Year 1 Accelerator Activity and Monitoring Report

BIO BOOST
Bioeconomy projects accelerator

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PROJECT INFORMATION

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0. Executive Summary

This document provides an overview of the activities and outcomes of the Accelerator during its first year of operation. It includes the quantification of Key Performance Indicators (KPIs), lessons learned, and operational changes implemented to enhance performance.

Objective – Monitor and evaluate the effectiveness of the Accelerator's operations and methodologies.

1. Re-definition of Accelerator's methodology. The methodology outlined in T2.2. has been updated and tailored to align with the operational procedures of the Accelerator. This includes refining processes for the application and evaluation of projects, optimizing service design and delivery, and enhancing impact evaluation and review mechanisms.

2. Recap of Activities. A summary of the Accelerator's activities throughout the first year is provided, detailing the services and initiatives associated with each Biobooster. This includes an overview of projects supported, partnerships established, and milestones achieved.

3. Lessons Learned. Insights gained from the first year of operation are documented as lessons learned. These encompass barriers identified and added value from systemic projects into the territory.

4. Monitoring (KPIs). Key Performance Indicators (KPIs) are quantified to measure the performance and impact of the Accelerator's activities. These metrics provide a systematic assessment of progress towards organizational objectives and inform strategic decision-making.

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1. Introduction

1.1. Background on the Bioboost project

Catalonia stands as a promising frontier for Bioeconomy innovation within Europe. With its robust industrial landscape, thriving research culture, and abundant natural resources, the region boasts the essential ingredients for driving Bioeconomy initiatives forward. Supported by The Catalan Bioeconomy Strategy, catalytic steps have been taken to harness this potential unveiled in September 2021.

However, the journey towards realizing the full potential of circular bioeconomy projects is fraught with challenges. Complex stakeholder dynamics, intricate business models, and the need for specialized technical and legal expertise often stymie promising initiatives, leaving them starved of investment. Enter Bioboost – a proactive initiative aimed at breaking down these barriers by offering Project Development Assistance (PDA) services tailored to the unique needs of bioeconomy projects in Catalonia.

At the heart of Bioboost lies the "Accelerator". Here, bioeconomy projects receive personalized attention, with experts crafting bespoke Project Development Plans and offering a comprehensive suite of PDA services. Collaborative efforts with the investment community and public institutions further bolster the Accelerator's impact, fostering an environment ripe for investment and project implementation.

Powered by a consortium of sector specialists, Bioboost promises a holistic approach to project development. From facilitating coordination to providing technical insights, legal guidance, and business acumen, the consortium is poised to catalyse Catalonia's bioeconomy evolution.

Projections indicate a transformative impact, with Bioboost expected to unlock over 30 million euros in investment for circular bioeconomy projects – a testament to its potential to drive sustainable economic growth while safeguarding the environment.

1.2. Background on the Accelerator

The Accelerator, a central hub within Bioboost, is instrumental in driving forward bioeconomy initiatives in Catalonia. This dynamic platform plays a critical role in shepherding bioeconomy projects from concept to investment readiness, embodying a multifaceted approach geared towards fostering innovation, collaboration, and sustainable growth.

At its essence, the Accelerator offers a suite of services tailored to the specific needs of bioeconomy ventures. These services fall into four primary categories, each essential for navigating the complexities of project development:

1. Technical services: we delve into the technical intricacies of projects. We conduct thorough assessments of material inputs, evaluate feasibility, and provide expert guidance to assist projects in making well-informed decisions aligned with their objectives.

2. Facilitation, mapping impact, and circular economy services: dedicated to maximizing project impact and sustainability. We meticulously map out value chains, identify synergies, explore market opportunities, and craft compelling narratives to engage stakeholders effectively.

3. Legal and administrative services: from securing permits to navigating corporate structures and safeguarding intellectual property rights, we provide comprehensive support to ensure projects navigate regulatory landscapes effectively.

4. Business and financing services: evaluate both economic and social impacts, develop tailored business models, structure investments, and uncover funding opportunities customized to meet the specific needs of each project.

In D2.2, we developed the methods and processes for monitoring and assessing the performance of the Accelerator for continuous improvement. These methods have been applied in WP3 to monitor the performance of the Accelerator, with results reported in this document. The methodology, crucial for achieving the Accelerator's objectives, has been defined and reviewed, as detailed in Section 2 of this report.

2. Methodology

Bioboost utilizes the Circular Cities and Regions Initiative (CCRI) framework for developing and implementing bioeconomy projects. This structured approach guides project management and evaluation. The methodology undergoes continuous refinement through internal meetings to identify areas for improvement.

Bioboost implements the CCRI methodology across its projects and reviews it iteratively to assess effectiveness and make necessary adjustments. Each interaction with a Biobooster provides insights, contributing to the refinement of the methodology. Project Development Assistance (PDA) services offered to Bioboosters aid in understanding effective approaches and areas needing adaptation.

The methodology outlined in Deliverable D2.2 undergoes ongoing evaluation and refinement as the project progresses. Engagement with Bioboosters informs updates to better meet stakeholder needs and ensure project success.

The methodology employed by Bioboost comprises three main parts:

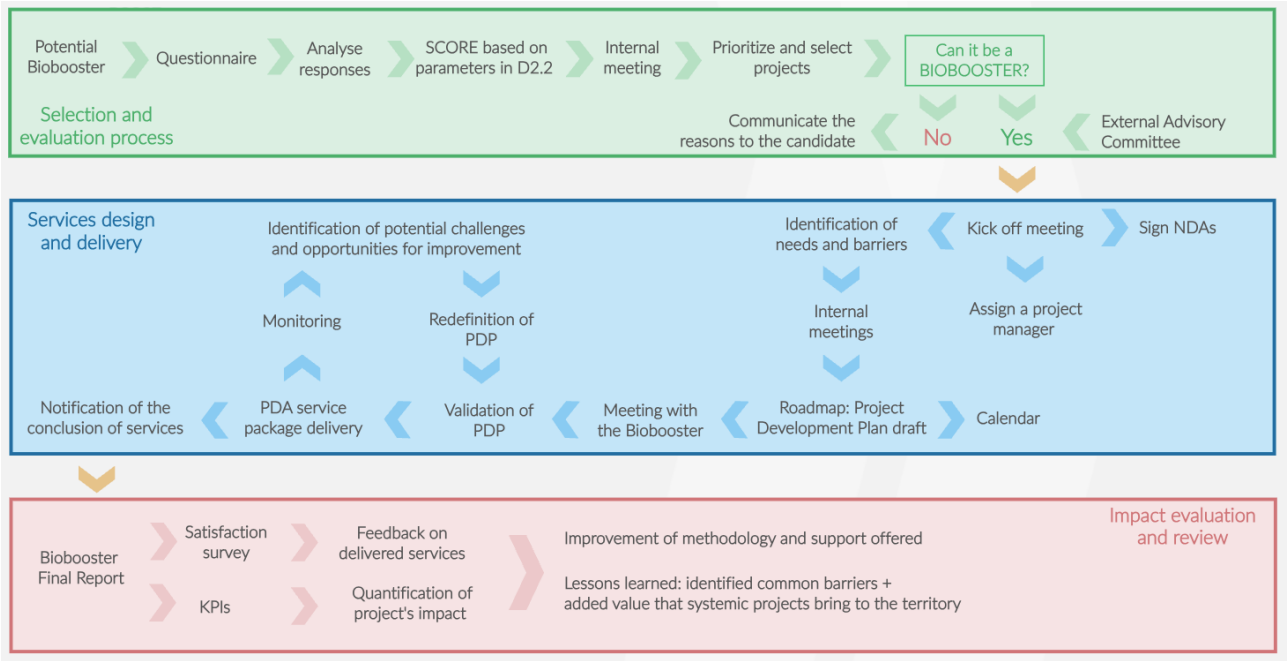
1. Biobooster selection and evaluation process involves the identification and assessment of potential Bioboosters, evaluating their suitability for engagement based on predefined criteria. The selection process aims to identify projects with the greatest potential for success and impact within the bioeconomy domain.

2. Biobooster services design and delivery: once Bioboosters are selected, this component focuses on designing and delivering tailored services to support their development. These services may include Project Development Assistance (PDA), technical assistance, mentorship, and access to networks and resources. The objective is to empower Bioboosters with the tools and knowledge necessary to realize their project goals effectively.

3. Biobooster impact evaluation and review: after the implementation of services, this component involves evaluating the impact of Biobooster projects and reviewing their progress. Impact evaluation measures the outcomes and effectiveness of the support provided, identifying areas of success and areas for improvement. This continuous review process informs future iterations of the methodology, ensuring ongoing optimization and alignment with stakeholder needs.

