	What?	By Who?	When?
IPR	A Creative Commons License that specifies the conditions of use of the platform.	Q-PLAN	Completed by the end of the Project
Communication and dissemination	Promotion and dissemination of KEP operation through the BECoop communication channels (BECoop website, social media, newsletter, press releases), and through BECoop partners networks.	Q-PLAN, IEECP	Completed by the end of the project.

6.8 Replication Handbook

Table 24 Exploitation and valorisation plan for the Replication Handbook

Asset description	The BECoop Replication Handbook for applying the project outcomes to additional regional settings.
Creators of Asset	The Replication Handbook was developed by WR with the support of all partners.
Intended users and expected benefits from exploiting the asset	The Handbook serves as a valuable resource for key stakeholders interested in initiating or expanding their involvement in the field of community bioenergy. This includes citizens, public authorities, small and medium-sized enterprises (SMEs), farmers, feedstock suppliers, civic organisations, non-governmental organisations (NGOs), existing renewable energy cooperatives (RESCoops), and educational institutions. By providing the necessary information and support, the Replication Handbook empowers these groups to successfully launch and manage their own community bioenergy projects.
Intended exploitation route	<p>The BECoop Replication Handbook is a powerful resource that empowers communities to replicate the bioenergy community concept. Through a clear and structured approach, the handbook provides step-by-step instructions, best practices, and valuable insights from successful case studies, enabling communities to navigate the replication process effectively. By offering customizable templates, tools, and checklists, it simplifies the replication process, allowing communities to save time and effort while building their expertise. Moreover, the handbook fosters learning among communities, creating a network of initiators who can learn from each other's experiences. By addressing challenges, promoting scalability, and aligning with sustainable development goals, the BECoop Replication Handbook acts as a tool for positive change for the local areas.</p> <p>Furthermore, the Replication Handbook is available at the Knowledge Exchange Platform, at Zenodo platform as well as the Energy Community Platform and Energy Communities Repository to ensure access to potential users well beyond the end of the project.</p>

Table 25 Actions needed for the exploitation and valorisation of the Replication Handbook

	What?	By Who?	When?
IPR	The main IPR protection measure is copyright.	WR	Upon approval and publication of the relevant deliverable by the EC (estimated after M30)
Communication and dissemination	<p>To ensure widespread distribution of the handbook and stakeholders' engagement around the project's mission, a comprehensive dissemination strategy was implemented across Europe.</p> <ul style="list-style-type: none"> • Consistent updates and announcements were shared on 	WR, Q-PLAN, IEECP	Completed by the end of the project

	What?	By Who?	When?
	<p>the project's and partners' social media platforms and website.</p> <ul style="list-style-type: none"> • Information about the handbook was directly communicated to the project's Network of Interest, and the Advisory Board members. • The handbook was shared with RESCoop.eu, and actively promoted among its networks. • Collaboration was established with a network of bioenergy-focused Horizon EU projects, who also supported and promoted the dissemination of the handbook. • The Handbook was uploaded to our KEP, our website, the Zenodo platform, as well as the Energy Community Platform and Energy Communities Repository • Presentation of the Handbook in various events 		

6.9 Policy Roadmaps

Table 26 Exploitation and valorisation plan for the Policy Roadmaps

Asset description	Evidence-based national and EU level policy roadmaps to assist relevant authorities and policy makers in putting forth enabling frameworks for community bioenergy and the renewable heating sector contributing to the decarbonisation of the energy sector and the role of community energy in it for 2050.
Creators of Asset	The Policy Roadmaps were developed by IEECP with the support of all partners.
Intended users and expected benefits from exploiting the asset	<p>The main target users were:</p> <ul style="list-style-type: none"> • Policy makers • Regional and national authorities • Relevant EU Initiatives <p>The concise and concrete Policy Roadmaps defined the points of attention/barriers and respective mitigation actions for the creation of an enabling environment that can foster community bioenergy.</p>
Intended exploitation route	The Policy Roadmaps were extensively shared with RESCoops, policy makers and municipal and regional authorities across the EU, through BECoop networks and communication channels, as well as in events like the European Week of Regions and Cities or the EU sustainable energy week. IEECP extensively used it within its range of activities as a major multiplier of the project's results, ensuring the wide dissemination of the Policy Roadmaps through its extensive affiliate networks with decision-makers and policy experts. It will also be submitted to EU knowledge bases such as the Knowledge Centre for Bioeconomy.

