Methodological manual for the establishment and operation of LL4CC

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1. Introduction to the methodological guide

This methodological guide aims to establish the **key guidelines and considerations** for the constitution and articulation of the **Living Labs for Climate Change Adaptation (LL4CC)** in each territory, within the framework of the Life eCOadapt50 project.

> **The main objective of the methodological guide is to provide both theoretical content and practical mechanisms for the constitution and operation of the Living Labs for Climate Change Adaptation (LL4CC). These Labs are conceived as spaces for the co-creation of actions to address climate change adaptation challenges in different territorial realities across Catalonia.**

More specifically, as illustrated in **Figure 1,** the guide seeks to:

- **Define a solid conceptual framework** for Living Labs and their operation, as well as the fundamental principles of co-creation processes.
- **Establish a clear and common methodology.** The guide incorporates a tool that allows the design and implementation of co-creation processes, enabling the LL4CC driving teams to execute them in a structured manner adaptable to the characteristics of each territorial context. Furthermore, the guide aims to define the **key steps** to follow throughout the co-creation process—from the identification of stakeholders to the implementation of solutions—ensuring that the dynamics are well-planned, participatory, and efficient.
- **Foster inclusive and representative co-creation.** This document defines the criteria to promote the active participation of relevant stakeholders in each territory, ensuring that diverse voices can be heard, considered, and influential in the co-creation process.
- **Facilitate the replicability of the model.** The guide is intended to be an accessible and easy-to-use instrument for other stakeholders who wish to implement co-creation processes in their own territories, thereby contributing to the impact of the Living Labs beyond the Life eCOadapt50 project.
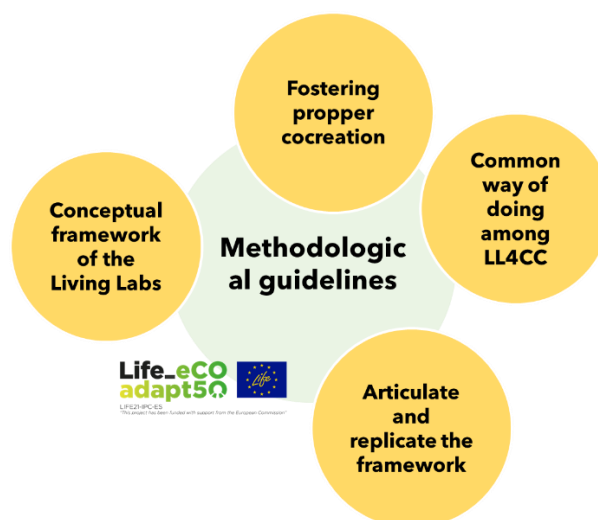
Figure 1: Summary of the methodological guide's objectives. Own elaboration.

To meet the objectives of the guide, this document is structured into **three interrelated levels**, as represented in **Figure 2**. Each level provides a distinct perspective and an increasing degree of depth for the operation of the LL4CCs. These three levels allow for the comprehensive treatment of the process's complexity from a **holistic viewpoint**, ranging from the analysis of the theoretical framework of Living Labs to the individual experiences of the people involved in the co-creation processes.

Level 1

Theoretical foundation on Living Labs and Living Labs for Climate Change (LL4CC)