This structured approach ensures a comprehensive and systematic method for guiding the development and implementation of bioeconomy projects. The following figure offers a concise overview, providing a glimpse into the core elements of the Accelerator methodology:

Figure 1. Last version of Bioboost project Accelerator methodology[1]



2.1. Biobooster's selection and evaluation process

In the initial stage of Bioboost's methodology, the **Biobooster Selection and Evaluation Process** plays a pivotal role in identifying and assessing potential projects within the bioeconomy domain. Whether candidates reach out to us or are actively sought by our team, each project (potential Biobooster) undergoes a rigorous evaluation process. This process includes:

1. Completion of a **questionnaire** designed to gauge the project's alignment with predefined criteria, as outlined in Deliverable D2.2.
2. Analysis of the responses and **calculation of a score** based on established parameters.
3. Deliberation of results in an **internal meeting** with Bioboost project partners to determine the project's candidacy as a Biobooster.
4. Sharing of all candidate information with our **External Advisory Committee for feedback**.
5. Final **determination of the project's suitability**, with insights from the committee. If the decision is negative, we communicate the reasons to the candidate. If the decision is affirmative, we proceed to the next phase: Biobooster's service design and delivery.

[1] Source: elaborated by the author

2.2. Biobooster's service design and deliverly

In the progression of Bioboost's methodology, the phase of **Biobooster's service design and delivery** emerges as a critical juncture, marking the transition from candidate selection to active project engagement. Upon a candidate's selection as a Biobooster, the process unfolds through a series of structured steps:

6. The journey begins with a **kick-off meeting**, where we address any lingering questions regarding the project's scope and objectives. It's an opportune moment to designate a project manager, sign necessary agreements, and embark on collaborative discussions.
7. Collaborating closely with the Biobooster team, we **identify existing needs and potential barriers** that may impede project progress. This step lays the groundwork for subsequent service design and delivery efforts.
8. Following the kick-off meeting, internal meetings with Bioboost partners convene to craft a **Project Development Plan (PDP) or roadmap**. This document outlines the services to be offered and establishes clear objectives for the project.
9. Tasks outlined in the PDP are scheduled in a **calendar**, allowing for efficient resource allocation and management. This step ensures that adequate attention and support are dedicated to each Biobooster project.
10. Through collaborative discussions with project stakeholders and the Bioboost team, the finalized **PDP is validated**. Any necessary adjustments are made to ensure alignment with project goals and objectives.
11. With the validated PDP in hand, we embark on delivering our suite of services - **Project Development Assistance (PDA)**. This phase represents a concerted effort to support Biobooster projects in achieving their defined objectives.
12. Throughout the service delivery process, ongoing **monitoring** allows for the **identification of potential challenges or opportunities for improvement**. As needed, the PDP is revisited and refined to ensure optimal project outcomes.
13. Upon completion of the promised services, project stakeholders are notified that the PDA services have concluded. This signals the transition to the next phase of the process: Biobooster's impact evaluation and review.

2.3. Biobooster's impact evaluation and review

At the conclusion of each Biobooster project, our focus shifts to the critical task of evaluating its impact and reviewing the overall process. This stage is vital for refining our methodology and ensuring continual improvement in our support services. The process unfolds through the following steps:

14. Upon project completion, we compile a summary of the entire process into a PowerPoint document known as the *Biobooster # **Final Report***. This report encapsulates challenges overcome and outcomes achieved throughout the project journey. The *Biobooster # Final Reports* will be integrated into *D3.1. – D3.3. Accelerator Activity and Monitoring Reports*.
15. As part of the *Biobooster # Final Report*, we include a **satisfaction questionnaire** for the Biobooster's responsible. This questionnaire solicits feedback on the services delivered,

providing valuable insights to enhance our methodology and improve the overall quality of support offered.

16. Complementing qualitative feedback, our efforts extend to quantifying the project's impacts. Central to this endeavour are Key Performance Indicators (KPIs), outlined in section 5 of this report. These indicators provide measurable metrics crucial for assessing the project's performance and its broader influence within the bioeconomy domain.
17. By combining qualitative feedback obtained through the satisfaction questionnaire with quantitative indicators, we conduct a holistic evaluation of each Biobooster project. This comprehensive approach enables us to gain insights into the project's effectiveness and contributions, informing future iterations of our methodology. Additionally, we extract valuable lessons learned, including common barriers identified in bioeconomy projects and the added value that systemic projects (Bioboosters) bring to the territory. These insights not only help us understand the current project's impact but also inform our approach for future initiatives, ensuring continuous improvement and optimization of our support services within the bioeconomy domain.

2.4. Progression of Accelerator's activities and focus areas

During the first year of the Accelerator, our primary focus has been on defining and refining the methodology to be used throughout the project duration. As we started delivering our services to the Bioboosters, we gained valuable insights that helped us iteratively improve the methodology. Additionally, we began applying this methodology to the Bioboosters, implementing necessary changes as we progressed. This included evaluating the impact of the first completed Biobooster project and adjusting accordingly.

Moving into the second year, we anticipate fewer changes to the already defined methodology, allowing us to concentrate our efforts on delivering services to the Bioboosters and evaluating their impact. However, we recognize that ongoing research and refinement of the impact analysis and Key Performance Indicators (KPIs) will likely take place to ensure the effectiveness of our evaluation processes.

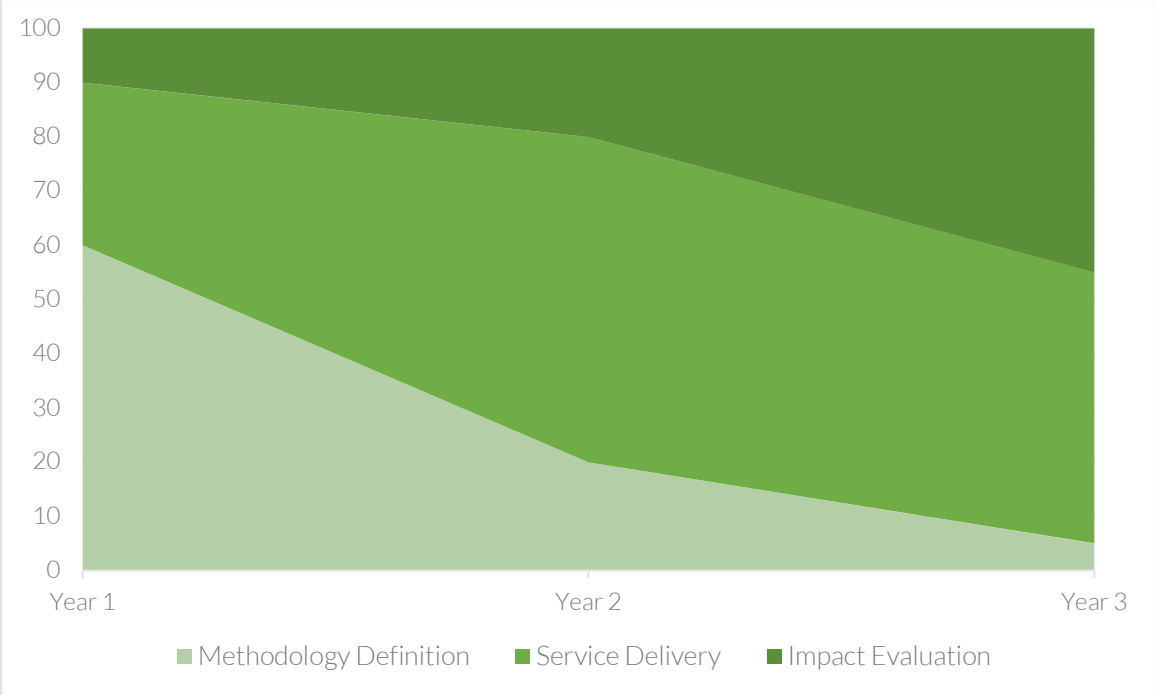
By the third year, with the methodology validated and established, the bulk of our service delivery activities will be completed or nearing completion. At this stage, our focus will shift predominantly towards measuring impact and KPIs, ensuring that we can accurately assess the outcomes and effectiveness of the Biobooster projects.