Table 27 Actions needed for the exploitation and valorisation of the Policy Roadmaps

	What?	By Who?	When?
IPR	The main IPR protection measure is copyright.	IEECP	Upon approval and publication of the relevant deliverables.
Communication and dissemination	Upload the Policy Roadmaps to the Knowledge Exchange Platform web platform and BECoop website. Promotion and dissemination of material through the BECoop communication channels (BECoop website, social media, newsletter, press releases), presentations by partners to various events and conferences and through BECoop partners networks.	Q-PLAN, IEECP	By the end of the project.

6.10 Network of Interest

Table 28 Exploitation and valorisation plan for the Network of Interest

Asset description	Network of Interest of community bioenergy stakeholders.
Creators of Asset	The Network of Interest was developed by Q-PLAN with the support of all partners.
Intended users and expected benefits from exploiting the asset	<p>The main target users are:</p> <ul style="list-style-type: none"> ● technical experts, ● EU RESCoops, ● policy makers and authorities, ● industry actors, ● investors and SMEs ● Local citizens and CSOs groups ● vulnerable and economically disadvantaged populations that face the risk of energy poverty. <p>The main benefits are extensive networking, identification of potential cooperation, synergies, employment opportunities, investment opportunities, funding opportunities, participation in a series of events about bioenergy community and participation in thematic groups.</p>
Intended exploitation route	BECoop has established a lively and active community that includes bioenergy communities, local authorities, bioenergy technology partners, business and social innovation partners, and policy makers, that have been engaged through the various components of KEP. Post project this community will remain active as links have been developed and the partners will tap on the Nol network to launch new projects and activities related to community bioenergy.

Table 29 Actions needed for the exploitation and valorisation of the Network of Interest

	What?	By Who?	When?
IPR	No actions in terms of IP protection are required. The partners clearly referred to the BECoop project as well as the funding received from the EU in line with the relevant dissemination guidelines for projects funded under the H2020 programme.		
Communication and dissemination	The Network of Interest was populated by open calls for experts to participate. The crucial mass for the NOI, was created by an initial pool of participants by reaching out to the BECoop partners' network. Promotion and dissemination of material through the BECoop communication channels (BECoop website, social media, newsletter, press releases), presentations by partners to various events and conferences and through BECoop partners networks.	All partners	Completed by the end of the project.

6.11 Guidebook

Table 30 Exploitation and valorisation plan for the Guidebook

Asset description	Guide to creating renewable energy communities using a participative approach
Creators of Asset	Goiener
Intended users and expected benefits from exploiting the asset	The main target users are citizens, communities and authorities as BECoop is set on transferring its concept, tools and services for sparking new bioenergy RESCoops in other cases and regions across the EU. The guidebook will help the reader to create a REC not addressing in depth all the steps but introducing a comprehensive participative approach.
Intended exploitation route	It has been published in various documentation repositories for RECs, such as https://energiakomunitateak.goiener.eus/ or rescoop.eu repository for communities. Goiener will use it for its' support services for energy communities

Table 31 Actions needed for the exploitation and valorisation of the Guidebook

	What?	By Who?	When?
IPR	No actions in terms of IP protection are required. The partners will clearly refer to the BECoop project as well as the funding it has received from the EU in line with the relevant dissemination guidelines for projects funded under the H2020 programme.		
Communication and dissemination	Upload the Guidebook to the Knowledge Exchange Platform web platform and BECoop website, Goiener website and rescop.eu repository. Promotion and dissemination of material through the BECoop communication channels (BECoop website, social media, newsletter, press releases), presentations by partners to various events and conferences and through BECoop partners networks.	GOI, Q-PLAN	Completed by the end of the project.