Level 2

Preparation of the co-creation process and key points

Level 3

Tool to structure and articulate the LL4CC
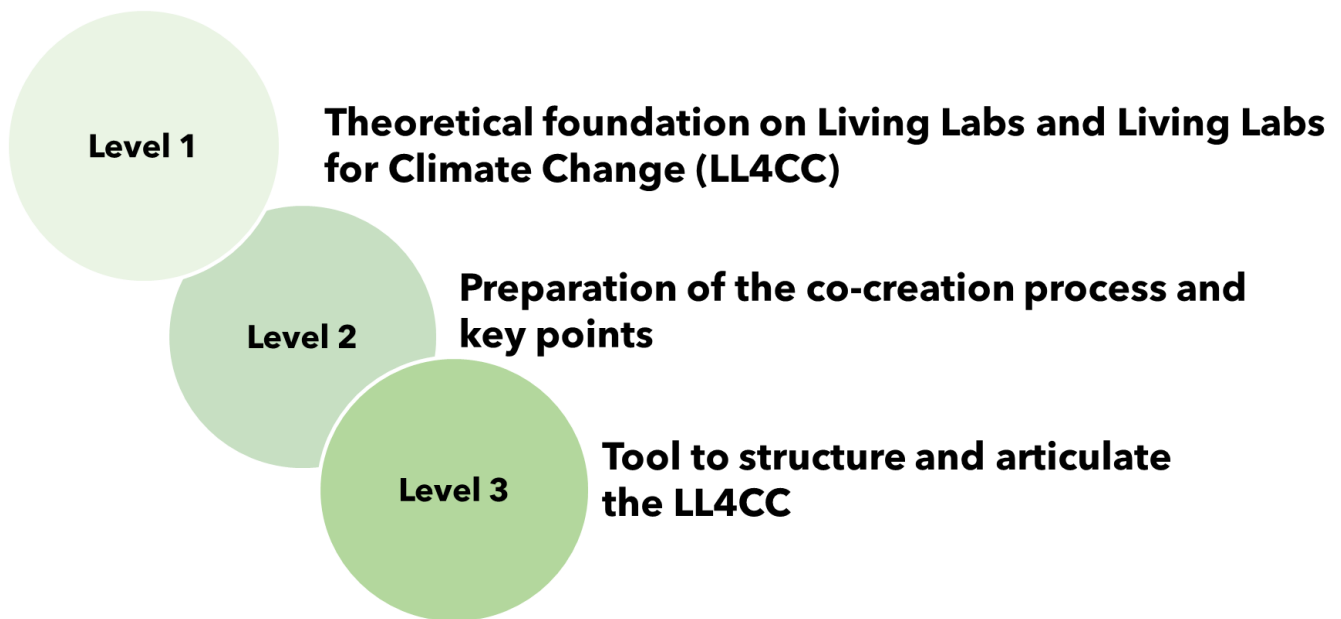
Figure 2: Diagram of the three levels of the methodological guide. Own elaboration.

Level 1: Theoretical foundation, corresponding to sections 2 and 3 of the guide.

- **Definition of the Living Lab (LL) concept:** A detailed explanation of the Living Lab concept and its core characteristics.
- **Definition and context of the LL4CCs:** Defining the LL4CCs within the Life eCOadapt50 project, considering their objectives, their importance in climate change adaptation, and their key strengths and benefits.
- **Key aspects of LL4CC operation:** An analysis of the essential elements for effective operation, addressing aspects such as the **space**, the **co-creation and facilitation process**, **convening power and recruitment**, **compensation for participants**, and **monitoring**. The transformative power of the LL4CCs, their constitution, and their governance are also detailed.

Level 2: Preparation of the co-creation process, corresponding to section 4 of the guide.

With the intention of translating the theoretical foundation into a **practical and operational framework**, the second level of the guide specifies the key points to ensure the correct formulation of the Living Labs for Climate Change Adaptation. The key elements for the success of a Living Lab are divided into **five main areas**:

- **Physical space:** The main aspects are defined for preparing a suitable space for the processes driven within the LL4CCs, which is essential for fostering **interaction, creativity, and teamwork** among the participants.
- **Co-creation process:** A proposal for a well-structured process is presented to ensure the **active participation** of all stakeholders.
- **Participant compensation:** Key considerations are presented for **recognizing and rewarding participation**, which is fundamental for maintaining the motivation and commitment of the involved stakeholders.
- **Convening power and recruitment:** The capacity to **mobilize a diversity of stakeholders** is defined, which is crucial for ensuring a richness of perspectives and the generation of innovative solutions to address climate change challenges.
- **Evaluation and monitoring:** An evaluation system is detailed that allows for measuring the **impact of the dynamics**, identifying areas for improvement, and documenting the results.

Level 3: Tool for Structuring the LL4CCs, corresponding to **Section 5** of the guide.

Once the theoretical and conceptual foundations and the key elements for the success of the LL4CCs have been established, the third level encourages moving to **action** by providing the necessary materials and resources to activate the constitution and operation of the LL4CCs. This third level includes a **tool** composed of different exercises that help to articulate the co-creation processes that will take place within the LL4CCs. To achieve this, this tool facilitates the **ideation, collection, organization, and analysis of information** to address the key points for the operation of the LL4CCs.