The following table illustrates the progression of activities planned for each year of the Accelerator, highlighting the evolving focus from methodology development to service delivery and impact evaluation:

Table 1. Activities planned for each year of the Accelerator

Activity/Year	Year 1	Year 2	Year 3
Methodology Definition	Defining and refining methodology	Implementing methodology to Bioboosters	Methodology validation and refinement
Service Delivery to Bioboosters	Initiating service delivery	Continued service delivery and evaluation	Completion of service delivery
Impact Evaluation and KPIs	Evaluating impact of first Biobooster	Refinement of impact analysis and KPIs	Measurement of impact and KPIs

Figure 2. Weight of the Accelerator's activities



3. Accelerator activities during 1st year

3.1. Overview

During the first year of the Accelerator program, significant advances were made towards the realization of the Bioboost project's objectives. The Accelerator, extending beyond physical confines to encompass a virtual platform, served as the nexus for delivering essential services to Bioboosters. This section offers an overview of the key initiatives, milestones achieved, and overarching themes or objectives that characterized the first year of the Accelerator:

- Establishing, applying, and refining a **methodology for Bioboosters** ensured systematic progress. Through iterative improvements, we enhanced its effectiveness, fostering adaptability.
- The journey commenced with a **launch event**, marking the establishment of the accelerator within the Agrobiotech Park in Lleida.
- Efforts were dedicated to **recruiting potential Bioboosters**, identifying entities that could benefit from the Accelerator's support and expertise. A call for projects was extended, inviting aspiring Bioboosters to participate in the program and leverage the support provided by the Accelerator.
- The creation of an application and evaluation template facilitated the streamlined management of project applications. Utilizing a structured scoring system, responses were meticulously analyzed, culminating in the identification and **prioritization of potential Bioboosters**.
- Regular **meetings** were conducted with the External Advisory Committee, including General Assemblies, fostering collaboration, and garnering insights to steer the project towards success. Also, regular meeting with the Bioboosters took place.
- Five comprehensive PDPs were formulated by the Consortium, serving as indispensable **roadmaps** for projects. These plans delineated necessary steps, stakeholders, resources, risks, outputs, and milestones, ensuring clarity and direction in project execution.
- Leveraging the insights garnered from PDPs, tailored **service packages** were designed to cater to the unique needs of each project, augmenting their efficacy and aligning support resources effectively.
- The Accelerator served as a platform for **presenting the "final report"** to the completed Biobooster 2, Alcarràs, highlighting the tangible outcomes achieved through collaborative efforts.

The following table provides an overview of the progress of each Biobooster within the methodological process, offering insights into the completed tasks and pending tasks during the first year of the project:

Table 2. Overview of Biobooster's progress in the 1st year of the Accelerator

	SELECTION AND EVALUATION PROCESS				SERVICE DESIGN AND DELIVERLY						IMPACT EVALUATION AND REVIEW		
	Questionnaire	Internal meeting	EAC meeting	Accepted as a Biobooster	KoM	Sign NDA	Assign a project manager	Roadmap / Project Development Plan	PDA / service package	Conclusion of PDA services	Final report	Impact review (KPIs)	Satisfaction survey
Biobooster 1 - Coopirenaica	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕				
Biobooster 2 - Alcarràs	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕		⊕
Biobooster 3 – Casa Ametller	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕					
Biobooster 4 – Wool plant	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕				
Biobooster 5 – Protein plant	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕				

Let us provide a detailed explanation of the work conducted by the Accelerator, phase by phase, elucidating the activities undertaken during the first year:

Selection and evaluation process

The evaluation process of Catalan bioeconomy projects submitted through the questionnaire (potential Bioboosters) encompasses several crucial aspects guiding the decision-making process for acceptance or rejection of these initiatives.

Factors considered include:

- Type of organisation spearheading the project
- Project description outlining key features and objectives
- Geographical context of the project's location
- Specific sector within the bioeconomy
- Project dimensions in terms of inputs and outputs
- Potential services required from Bioboost

Evaluation extends to project maturity, covering:

- Stakeholder involvement
- Technical solution maturity
- Data quality
- Objectives and value proposition
- Business model
- Systemic impact potential assessment considering areas like energy generation, GHG emissions reduction, waste management, job creation, and stakeholder engagement.

Crucially, the investment aspect is pivotal. During the initial phase of the Accelerator's activity, as outlined in D2.2, priority is given to initiatives mobilising higher investments, aligning with the primary objective

of mobilising €30 million in investment in the bioeconomy sector in Catalonia. Weighting criteria during this phase prioritise investment (40%), project maturity (20%), systemic impact potential (15%), PDA services provided (10%), sector (10%), and location (5%), continuing until €12 millions of investment is reached.

Numerical scores ranging from 1 (lowest) to 3 (highest) are assigned to each criterion during the evaluation. A weighted score is then calculated for each project by multiplying the weight for each criterion by its assigned score and summing the resulting values. The outcomes are presented in Table 1, listing the projects from lowest to highest points. Accepted projects officially become Bioboosters.

In the following table, there is an overview of all potential Bioboosters, their questionnaire results, and their status (accepted, rejected, pending, deferred). From 9 potential Bioboosters, 5 have been chosen as Bioboosters due to various reasons:

Table 3. Potential Bioboosters questionnaire results and status

	Potential Biobooster	Brief description of the project	Score from questionnaire	Status	Reasons
1	Coopirenaica	Biogas production	8.54	**Accepted as Biobooster 1**	Accepted with the consent of the Strategic Committee. Collaboration is strongly recommended, emphasizing the importance of this initiative within the regional bioeconomy context.
2	Alcarràs Bioproductors SAT	Biogas production. Production of biofertilizers.	8.97	**Accepted as Biobooster 2**	Accepted with the consent of the Strategic Committee. Collaboration is strongly recommended, emphasizing the importance of this initiative within the regional bioeconomy context.
3	Timberlab	Bioconstruction	3.27	Rejected	Financing service already explored. Limited relevance to bioeconomy. Low systemic impact.
4	Casa Ametller	Agro-park	8.93	**Accepted as Biobooster 3**	Accepted with the consent of the Strategic Committee. Collaboration is strongly recommended, emphasizing the importance of this initiative within the regional bioeconomy context.
5	Alere Circular	Production of biofertilizers.	6.17	Deferred to later stages	Low project maturity, untested technology, uncertain results, exploration of manure valorisation, services, sector, and location already explored.
6	Wool processing plant	Valorisation of sheep wool	5.67	**Accepted as Biobooster 4**	The low investment is outweighed by a significant systemic impact potential (consulted with the Strategic Committee)
7	Open access pre-industrial protein scaling plant (EPACAT)	Alternative Protein	8.27	**Accepted as Biobooster 5**	Accepted with the consent of the Strategic Committee. Collaboration is strongly recommended, emphasizing the importance of this initiative within the regional bioeconomy context.
8	Segrià Compost SA	Production of biofertilizers	7	Pending	Services already provided to various initiatives, prompting a wait-and-see approach before entering this project.
9	Plana de Vic Cooperative	Biogas production	7.23	Pending	A wait-and-see approach is adopted due to existing service provision and exploration in the sector and location.

Service design and delivery

During the first year of operation, the Accelerator worked closely with five selected Bioboosters, applying a range of services tailored to their specific project needs. These services, as outlined in Section 1.2 of the report, encompassed technical assistance, facilitation, mapping impact, circular economy services, legal and administrative support, and business and financing services. Below is a recap of the activities conducted and the importance of the services delivered to each Biobooster:

Table 4. Recap of importance of serviced delivered for each Biobooster

	Facilitation	Technical	Administration and legal	Business and financing
Biobooster 1 – Coopirenaica	medium	medium	low	high
Biobooster 2 – Alcarràs	high	medium	high	high
Biobooster 3 – Casa Ametller	low	high	low	high
Biobooster 4 – Wool plant	medium	low	high	high
Biobooster 5 – Protein plant	low	low	high	high

Impact evaluation and review

During the first year, the Accelerator successfully completed the service delivery phase with Biobooster 2, Alcarràs Bioproductors SAT. To evaluate the impact of the services provided, the Accelerator prepared a final report. This report captured the journey of the project, highlighting the challenges overcome and the outcomes achieved.

In addition to the final report, a satisfaction survey was created and shared with the client. This survey aimed to gather feedback on the services provided and the relationship maintained throughout the project duration. The feedback obtained through this survey will be instrumental in refining and improving the Accelerator's services for future initiatives. By incorporating client perspectives and addressing any areas of improvement identified, the Accelerator aims to enhance its support mechanisms and maximize its impact on upcoming projects.

3.2. Biobooster engagement activities

This section focuses on detailing the activities related to engaging with each Biobooster during the first year. It includes descriptions of the specific tasks, interactions, and support provided to individual Biobooster projects.

Biobooster 1: Coopirenaica

Description

Project description

Location: Alt Urgell region, Lleida, Catalonia.
Stakeholders: Coopirenaica (agricultural and farmers' cooperative), Cadí (farming and dairy production cooperative), Peusa group (local power & gas distribution company, with renewable power generation assets).
Objectives:

- Need of efficient and circular management and valorisation of livestock manure and slurry and other agro-industrial waste.
- Production of renewable energy to be used for local industry/transport.
- Preparation of proposal for dimensioning of the plant, business model, and necessary investment.
- Maximise systemic impact.

Needs and barriers identified

- Lack of expertise to select the best biotechnology/valorisation process and corresponding dimension.
- Financing sources unclear, investment structure unclear.
- No business plan.
- Storytelling to cooperative members: How to present the project so that they want to implement it?
- Strong reluctance to implement innovative solutions and to large investments.
- Complexity of administrative procedures.
- Urban planning, location of the facilities.