6.12 BECoop synergies

Table 32 Exploitation and valorisation plan for the BECoop synergies

Asset description	A group of Horizon funded projects also referred to as “sister projects”, which met monthly to shared results and drafted potential collaboration ideas
Creators of Asset	IEECP
Intended users and expected benefits from exploiting the asset	Other EU-funded projects and organisations working on them, European Commission
Intended exploitation route	<p>In September and October 2023, the BECoop Dissemination Manager (IEECP) organised the last two calls, with remaining projects demonstrating a lot of interest (WIMBY, ALFA, RESCHOOL) to continue the initiative. A resolution was reached in which the initiative is expected to continue albeit in two distinct groups:</p> <ul style="list-style-type: none"> • ALFA and WIMBY will to join another existing group under the slogan “Smart energy cluster” and gathering 23 projects • RESCHOOL will join the group EC² (one of the sister projects) with other energy citizenship-focused projects such as GRETA.

Table 33 Actions needed for the exploitation and valorisation of the BECoop synergies

	What?	By Who?	When?
IPR	None		
Communication and dissemination	IEECP/BECoop shared the link to the drive once again for projects to access useful contacts if needed. IEECP carried on discussion to ensure the synergies will be continued for the remaining project in two distinct groups	IEECP + new projects	Completed by the end of the project

7 Individual Exploitation Plans of the BECoop partners

This section summarises, in tabular format, the assets of the BECoop project that each partner is currently interested the most to exploit.

Partners: GOIENER (Spain)	Asset(s) of major interest: New bioenergy communities, Knowledge on the community bioenergy, Assessment tool, Inventory of tools and resources, Technical and business catalogues, Technical, business and financial services portfolio, Knowledge Exchange Platform.
GOIENER as a non-profit citizen cooperative dealing with electric energy commercialization has been benefited greatly from the BECoop assets both in terms of expanding its membership and by networking with the bioenergy supply chain internationally (Knowledge Exchange Platform – Network of Interest). GOIENER supports the creation of new renewables cooperatives in other regions of Spain in order to increase local, democratic and renewable energy resilience. For these purposes the Assessment tool, the Inventory of tools and resources alleviate the knowledge gap in large parts of the citizenry and Civil Society Organizations (CSOs) considering launching initiatives in the RES sector for the first time or considering expanding in the bioenergy community sector and are often uniformed and wary of the jargon used. In addition, the technical and business catalogues and Technical, business and financial services portfolio helped GOIENER to finetune its existing activities and plan investments for expansion in a less risky manner. GOIENER is able to expand to bioenergy heating acting as a catalyst for citizens and municipalities that have plans for clean energy with the use of bioenergy. Bioenergy heating scenarios are considered and evaluated by the tools provided by BECoop.	
Partners: ESEK (Greece)	Asset(s) of major interest: New bioenergy communities, Knowledge on the community bioenergy, Assessment tool, Inventory of tools and resources, Technical and business catalogues, Technical, business and financial services portfolio, Knowledge Exchange Platform.
ESEK is an energy community that consists of municipalities and citizens in Karditsa, Thessaly, a region rich in biomass supply through agricultural, forestry and wood processing industries concentrated in bioenergy technologies (solid biofuels). ESEK has been benefitted from the technical, financial and business support services to expand its activities in the bioenergy heating market while reducing the investment risk and expanding access to finance. For ESEK the access to the BECoop Knowledge Exchange Platform (KEP) and the e-market environment grows its network with other bioenergy community stakeholders while enabling ESEK to act as a multiplier in the region of Thessaly by local low public concerns for bioenergy stemming from bad practices of industries, low awareness on biomass technologies and on the real benefits and costs of energy sources. ESEK investigates how the existing pelleting plant can be used to expand the bioenergy community activities and combine them with the uptake of a local bioenergy heating community. High potential intervention/switching points for the area could be the direct heating applications to individual houses and the development of consumption and production communities. ESEK also exploits BECoop assets to address local low public concerns for bioenergy stemming from bad practices of industries, low awareness on biomass technologies and on the real benefits and costs of energy sources.	
Partners: SEV (Italy)	Asset(s) of major interest: New bioenergy communities, Knowledge on the community bioenergy, Assessment tool, Inventory of tools and resources, Technical and business catalogues, Technical, business and financial services portfolio, Knowledge Exchange Platform, Replication Handbook, Policy Roadmaps.
The South Tyrolean Energy Federation (SEV) promotes the decentralised, responsive use of renewable energy in South Tyrol. As such SEV shared the BECoop assets created for supporting bioenergy communities in various levels of maturity to its wide members that include 202 enterprises, 21 municipalities and public bodies and	