2. Context: The Living Lab concept

2.1 Definition of the Living Lab concept

Living Labs (LLs) are a type of **Social Innovation Laboratory (SIL).** SILs emerge as spaces for **experimenting with new ways** of addressing the social and environmental challenges that our society must face, through the active participation of individuals directly connected to the challenges themselves (Fernández & Herrera, 2022). The goal is to create meeting spaces to reach concrete solutions through a series of participatory dynamics, processes, and activities. This SIL paradigm helps to collectively define the proposed challenges with the involved stakeholders, including all possible perspectives for the development of coherent and complete solutions that are adapted to the reality of a specific territory. Nevertheless, the most important element of these processes is the **community** that is generated around the laboratory, as it constitutes the basis for the co-creation and implementation of the proposed solutions.

The main difference between SILs and other participatory methodologies lies in the **focus on social innovation**. This approach seeks to promote the **activism of the participants** from a systemic and community perspective. According to Westley & Sam (2015), social innovation is defined as any initiative—be it a product, process, program, project, or platform—that challenges and contributes to changing the established routines of the social system in which we live.

Within the framework of SILs, there is a great diversity of configurations, which vary depending on their specific focus, as illustrated in **Figure 3**.

Figure 3: Summary of Social Innovation Laboratories, inspired by Fernández & Herrera (2022) and URB@Exp (2017). Own elaboration.

Living Labs (LL) represent a specific modality within the SIL framework. they are characterized by a **people-centric approach to innovation**, where the LL actively involves them in the co-creation, development, and evaluation of solutions. In this sense, the European Network of Living Labs (ENOLL) defines the LLs as "open innovation ecosystems in real-life settings, iterating throughout the life cycle of an innovation to create impact." LLs, therefore, focus on the **co-creation of innovations**, whether they are policies, actions, strategies, prototypes, or concrete practices, as solutions to specific challenges situated throughout the different phases of the innovation process.

Social Innovation Laboratories (SILs), and Living Labs in particular, offer a distinct methodology for developing solutions to address current challenges. The active participation of the individuals involved in Living Labs enables the generation of ideas and the securing of continuous feedback to identify and improve solutions.

2.2 Key aspects of Living Labs

As established by the **European Network of Living Labs (ENoLL)**, Living Labs emerge as spaces to foster collaborative innovation in a real-life environment. Unlike other types of laboratories, Living Labs generate an open and flexible space where diverse stakeholders converge to co-create solutions. In this section, and as represented in **Figure 4**, the five key elements that characterize LLs are detailed: real-life setting, active participation, co-creation, multiple stakeholders, and multiple methodologies.
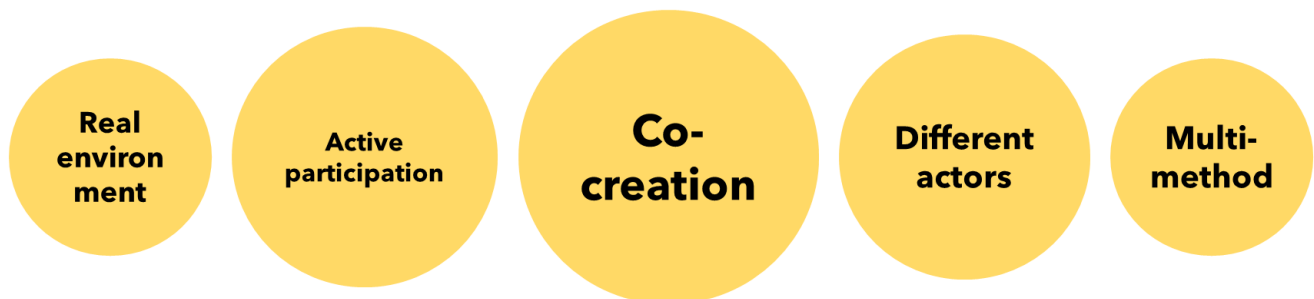
Figure 4: Summary of the key aspects of Living Labs established by ENoLL. Own elaboration.

2.2.1 Real-life setting

According to the European Network of Living Labs (ENoLL), a Living Lab is defined as an open innovation ecosystem in **real-life settings**. This means that Living Labs operate in a genuine, specific social and environmental context, where the solutions developed can be tested and validated directly with the end-users and involved stakeholders. The setting is not limited to a specific physical space but encompasses all aspects of the context in which it operates: physical, social, economic, and cultural. This characteristic distinguishes Living Labs from other innovation methodologies, as it allows for the development of more **effective solutions** that are adapted to the needs of the end-users in a specific territory.