Potential services to offer – roadmap

Strategic plan in 2 phases:

- Phase 1:
  - Phase with few stakeholders
  - Valorisation of agri-waste from Coopirenaica's cooperative, production of biomethane, and fertilizer production.
  - Evaluation of suitable biotechnologies and sizing of the project.
  - Evaluation of investment needed and preliminary investment structure.
  - Preliminary business model.
- Phase 2: maximizing systemic impact
  - Consider other inputs: municipal organic waste, sawdust, forests.
  - Consider other outputs: biochar, ammonium sulphate, dairy serum.

PDA services and outcomes

Offered services

Facilitation:

- Construction and preparation of the story as a communicative instrument based on the chosen proposal/project.
- Mapping of systemic impact potential using surplus resources:
  - Evaluation of the potential for systemic impact beyond the core of the project (use of livestock manure).
  - Opportunity approach: synergies within existing metabolism
  - Calculation of savings/benefit potential for each opportunity
  - Detection and mapping of the main actors within the different opportunities detected.
- Evaluation of the different monitoring indicators of systemic impact and system of prioritization of the different opportunities, facilitating autonomy for the project promoters in making long-term decisions
- Technical, economic, environmental and social feasibility of the opportunities detected.
- Systemic: social, economic and environmental impact of detected opportunities.

Technical:

Proposal of anaerobic digestion plant for the valorisation of the dejections taking into the account the feedstock available (2 scenarios were evaluated). For that purpose, the stages followed are:

- Evaluation of the generated substrate: quality of the substrate
  - Number of farms and cows/farm: As a cooperative, not all farms are willing to participate in the initiative. This fact conditions the amount of available substrate.
  - Tones of cow slurry and cow manure produced (annual production per type and farm).
  - Characteristics of the slurry and manure: dry matter (DM, %) and organic content (ODM, %)
- Evaluation of the substrate quantity and energy production
  - Taking into the account the production (daily or annual) and the quality of the substrate, the biogas and methane production are calculated.
- Determination of the biogas parameters
  - Expected biogas and methane yield allows to estimate the energy produced in MWH/year
- Determination dimension of the anaerobic digestion plant:
  - Quantity of digester, diameter per digester, gross volume per digester, net volume per digester, surface area base plate per digester, total gross volume, total net volume, total surface area base plate.
  - Operational parameters such as: calculated fermentation in days, expected organic loading rate in the main digester, expected digester-feed dry matter content, expected digester-average dry matter content and expected organic dry matter reduction.
- Energy balance: Through this analysis it is possible to estimate the energy produced and the one consumed in the plant, obtaining the net energy produced to be used as a resource (biogas).
- Economic proposal: An estimated CAPEX for the prosed biogas pilot plant has been calculated.

Business and Financing:

- Support in the biotechnologies analysis to choose the best option based on feedstock availability and techno-economic analysis.
- Circular business model development.

- Sensitivity analysis: different feedstock prices vs. Energy price.
- Sensitivity analysis: CAPEX vs. quantity of feedstock.
- Financing options (private equity and debt, and public funding).
- Investment structuring.
- Support in story-telling building to motivate the cooperative members to implement the project.
- Support in analysis of potential systemic impacts.

Legal and Administrative:

- Initial identification of the environmental intervention regime applicable to the activity (environmental authorization or license).
- Approach of the requirement of other administrative permits, based on specific environmental factors related to the facilities and processes of the activity (e.g., atmospheric emissions authorization, wastewater discharge permit, etc.).
- Identification of territorial, urban planning, and landscape aspects for the implementation of the activity.
- Analysis of the legal requirements for the production and use of biogas.
- Legal assessment of the possibility of use and management of digestate as an agricultural application.
- Study of corporate issues related to project structuring and legal aspects concerning financing operations in banking or other matters.
- Prior recommendations on industrial property rights and in the selection of technological solutions and cybersecurity measures

Outcomes & results

- Preliminary mapping of available biomass resources.
- Preliminary technology feasibility for biomass valorisation through anaerobic digestion: estimation of the amount of biogas production, digestate, and other sub-products.
- Preliminary financial feasibility analysis: CAPEX, OPEX, IRR.
- Preliminary financing structure: output-based financing + equity.
- Preliminary governance model proposal: SPV

Biobooster 2: Alcarràs Bioproductors

Description

Project description

Alcarràs Bioproductors is an association (Agrarian Transformation Society - ATS) of 150 farming families (600 farms) in the cattle and pig sector of the municipal area of Alcarràs, coming together to collectively manage the waste from their farms. They acquire 50 hectares of land, were the first Biopark in Catalonia will be located. They have a composting plant, and they are planning to allocate a biogas plant and an open-access industrial pre-scale plant for the validation of biotechnologies and products, along with other technologies and businesses related to bioproducts, biomaterials, and bioenergy.

- Composting plant using livestock waste and vegetative residues from agricultural operations.

- Biogas plant from livestock waste (slurry, manure, etc.).

Their initial project was to use the biogas only to produce electricity and use the digestate to produce compost.

Needs and barriers identified

The following barriers were identified:

- Complexity of administrative procedures to obtain construction permits, difficulty in being declared as a strategic business project, etc.
- Lack of capacities/vision to connect with other projects in the area (and other sources of organic resources) to address the viability of biogas and fertilizer utilization.
- Reluctance to high investments and losing power/shares in the process of introducing external investors into the process.
- No clear business case, ambiguous value proposition, low market size.

Potential services to offer – roadmap

From Bioboost, the objective is to propose innovative technological solution to maximise the use of resources, maximise systemic impacts, create new business models for the primary producers in order to diversify and enhance their agricultural incomes.

PDA services and outcomes

Offered services

Facilitation:

Support in the definition of the business model of the biogas plant complementary to the production of electricity production: tractor filling station and creation of a market for fertilizers

- Exploration and facilitation of market access for liquified biogas, with a specific focus on its utilization to power tractors.
- Exploration and facilitation of market access to sell for high quality soil amendments and biofertilizer, ensuring a continuous market presence for the produced compost, even during off-season periods.
- Exploration and facilitation of market access for ammonium sulphate, a byproduct of the composting process.
- Proposal of strategies for an effective utilization of water derived from the digestate.
- Proposal connections with other projects in the area, fostering a collaborative ecosystem.
- Collaboration to establish a shared connection to the electrical grid.
- Exploration of the potential generation of methane and sharing gas connections with existing facilities and consideration expanding the digestion plant for gas production.

Technical:

Analysis of the technical proposal for the biogas plant for the valorisation of the dejections.

- Evaluation of alternative scenarios to increase the biogas production: Alcarràs Bioproductors biogas plant which will be installed in their facilities is based on 2 digesters to be feed with the current production (tons/year) of dejections (slurry and manure). An evaluation of other potential feedstocks

located near to Alcarràs, Bioproductors allows the definition of 2 possible alternative scenarios for maximising the biogas production.
    - Scenario 1: Use of FORM.
    - Scenario 2: Use of agro-food waste.
- Consider other valorisation technologies apart from anaerobic digestion (e.g. pyrolysis for non-fermentable waste).
- Support in the business model of the biogas plant complementary to the production of electrical energy.
- Support in the valorisation of organic fertilizer: search for potential market.

Business and Financing:

Support in the biotechnologies analysis to choose the best option based on feedstock availability and techno-economic analysis.

- Analysis of new business models, new markets, that can be integrated into their initial project to enhance systemic impact and increase and diversify primary producers' incomes.
- Circular business model development according to different scenarios (sale of electricity, liquefied or compressed natural gas, prices of feedstock).
- Integration of primary producers in the value chain and business model.
- Building of 4 business model scenarios considering different valorisation routes, end-products, sources of revenue, and investment needed.
- Financing options (private and public).
- Investment structuring.

Legal and Administrative:

- Comprehensive legal advice in the entire procedure to obtain the grid connection permit for the biogas plant. This task includes a legal analysis of the conflict with Serosense, the electric company, distributor and seller of electricity, as well as the preparation of a draft of allegations to the conflict with Serosense and a document accepting the technical part and the quotation provided by Serosense.
- Assistance in all the procedure to secure the IDAE's grant (Program of incentives for singular pilot projects for energy communities) of and amount of 401.400,00€. It involves the interlocution with the Administration and the preparation of a document to request an extension of the deadline established in the grant's resolution of August 2022 to execute the Project in a period of 14 months. The 14-month deadline could not be met due to the Town Hall's delay in issuing a decision on Special Urban Development Plan. Finally, IDAE has extended the deadline until 07/07/2024 in its resolution of October 20th, 2023. Also, various inquiries related to the grant have been addressed.
- Analysis and study of the feasibility to declare the biopolygon as a "Strategic Project", according to the criteria established in f the Agreement GOV/177/2022, of September 6th, 2022.
- Follow up throughout the entire process to obtain approval of the Special Urban Development Plan submitted by Alcarràs Productors. On September 29th, 2023, the Special Urban Development Plan was approved definitively by Territorial Commission of Catalonia.
- Following up the administrative procedure to obtain the environmental authorization to carry out the activity. It was obtained on July 20th, 2023.
- Preliminar study on how to establish an energy community.