72 cooperatives and consortiums. Furthermore, as SEV has assumed the role of promoting power utilities and cooperatives as well as private companies and municipalities in the policy dialogue, it also taps on the Policy Roadmaps and the Replication Handbook with the aim of actively supporting the increased role of bioenergy community in the energy mix in Italy and the EU. Furthermore, it boosts public awareness on the potential of bioenergy communities for the local economy and for facing the challenges of energy poverty.	
Partner: Municipalities: OBS (PL)	Asset(s) of major interest: New bioenergy communities, Knowledge on the community bioenergy, Assessment tool, Inventory of tools and resources.
The project has assisted OBS in the promotion of community energy (an almost absent notion in Poland) as well as in addressing its decarbonisation objectives that are largely hindered by the fossil fuel heating in the area. OBS used the BECoop results in order to increase environmental awareness around bioenergy, develop a local bioenergy RESCoop, increase local acceptance of bioenergy as well as develop new entrepreneurship opportunities emerging from the thermal energy and local biomass supply chains. The tools provided and the technical, business and financial services portfolio facilitate the investment decisions and provide the opportunity to easily understand the challenges while also guiding them to possible, impactful points for switching from fuels to bioenergy, thus, saving them from unnecessary/non targeted actions.	
Partner: Renewable Energy Association: FIPER (IT)	Asset(s) of major interest: New bioenergy communities, Assessment tool, Inventory of tools and resources, Technical and business catalogues, Technical, business and financial services portfolio, Knowledge Exchange Platform, Network of Interest.
FIPER, as a national association of Italian renewable energy producers, has expanded further their membership into the bioenergy sector, through the creation of a new energy community (Mortirolo Energy) thus diversifying further the energy mix of the country. It also signals that the future of energy transition lies in the uptake of community energy. To this end, they acquire the new knowledge for the development of bioenergy RESCoops that then is transferred to the district heating systems and municipalities that are members of the association. Furthermore, the tools, resources and services portfolio (Technical, Business and Financial) were offered to their membership empowering them to expand their activities and apply innovative tools and new business models in the turbulent and challenging period of the energy transition. Finally, FIPER members gained access to the Knowledge Exchange Platform, the E-market environment and the Network of Interest facilitating the access to new knowledge, technology expertise and best practices.	
Partner: CIRCE (Spain)	Asset(s) of major interest: New bioenergy communities, Knowledge Exchange Platform, Network of Interest, Technical and business catalogues, Technical, business and financial services portfolio.
CIRCE, building upon its key expertise and experience in the field of innovative technology applications, designed and developed a series of technical tools and services for the support of the bioenergy communities. In particular, CIRCE provided the framework and methodologies for the current status evaluation methods towards bioenergy community applications. CIRCE was also responsible for developing an online repository of tools in support of the development and operation of community bioenergy initiatives. CIRCE tested an online market environment, hosted on its existing platforms, and gathered participants' feedback about the use of e-market tools in the technical services provision which was designed by CIRCE in collaboration with other technical partners. In that respect BECoop opens up new opportunities for further technological applications and research and provide the opportunity to validate tech solutions. Furthermore, the Knowledge Exchange Platform and the Network of Interest provide CIRCE with reliable tools for engagement and networking allowing them to develop stronger relations and networks with the Bioenergy Communities and the bioenergy value chain stakeholders.	
Partner: CERTH (Greece)	Asset(s) of major interest: New bioenergy communities, Knowledge Exchange Platform, Network of Interest, Technical and business catalogues, Technical, business and financial services portfolio.
CERTH as a technical partner is able to test and see in practice the implementation of bioenergy technologies and solutions at the community level. They had the opportunity to implement technical bioenergy models in	

<p>the community level. Furthermore, they enriched and complemented their knowledge on biomass-based value chains and exploitation methods of feedstock such as coffee residues and urban prunings. Thus, the project opens up new markets and new opportunities for further technological applications and research. Furthermore, the Knowledge Exchange Platform and the Network of Interest provides them with reliable tools for engagement and networking enabling them to develop stronger relations and networks with the Bioenergy Communities but also acquaint other technology and research experts and organisations to initiate research activities and launch new projects.</p>	
Partner: WR (Belgium)	Asset(s) of major interest: Technical and business catalogues, Technical, business and financial services portfolio, Knowledge Exchange Platform, Network of Interest, Policy Roadmaps.
<p>WR is a social research SME specialising in consumer behaviour, market analysis, and innovation management in key sectors including Energy. The company addresses business strategy, policy, market and user related issues through an array of diverse analytic tools. More specifically, WR mines and interprets hard-to-grasp consumer insights through a combination of modern analytics and marketing research and evaluation methods and uses this knowledge in designing efficient actions that put the user at the centre of the decision-making process. WR will be able to test its social research portfolio in the bioenergy and bioenergy community sector growing its experience and expertise in the fast-evolving bioenergy sector. Access to the Knowledge Exchange Platform, Network of Interest and BECoop synergies will provide new business opportunities and prospects for new projects. Furthermore, the insights provided through the policy roadmaps will enrich their capacity to support similar exercises in the renewable energy policy sector. In addition, WR may leverage the knowledge generated during the development of the Replication Handbook to create similar tools for other sectors.</p>	
Partner: Q-PLAN (GR)	Asset(s) of major interest: Technical and business catalogues, Technical, business and financial services portfolio, Knowledge Exchange Platform, Network of Interest, Policy Roadmaps, Replication Guide
<p>Q-PLAN is an innovation and management consulting company that focuses its activities on European research, innovation and support actions in various sectors such as Energy (Bioenergy included) and Bioeconomy, business and finance support services to private and public organisations operating in several industrial and market sectors (i.e. Energy, RES, etc.). BECoop's business and financial services catalogues and portfolio strengthen the capacity of Q-PLAN and advance their market support services portfolio both in the public (e.g. municipal, regional) and private sector. Exploiting the network of the bioenergy cooperatives and experts also provides new opportunities for further collaboration or joint exploitation with regards to the market uptake of renewables in the energy sector (e.g. supporting business set-up, stakeholder engagement, access to further funding etc.). Finally, Q-PLAN also considers employing the BECoop Replication Guide along with the knowledge and know-how acquired throughout the implementation of the project in order to develop similar services and tools for SMEs within other sectors. Q-PLAN will also maintain KEP for two years and seek partnerships with similar platforms and exploitation of the networks in future projects.</p>	
Partner: CBS (DK)	Asset(s) of major interest: New bioenergy communities, Knowledge Exchange Platform, Network of Interest
<p>CBS applies its knowledge and expertise on behavioural science and civil engagement (CBS) to trigger a societal shift towards community bioenergy projects that have the potential to deliver sustainable bio-heating applications. CBS seeks to expand its knowledge on behavioural and engagement strategies to other possible audiences. Furthermore, the Knowledge Exchange Platform and the Network of Interest provide CBS with access to the expanding Bioenergy Communities but also enrich their networks with technology and research experts and organisations in order to initiate new research activities, develop synergies and launch new projects.</p>	
Partner: WUELS (PL)	Asset(s) of major interest: New bioenergy communities, Knowledge Exchange Platform, Network of Interest
<p>WUELS applies their knowledge and expertise on environmental sustainability and sustainable bioenergy to initiate an increase of community bioenergy projects in Poland that has great updated potential especially for sustainable bio-heating applications. WUELS aims at increasing environmental awareness across local</p>	