- In relation to the legal entity of Alcarràs Bioproductors, the Association:
  - Legal analysis of the governance framework under which the Association operates.
  - Legal analysis of the legal framework under which the members of the Association participate in current and potential new projects.
  - Legal advice in the identification of a more simplified governance and legal framework to operate.

Outcomes & results

As indicated in the methodology, at the end of the offered services, the project manager prepares a **final report** for the client (bioeconomy project promoters). This report encompasses all the information gathered throughout the phases of the process, including the identification of barriers and needs, the roadmap developed, the services provided, and the outcomes achieved. The report is presented in a PowerPoint format and serves as a comprehensive overview of the project's progress and results.

Bioboost conducted a **satisfaction survey** among participants of the Alcarràs Bioproductors project (Biobooster 2) at the end of Phase II. The survey aimed to gather valuable feedback on the quality of services provided, the effectiveness of our team's communication and problem-solving, and the overall satisfaction levels of project participants. In this analysis, we present the results obtained from the survey, offering insights into areas of strength and areas for improvement.

The survey received responses from two key contacts within Alcarràs Bioproductors, providing valuable perspectives on their experience with Bioboost. Here's a breakdown of the responses:

- Service offerings: both respondents acknowledged receiving various services facilitated by Bioboost, including advice on circular economy, technical assistance, legal advice, and business model and investment advice. This indicates a comprehensive utilization of the services offered by the Accelerator.
- Service quality: both respondents rated the quality of services received with a maximum score of 5, indicating a high level of satisfaction with the support provided by Bioboost. This positive feedback underscores the effectiveness of our service delivery and highlights the value perceived by project participants.
- Team communication and response: participants expressed high levels of satisfaction (rated 5 out of 5) with the attention received from the Bioboost team. This indicates efficient communication channels and timely responses to queries and concerns, fostering a positive working relationship between project participants and the Accelerator team.
- Expertise and knowledge: both respondents affirmed that the Bioboost team possesses the necessary knowledge and experience to deliver the agreed-upon services, with no identified shortcomings in expertise.
- Results achieved: when asked about achieving expected results with Bioboost's assistance, one respondent rated it 4 out of 5, while the other rated it 5 out of 5. This suggests a high level of alignment between project expectations and outcomes facilitated by the Accelerator.
- Areas for improvement: participants identified increasing the availability of resources and assistance as a potential area for improvement.

Biobooster 3: Casa Ametller

Description

Project description

Ametller Origen is a company founded in 2001 specialized in the production and distribution of food products. The company owns and operates about 200 stores in Catalonia, where it distributes agricultural products and processed food, some of them cultivated and manufactured by themselves.

Following their objective to contribute to the improvement of food and people's health, in the last years, they have initiated the Agroparc Penedès (Gelida, Barcelona, Spain). A space that integrates agriculture, livestock, agro-industry (including alternative protein production) and renewable energy generation. The Agroparc Penedès will be the first circular agro-industrial district with positive energy and negative CO_2.

In addition, they are planning to install the Agroparc Mont-Roig (Mont-Roig del Camp, Tarragona, Spain). The initial project will count with more than 45ha of technical greenhouses to produce organic horticulture products and host R&D initiatives. The project will also count with renewable energy production.

Needs and barriers identified

Being the first circular agro-industrial district, the project counts with several barriers for its implementation. Here are the main ones identified:

- The project dimension requires innovative public-private funding formulas to build the 2 Agroparcs.
- The project faces the opposition from local citizens and requires public opinion acceptance.
- Limited vision of other companies or industries resources surplus/needs that could be integrated in the Agroparc model (industrial symbiosis).
- Lack of technical knowledge to identify the most appropriate technologies to optimize resources and subproducts valorization and limit CO2 emission.

Potential services to offer – roadmap

Based on the above needs and barriers. Bioboost propose a set of services tailored to the specific needs of the two different AgroParcs:

Agroparc Penedès:

1. Support on increasing the project systemic potential
2. Search for co-financing strategies

Agroparc Mont-Roig

1. Proposal to expand the business model to optimize biowaste valorisation
2. Business model evaluation considering (1).
3. Search for co-financing strategies

PDA services and outcomes

Offered services

Facilitation:

- Assessment of systemic impact potential from available resources, includes evaluating surplus resources and detecting opportunities beyond the core project. The focus is on identifying synergies within the existing metabolism to maximize impact.
- Proposal connections with other projects in the area, fostering a collaborative ecosystem.
- Opportunity detection mapping
- Monitoring indicator evaluation and prioritization system

Technical:

Proposal of technical solution to valorise agri-waste from Ametller Origen production site and other local agriculture sites and forest through anaerobic digestion.

- Evaluation of the types of biomass (feedstock)
- Evaluation of the substrate quantity and energy production
- Determination of the biogas parameters
- Determination dimension of the anaerobic digestion plant:
- Energy balance: Through this analysis it is possible to estimate the energy produced and the one consumed in the plant, obtaining the net energy produced to be used as a resource (biogas).
- Economic proposal: An estimated CAPEX for the prosed biogas pilot plant has been calculated.

Other technologies will be evaluated after the first approach (for example, pyrolysis).

Business and Financing:

Proposal to expand the business model to optimize biowaste valorisation:

- Mapping low or non-valorised bio-resources from the locality
- Viability of biogas production integration (biogas and pyrolysis)
- Mapping biogas and sub-products usage options and out-takers
- Mapping regional stakeholders interested into the project
- Developing circular business models tailored to the new value stream created.
- Search for innovative funding scheme

Legal and Administrative:

No legal and administrative services are required at the current stage.

Outcomes & results

- Preliminary mapping of available biomass resources: internal and external.
- Gathered success cases of implemented biogas and pyrolysis plants, compiling information about the investment mobilised, type of investment, capacities, governance model, business model, financing model.

- Preliminary technological assessment.

Biobooster 4: Wool processing plant in Tagamanent

Description

Project description

One of the main problems of farmers on small family farms is the difficulty of valuing the resource of sheep wool obtained after shearing, they do not obtain profit due to the difficulties they have to collect it in a remunerated way it is considered a waste. The wool washing is regulated by European regulations due to its water's consumption and effluents it requires. The wool processing industry does not accept small batches as in these cases, although feasible on a small scale, the maintenance and operation of the machinery and the problems of water and energy continue to make the alternative unviable to be abandoned. Thus, making the farmer choose to dispose of the product as waste without recovering it, with the corresponding management and treatment costs. One of the main problems of farmers of small family farms is the difficulty of valuing the resources of sheep wool obtained after shearing, they do not obtain profit and due to the difficulties, they must collect it in a remunerated way it is considered a waste. The wool washing process is regulated by European regulations due to its consumption of water and effluents it requires. The wool processing industry does not accept small batches as in these cases, although feasible on a small scale. the maintenance and operation of the machinery and the problems of water and energy continue to make the alternative unviable both economically and in terms of sustainability. This difficulty causes the practice of washing to be abandoned. Thus, making the farmer choose to dispose of the product as waste without recovering it, with the corresponding management and treatment costs. The purpose of this project is the definition of a wool treatment system in small quantities, modular, portable and replicable in other parts of the territory, which allows its implementation in areas close to livestock farms, and that allows them to value their wool from sorting and washing to carding and spinning, achieving a local production chain and recovering what is currently a waste.

Needs and barriers identified

- Current state of the market for wool-based products: (textile, bioconstruction, production of chemicals such as lanoline o queratine, etc.)
- Business model for the potential market products
- Co-financing for the project implementations
- Humans' resources for the project's implementation
- Search of stakeholders for increasing the systemic impact

Potential services to offer – roadmap

Based on the needs and the barriers identified to the date are:

- Organization of a Catalan hub with relevant stakeholders of the wool to increase the systemic impact, including the whole wool value chain: wool producers (farms), washing machines companies, companies for wool transformation, research centres devoted to R&D activities and final users
- Development of the bases for the business model

- Evaluation of the market products based on wool: yarn for textile, building insulation, fertilizers, chemical products.

PDA services and outcomes

Offered services

Facilitation:

- Analysis of potential systemic impacts.
- Support in story-telling building to motivate the stakeholder's members to implement the project.
- Search and contact potential stakeholders for the creation of a Catalan Hub for the wool.
- Support in the evaluation of the project from the technical point of view to evaluate the resource needed in terms of water and energy consumption.

Technical:

Aeris is the project manager of the Biobooster. To the date, no technical services has been offered due to the current state of the project. However, Aeris has offered:

- Evaluation of the project from the technical point of view to evaluate the resource needed in terms of water and energy consumption
- Search and contact potential stakeholders for the creation of a Catalan Hub for the wool.
- Support in story-telling building to motivate the stakeholder's members to implement the project.
- Support in analysis of potential systemic impacts.

Business and Financing:

- Circular business model development.
- Financing options (private and public).
- Investment structuring.
- Support in story-telling building to motivate the stakeholder's members to implement the project.
- Support in analysis of potential systemic impacts.

Legal and Administrative:

- Preliminary study on the legal requirements to use the wool in different applications (textile, construction, agriculture).
- Identification of the requirements to become a member of the International Wool Textile Organisation.
- Preliminary analysis of the most suitable legal structure to establish a group of different actors from the Catalan wool sector.

Outcomes & results

To the date, we have created a group with different actors related to the wool sector such as Public Administration, Research centres and private sector (companies) interested in the project. A first meeting had been carried out to put in common the needs and the barriers to solve related to the valorisation of sheep wool. Once the technologies for the wool valorisation are defined, the business model and the technical services will be delivered.

Biobooster 5 : Open access plant for the industrial pre-scaling of alternative protein

Description

Project description

The Public Administration of Catalonia is promoting the BIOHUBCAT, the flagship initiative of the Shared Agenda of Lleida, the Pyrenees, and Aran regions within the Research and Innovation Strategy, for the Smart Specialisation of Catalonia 2030 (RIS3CAT). BIOHUBCAT is pursuing the creation of a bioeconomy hub by exploiting synergies between regional, national and EU funds.

In this framework, BIOHUBCAT is interested in the implementation and acceleration of an open access plant for the industrial pre-scaling of alternative protein extraction, production and transformation processes, providing an innovative solution to a need identified in the agri-food sector of Catalonia.

Currently, the alternative protein market is dominated by soy or yellow pea protein (plant-based producers), however, many companies are experimenting and looking for alternatives to these products. Therefore, this industrial pre-scaling plant aims to provide an innovative solution to this need and create a space that facilitates the development of industrial investments in the bioeconomy.
It is foreseen that the project will be co-financed by public and private sector.

Needs and barriers identified

This is a project that involves both the public and private sectors. Therefore, the following needs have been identified at this stage:

- Regulation of the public-private relations of the plant
- Intellectual and Industrial Property issues
- Searching of private investors
- Development of evaluation criteria for the selection of participate in the plant.

Potential services to offer – roadmap

From Bioboost, the purpose is to propose innovative and systemic solutions to regulate the public-private relations aspects of the different actors involved in the Project and create a preliminary business model to accelerate and facilitate the implementation of the Open Access Plant.

PDA services and outcomes

Offered services

Facilitation:
No facilitation services are required at this current stage.

Technical:
No technical services are required at this current stage.

Business and Financing:

Support on building the most suitable business model and exploitation strategy for the industrial pre-scaling plant. To provide this support, the following aspects will be considered:

- Value proposition
- Market segmentation
- Process optimization
- Risk evaluation and mitigation.
- Relationship with potential customer and appropriate communication channels
- Key activities and resources
- Strategic partners
- Requires Investment and operational costs (CAPEX & OPEX)
- Financing options (Public and private)
- Investment structure

Legal and Administrative:

- Analysis of the optimal legal framework to regulate the public-private legal relations of the Plant for the industrial pre-scaling of alternative protein extraction (Governance Model).
- Intellectual and Industrial Property Law services:
  - Support in creating a Non-Disclosure Agreement (NDA) model to sign with companies willing to use the Plant (service provider company and potential clients of the Plant).
  - Provide guidelines for establishing an accurate Intellectual and Industrial Property protocol for the Open Access Plant.

Outcomes & results

To date, we have analysed and identified the most suitable legal structure to govern the public-private relations of the Plant and have started to define a strategy to implement the selected governance model, ensuring full compliance with regulatory requirements and operational efficiency. Furthermore, we have supported the creation of a Non-Disclosure Agreement (NDA) template to be signed by companies interested in using the Plant (both the service provider and potential clients) and have provided guidelines for establishing an Intellectual and Industrial Property protocol tailored to the Plant's specific activities.

The table below summarises the distribution of partner effort (in person-months) across the five active Bioboosters during RP1, as well as transversal tasks related to coordination and early project scouting. The resourcing model followed a collaborative logic, with each partner contributing according to its area of expertise. SYM and INV assumed the largest workload (10.3 and 10.9 PM respectively), reflecting their lead roles in facilitation and business development. AERIS and RJ provided more targeted support in technical and legal matters.

Summary of partner effort (PM dedicated per project) during RP1

#	Name	INV	SYM	AERIS	RJ
1	Coopirenaica	4	1.1	1.21	1.5
2	Alcarràs Bioproductors SAT	3	5.1	1.15	2.65
3	Casa Ametller	1.5	0.8	0.1	0.1
4	Open access plant for the industrial pre-scaling of alternative protein	0.9	0.4	0	1
5	Wool processing plant in Tagamanent	0.5	0.5	0.75	0.31
	Coordinating and leading the work package, deliverables D3.1 and D3.2.	0.5	1.6	0	0
	Managing potential Biobooosters that were not selected, including initial meetings	0.5	0.8	0.25	0.25
	TOTAL	10.9	10.3	3.46	5.81

When compared to the total person-months foreseen for WP3 over the full project duration (27 PM for INV, 36.56 PM for SYM, 24.56 PM for AERIS and 24 PM for RJ), the data shows that:

- INVENIAM used **40.4%** of its total WP3 effort during RP1;
- SYM used **28.2%**;
- RJ used **24.2%**;
- AERIS used **14.1%**.

This distribution is consistent with the nature of the tasks carried out in RP1, which focused on project identification, facilitation and early-stage structuring. Technical and legal services — which typically require more effort in later stages of project development — are expected to increase significantly in RP2 and RP3. The resource allocation is therefore considered well-aligned with the project's phased implementation strategy.

4. Lessons learned

In the journey of supporting innovative and systemic projects through the Accelerator program, we have encountered numerous challenges and opportunities. Each project has provided invaluable insights that shape our understanding of effective collaboration, sustainable development, and project management.

In this section, we reflect on the lessons learned during our engagement with the Biobooster initiatives, focusing particularly on the experiences gleaned from Biobooster 2: Alcarràs Bioproductors. Through a comprehensive examination of the barriers identified and the added value to the territory, we aim to distil key learnings that inform our approach moving forward. Additionally, we discuss the actions taken to address these insights, demonstrating our commitment to continuous improvement and the advancement of sustainable solutions in the community.

The tables below present an evolving compilation of **barriers identified** and the **added value** that systemic projects contribute to the territory. This table serves as a dynamic resource, capturing insights garnered

throughout our engagement with the Biobooster initiatives. As we progress, it will continue to evolve, reflecting our ongoing efforts to refine our understanding and enhance our impact:

Table 5. Compilation of identified barriers during the 1st year of Accelerator

Identified barriers
• Complexity of administrative procedures • Capacity gaps in connecting with other projects • Unclear business case and value proposition • Reluctance of primary producers to high investments • Difficulties engaging with investors • Low maturity of bioeconomy projects in the territory

Table 6. Compilation of added value generated by Bioboosters

Added value generated
• Demonstration of sustainable solutions for the valorisation of underutilised / residual biomass • Demonstration of the economic and sustainable feasibility of the production of high added-value bio-based products with tangible market applications • Diversification and enhancement of agricultural incomes • Generation of renewable energy for local use • Strengthening of the agricultural sector through diversification • Job creation and economic development • Share best-practice examples and promote new business models in the primary production sectors

Through the engagement with Biobooster 2, we have learned valuable lessons that can enhance our performance in future initiatives. The challenges identified, such as administrative complexities and unclear business cases, highlighted the need for more streamlined processes and clearer project objectives. To address these issues, we have decided to implement the following changes:

- We will work closely with relevant authorities to streamline administrative procedures and expedite the process of obtaining permits and other necessary approvals.
- Recognizing the importance of collaboration in project success, we will organize more networking events and facilitate connections between different projects to maximize synergies and resource sharing.
- We will provide additional support in developing business models and clarifying the value proposition for each project, ensuring clearer understanding and buy-in from stakeholders.
- We will offer more comprehensive financial planning and investment strategy consultations to help projects navigate funding challenges and secure necessary investments for implementation.

These actions aim to address the identified barriers and enhance the overall effectiveness of our services in supporting systemic projects. By continuously learning from our experiences and adapting our approach, we are committed to driving positive change and maximizing the impact of sustainable initiatives in the territory.

To address the difficulties of engaging with investors we will:

- have one-to-one meetings with the investors in order to explain the project and the bioboosters in detail and gain their trust. Moreover, to asses the investors expected payback time / return on capital is in line with bio boosters business plans we will share with them a questionnaire after having the one-to-one meeting with them.
- Implement a targeted dissemination and communication plan specifically designed for investors, integrated within the updated Communication & Dissemination (C&D) strategy. This plan also complements The plan aimed to better understand and engage financial actors by:
    - Launching a **LinkedIn campaign** featuring a **dedicated survey** to collect investor preferences and expectations;
    - Organising **one-to-one meetings** with selected investment stakeholders to explore funding opportunities;
    - Participating in **dedicated investor webinars and workshops**, such as those organised by InvestCEC and CCRI-related events;
    - Conducting **direct outreach via email**, supported by partners with strong networks in the investment ecosystem.