societies through training and opportunities' creation to foster environmentally responsible citizens. Furthermore, the Knowledge Exchange Platform and the Network of Interest provide WUELS with access to the expanding Bioenergy Communities but also enrich their networks with technology and research experts and organisations in order to initiate new research activities, develop synergies and launch new projects.	
Partner: Institute for European Energy and Climate Policies - IEECP (NL)	Asset(s) of major interest: Policy Roadmaps, Sister projects cluster
Acquiring and sharing know-how and experience in strategic plans and policy recommendations regarding facilitating the creation and operation of community initiatives that use bioenergy applications is a key asset for IEECP, as well as investigating cases of practical relevance and replicable results. Thus, it will act as a major multiplier of the project's results, ensuring the wide dissemination of the replicable approaches and outcomes, as well as their further validation through extensive affiliate networks, decision-makers and users. IEECP will further build on the concept of a group of sister projects. Finally, we plan to transfer most important contents from the BECoop website to an IEECP web area in the next 2 years, to ensure the contents are available on a longer time frame.	

8 Conclusions and steps forward

This final version of the BECoop Exploitation and Sustainability Plan describes the strategy and methodology employed in this respect within the framework of BECoop, while also providing an overview of its final Background and Foreground IP as well as its Exploitable Results. A dedicated tool, namely the IPR Matrix, has been elaborated in order to facilitate the identification and management of BECoop's assets by project partners under the supervision of the Exploitation Manager (Q-PLAN) throughout the project.

Accordingly, the Exploitation and Sustainability Plan of BECoop reflects the final project results along with their protection, ownership, access rights with the support of all partners. This version of the **Exploitation and Sustainability Plan** provides a more accurate outline of the main exploitable assets of the project, the main target groups of external stakeholders (Bioenergy Communities) and the potential benefits they stand to gain from BECoop's outcomes, the exploitation plans per asset, per partner and per groups of partners. Alongside, this report encompasses the measures that have been taken to protect the partnership's IP, fostering the successful post-project exploitation and sustainability of the project's assets.

All online tools developed by BECoop namely the eMarket Environment, Self-Assessment Tool, Knowledge Exchange Platform will be available and operational for **at least two years after the end of the project** by the respective partners (CIRCE and Q-PLAN). Partners will seek partnerships with other platforms to prolong the operation beyond the period of two years. If no partnerships are found and agreed during this period other options will be considered (e.g. uploading the material in open repositories and knowledge bases)

Taking into account all the above with this report we would like also to emphasise the significance of the BECoop results. First of all, within our project activities BECoop pioneered into:

- The creation of new Energy Communities that started their activities during our project.
- The kick-start of newly formed energy communities.
- The expansion of the business activities of existing energy communities in the bioenergy field.
- The initiation of the critical steps required for the formation of an Energy Community.

These cases have harnessed the outcomes of BECoop results and initiated the development of bioenergy community concepts. These concepts had their origins in the BECoop implementation and are set to continue with a 2030 vision. The defined roadmaps for the BECoop cases (pilot and follower cases) can be integrated with BECoop assets, including tools, knowledge, networks, business and technical support, to guide these cases in realizing their vision within their respective bioenergy projects. In sum, BECoop assets will be extensively utilized, and the project's results will find application in other pertinent EU-funded projects, particularly within the synergistic network of research projects that has been established.