5. Quantification of Key Performance Indicators (KPIs)

The monitoring and quantification of KPIs related to both the Accelerator's performance and the Biobooster projects' impacts are essential for assessing progress, identifying areas for improvement, and informing decision-making processes. As the project progresses, continued evaluation and adaptation of methodologies will ensure the effective delivery of services and the maximization of positive outcomes for the bioeconomy sector in Catalonia.

5.1. Monitoring of project's KPIs related to the Accelerator

The Bioboost project aims to support bioeconomy project (Bioboosters) by providing Project Development Assistance (PDA) services through the Accelerator. To evaluate the performance and impact of the Accelerator, several Key Performance Indicators (KPIs) have been defined:

Table 7. KPI related to SO3 Deliver PDA services to Catalan bioeconomy projects

KPI	Result
Number of bioeconomy projects applying for PDA services	9
Number of bioeconomy projects receiving PDA services	5
Total count of PDA services provided	33
Satisfaction rating or feedback from bioeconomy projects participants regarding the effectiveness and value of the PDA services	4,5/5
Total number of investor-oriented business plan developed for bioeconomy projects	1
Invested projects	1
Money invested	3M€

The Bioboost project not only aims to provide Project Development Assistance (PDA) services to bioeconomy projects but also seeks to catalyse investment and overcome systematic barriers within the Catalonia region. This section delves into three main topics crucial for evaluating the Accelerator's performance:

1. Investment catalysed trough provision of PDA service

Bioboost targets to evaluate €150M of investment opportunities across approximately 30 projects. With the intention to deliver PDA services to half of these opportunities (€75M and 15 projects), the project endeavours to stimulate investment in 40% of the supported projects (€30M investment, 6 projects). The evaluation of investment opportunities occurs in phases:

- Mapping phase: during the mapping phase, projects meeting the applicability criteria are identified as investment opportunities. This phase is crucial for filtering out projects that align with Bioboost's strategic goals and have the potential for successful outcomes.
- Quantification of investment opportunities supported will be conducted after the conclusion of Phase II of each supported project. This step ensures that the financial and resource commitments are accurately assessed and documented.

- Similarly, the **stimulated investment** in the supported opportunities will also be quantified post-Phase II, aligning with the latest project results and impacts.

These indicators play a vital role in the decision-making process for selecting new projects, contributing to a comprehensive evaluation framework. Currently, the **investment catalysed** through Biobooster 2 (Alcarràs) can be calculated, and similar estimates can be made for the other Bioboosters.

Table 8. Estimated investment catalysed by Bioboosters

	Description of the current investment situation	Detailed inversion components	Estimated amount of investment	Executed amount of investment	Type of financing
Biobooster 1 – Coopirenaica	The investment for Coopirenaica has been allocated for the enhancement of biogas production facilities. The project is in the planning phase. Detailed planning and design are underway before moving to the implementation stage.	It covers the purchase and installation of digestors for biogas production and an efficient system to inject feedstock into these digestors. Additionally, it funds upgrading technology to refine biogas into biomethane, commissioning the plant, staff training, and constructing the necessary infrastructure, such as foundations and buildings, for the facility.	~7,8M€	To be determined	Equity
Biobooster 2 – Alcarràs Bioproductors	According to Alcarràs Bioproductors, the first phase of biogas production has been completed, and the second phase is nearing completion. Investments in biomethane production and composting plant expansion are ongoing.	This includes the completed first phase of biogas production, which required 3M€, and the nearly completed second phase, which involved an additional 2M€. Ongoing investments include 2M€ for biomethane production and 300,000 to 400,000€ for the expansion of the composting plant.	~7,8M€	3M€	Equity, Grant
Biobooster 3 – Casa Ametller	The potential of investment has been estimated by the Bioboost consortium during the planning phase. Detailed planning and design are underway before moving to the implementation stage.	The investment includes various components: 2.5M€ for advanced digesters, designed for efficient breakdown of organic matter and biogas production; 3.5M€ for mini cryo-upgrading, enhancing biogas processing efficiency through cryogenic separation; 1M€ for cryogenics tanks, essential for storing and maintaining low temperatures; 2.7M€ for pyrolator, converting biomass into biochar and syngas;	~9.7M€	To be determined	Equity, Grant
Biobooster 4 – Wool processing plant	According to the Preminary Project elaborated by Rifà Enginyers and Ajuntament de Tagamanent the estimated inversion taking into the account the stage of the project is 0.7 - 1 M €. This budget is provisional and will be detailed in D3.2.	The investment associated to the units for the wool valorisation including washing and processing of the clean wool is around 0.5 M€. Auxiliary equipment for the proper operation of the plan is estimated in 250.000 €. Due to the current state of the project and taking into the account the perspective of the project, the total investment could reach up to 1 M€.	~800.000€	To be determined	Grant

Biobooster 5 - Open access plant for the industrial pre-scaling of alternative protein	According to the executive summary of the Preliminary Project drafted by Ingal Ingeniería & Consulting in April 2024 (company in charge of its redaction according to the public tender organized by the Public Administration), the estimated investment is 30 M €. This budget is provisional; it will be detailed in D3.2.	The estimated investment includes various components: 17.5M€ for the different industrial process lines (fermentation line, isolated protein line, extrusion line, finished product line, pilot plant, laboratory, and other auxiliary facilities), 11M€ for civil works and installations, 500.000€ for the urban development of the plot and 1M€ for the purchase of the plot.	~30 M €	To be determined	Equity, grant

Milestone 4 (MS4) is a crucial checkpoint within the project timeline, representing the achievement of the "First Project Investment." It falls under WP3, with SÍMBIOSY as the lead beneficiary. This milestone signifies the initiation of financial investment in the project, marking a pivotal step towards its realization.

The due date for achieving MS4 is set at month 24, indicating that by the end of the project's second year, the project should have successfully attracted its first investment. This investment is not only a financial milestone but also a validation of the project's viability and potential impact.

In the context of the Alcarràs Biobooster project, we can already demonstrate the achievement of MS4. The completed first phase of biogas production, requiring an investment of 3 million euros, serves as the tangible evidence of the project attracting its first investment. This initial investment is a clear indication that the project has successfully mobilized financial support, thereby achieving Milestone 4 on time.

2. PDA services tested

The Accelerator serves as a testing ground for various services aimed at addressing systematic barriers within the Catalonia region. To identify and overcome these barriers effectively, a catalogue of services has been pre-defined, encompassing technical, facilitation, mapping impact and circular economy, legal and administrative, as well as business and financing services. The objective is to test at least 70% of each offered service during Phase I of each project, ensuring a balanced approach across the consortium. These test results inform the decision-making process for selecting new projects and refining service offerings.

The tested services during the 1st year of Accelerator include:

1. Construction and preparation of the story as a communicative instrument.
2. Mapping of systemic impact potential.
3. Evaluation of monitoring indicators.
4. Technical, economic, environmental, and social feasibility evaluations.
5. Support in biotechnologies analysis.
6. Circular business model development.
7. Sensitivity analysis.
8. Financing options exploration (private and public).
9. Identification and analysis of legal issues.
10. Support in defining the business model of the biogas plant.
11. Exploration and facilitation of market access for liquified biogas.
12. Exploration and facilitation of market access for biofertilizer.
13. Proposal of strategies for water utilization.

14. Proposal connections with other projects.
15. Collaboration for establishing a shared electrical grid connection.
16. Legal analysis for regulating public-private relations.
17. Assistance in securing grants and permits.
18. Investment structuring.
19. Support in storytelling building.
20. Technical proposal evaluation.
21. Market segmentation.
22. Process optimization.
23. Risk evaluation and mitigation.
24. Relationship management with potential customers.
25. Key activities and resources identification.
26. Strategic partnerships development.
27. Investment and operational cost analysis (CAPEX & OPEX).
28. Private financing options exploration.
29. Public financing options exploration.
30. Intellectual and industrial property protocol development.
31. Evaluation criteria development.
32. Human resource assessment.
33. Stakeholder engagement.

These services are pivotal in overcoming barriers and facilitating the successful implementation of projects within the Biobooster consortium.

3. Feedback about the services provided

Continuous improvement lies at the heart of Bioboost's operational approach. Stakeholder feedback, gathered through satisfaction surveys distributed to project promoters, plays a pivotal role in refining methodologies and optimizing service delivery. These surveys, conducted at the conclusion of Phase II of each project, solicit feedback on various aspects including response time, service quality, expectation fulfilment, team capacity, and more. Additionally, open-text questions allow participants to express their opinions on the role of the Accelerator, facilitating a holistic understanding of stakeholder perspectives.

Bioboost conducted a satisfaction survey among participants of the Alcarràs Bioproductors project (Biobooster 2) at the end of Phase II. As explained in section 3.2. of this report, the positive feedback received from participants of the Alcarràs Bioproductors project underscores Bioboost's effectiveness in providing tailored support and catalysing growth within the bioeconomy sector. While the survey highlights areas of strength, such as service quality and team communication, it also provides valuable insights into areas for enhancement, particularly in resource availability.

5.2. Monitoring of Biobooosters' KPIs

The evaluation of the project impacts and their performance is key to prove the convinience and viability to boost the Bioeconomy in Catalonia and other regions. An effective monitoring will not only serve to

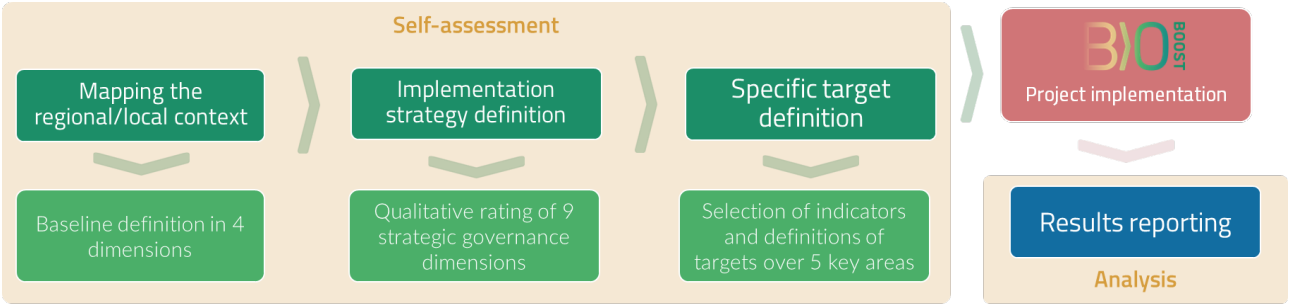
calculate the impact but will also help to effectively communicate the project results. Nevertheless the definition of the indicators to be followed is not an immediate process. Currently, there is no standard monitoring scheme established for circular or bioeconomy. In the literature, and most specifically in Europe, can be found extensive lists of very aggregated metrics[2] which complicates the selection of the most adequate KPI and can also deform the real performance in each of the territories. In addition, the systemic approach required also makes even harder to establish a unique methodolgy.

Recently, the European Comission has launched the "EU Bioeconomy Monitoring System Dashboard"[3] to offer a comprehensive overview of European trends in indicators related to the EU Bioeconomy. The set of indicators is organised according to a conceptual framework that allows for full coverage of the EU Bioeconomy including the value chain steps, sustainability pillars and primary production sectors. But unfortunalety, specific KPI and data are still not available for all the categories.

In order to overcome these barriers an ease the establishment of the monitoring protocol, BioBoost project has decided to adopt the CCRI monitoring methodology. This not only to take advantage of the extensive investigation already done but also to align and ease the potential reporting and provision of data to the CCRI reporting tool by being a CCRI project.

Thus, according to this methodology, the project impact assessment or project performance is done in 2 differenciated phases: Self-Assessment and Analysis.

Figure 3. Bioboost Accelerator monitoring methodology



Self-Assessment

The first phase consists of the evaluation of the context and baseline situation and the selection of indicators with their corresponding definition of targets. This self-assessment will be done during the

[2] https://www.oecd.org/cfe/cities/InventoryCircularEconomyIndicators.pdf
[3] *Knowledge Centre for Bioeconomy:* https://knowledge4policy.ec.europa.eu/bioeconomy/monitoring_en

Phase I according to the project development assistance methodology described above in this document. For this, 3 differentiated steps are defined.

Mapping of the regional/local context

In this first step, the assessment starts with the analysis of the context in 4 dimensions:

- General information
- Qualitative description of the situation
- A brief policy analysis
- Actor analysis.

According to the protocols defined in the Bioboost Accelerator, this first step is performed during the preliminary analysis done during the project evaluation and selection and later checked in more detail during the Phase I.

Implementation strategy definition

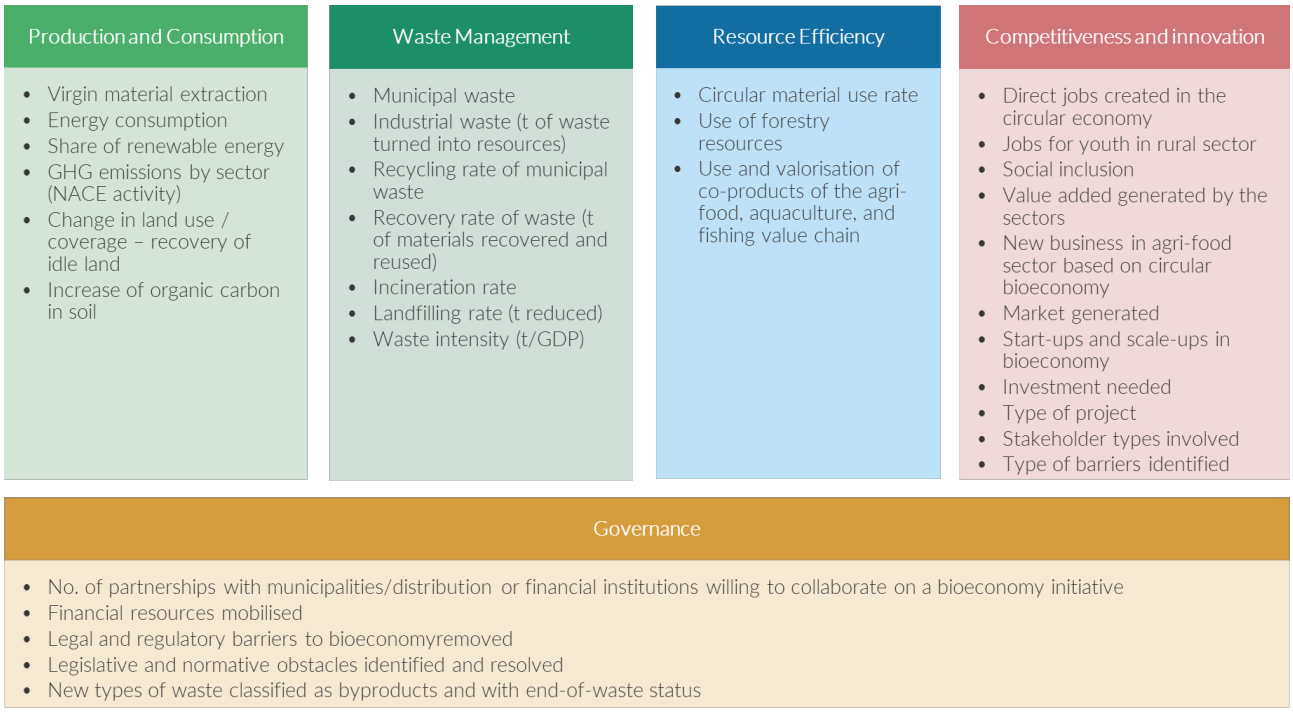
In this step, the BioBoost work team will rate the appropriateness of the implementation actions based on the qualitative rating of the 9 strategic governance dimensions defined by the OECD Governance Framework[4]: appropriate scale, awareness and transparency, capacity building, coordination, Innovation, policy coherence, roles and responsibilities, stakeholder engagement and strategic vision.

Specific target definition

In order to quantify the project impacts, a series of indicators and targets will be defined in 5 key areas: Production & Consumption, Waste Management, Resources Efficiency, Competitiveness & Innovation and Governance. For each of these areas, a list of SMART KPIs (Specific, Measurable, Achievable, Relevant and Time-based) will be considered. In the below figure are shows some example of the possible KPIs considered for each of the key areas which will be based on the *Knowledge Centre for Bioeconomy*[3] from the European Comission and the OECD Inventory of Circular Economy Indicators. Their selection will depend on each specific BioBooster project.

[4] OECD (2015), G20/OECD Principles of Corporate Governance, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264236882-en

Figure 4. Bioboost indicator's key areas and KPI examples



Environmental Impact Assessment:

To evaluate the environmental impact of the four scenarios developed for the Alcarras project, we will conduct an attributional cradle-to-grave **life cycle assessment (LCA)** study following ISO 14040:2006 guidelines. This study will encompass foreground and background processes necessary for material and energy supply. Environmental impacts, focusing on **climate change** (measured in kg CO2-eq), will be assessed using the Environmental Footprint v3.1 method established by the EU Commission.

Economic Impact Assessment:

To assess the economic impact, a **cost-effective assessment** will be performed based on a detailed bill of materials (BoM). The social discount rate (SDR) is a key parameter in this analysis. Therefore, SDR-dependent economic indicators such as internal rate of return (IRR) and net present value (NPV) will be determined and analysed. The cost analysis will define the economic feasibility of each project.

Job Creation Assessment:

To measure job creation, we will employ two methods: jobs created per kilogram of product, and sporadic jobs created per kilogram of product. Job creation will be categorized into **direct** (e.g., production process, research and development) and **indirect** (e.g., supply chain, land workers, service providers) roles to quantify their impact on the projects.

The quantification of the KPIs is still being performed.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