Therefore, LLs are situated in a concrete setting, such as a neighbourhood, a city, a rural area, or a territory. Furthermore, the LL involves individuals linked to the local social fabric. These **real-life stakeholders** are part of the innovation processes, as interaction with these individuals is crucial for generating viable solutions that meet their needs.

Thus, LLs consider the **cultural context** in which they operate, adapting their methodologies to generate innovation and develop participatory solutions that align with the cultural characteristics of the territory. The real-life setting is, consequently, a key aspect for ensuring the social acceptance of the solutions and their positive impact on both the community and the territorial challenges.

2.2.2 Active participation and stakeholder involvement

According to the European Network of Living Labs (ENoLL), **active participation** is the fundamental principle for the correct operation of Living Labs. This is characterized by:

1. Participants play an active role in the co-creation processes. This means they participate in the definition of problems, the generation of ideas, the co-design of solutions, the implementation of prototypes, the scalability of solutions, and the evaluation of results.

2. Living Labs seek the involvement of a wide and diverse range of individuals connected to the environment where the Lab is situated. This entails including individuals from different professional sectors, administrations, businesses, collectives, entities, organized civil society, citizens acting individually, etc. Therefore, it is essential to include individuals from various cultures and diverse backgrounds who may be the end-users of the solutions. It is necessary to ensure that all voices are considered, heard, and that all stakeholders have the opportunity to participate in a **meaningful and equitable manner**, fostering empathy and understanding among diverse groups.

3. Living Labs aim to empower the participants, providing them with the necessary tools and knowledge to contribute effectively and equitably to the innovation processes[1]. Therefore, fostering their **autonomy, creativity, and decision-making capacity** is key.

4. Participants not only form part of the co-creation processes but also assume co-responsibility for their results. This implies that the involved individuals must be committed to the success and implementation of the co-designed solutions.

2.2.3 Co-design and co-creation: Phases and methodologies for the process

Living Labs foster **co-creation and co-design**. This approach corresponds to a process in which participants work jointly and collaboratively to address challenges through the development of new solutions. To do this, it is necessary to **share knowledge, ideas, and experiences**, and to work as a team to obtain creative and inclusive results.

Co-design

Design is a way of thinking that allows for the creation of concrete proposals through a process. As stated by The Design Economy Council (2015), the design process is the path toward creating specific proposals, using a set of tools and means to make the proposal viable and feasible. As described by the 2ISECAP, the design process consists of the following elements:

- **A process:** The path that design follows to arrive at the proposal. It can be iterative and is composed of different phases, which are explained throughout this section.

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[1] The Life eCOadapt50 project includes a **Training Plan** with various training activities (online course, webinars, workshops, etc.) aimed at these participants to capacitate them. This training plan addresses the training needs of the stakeholders identified initially.

- **A proposal:** The result of the ideas that emerge during the process, indicating a possible way forward.
- **Tools:** Instruments and methodologies, whether physical, digital, or intellectual, that enable the execution of the design process.
- **A medium:** The mechanisms for transmitting and realizing the proposal.

In this sense, **co-design**, which includes the collaborative component, represents an innovative methodology where a proposal addressing a specific problem is reached through the participation of various individuals. These people, generally non-design experts, are integrated into the process via tools that capture diverse perspectives. Therefore, co-design is the action of fusing **collective intelligence** to innovate toward concrete solution proposals.

Co-creation

According to the European Network of Living Labs (ENoLL), **co-creation** is a central element in the functioning of Living Labs. It is a process based on collaboration, in which various individuals work together to co-design and reach concrete solutions through the exchange of knowledge, ideas, and experiences.

The necessity for co-creation arises from a profound shift in the understanding of innovation, challenge resolution, and the urgency of delivering rapid, deployable, and efficient solutions. Instead of relying on a small group of experts to make decisions that may lack integration, co-creation recognizes that collective intelligence allows for the aggregation of a wide diversity of perspectives and significantly enriches the idea generation process, leading to more **holistic and appropriate solutions** for specific territorial contexts.

Living Labs, therefore, conduct co-creation processes using various tools and methodologies that collectively help to design concrete solution proposals. Historically, they have employed the **Design Thinking** approach. This approach, which is based on thinking through design, involves different well-established phases. Each phase of Design Thinking consists of concrete steps through which iteration can occur until viable, desirable, and appropriate solutions are reached for each specific challenge and context.

Iterating through the different steps of the Design Thinking framework depends both on the circumstances of the solution proposal being designed and on the specific project that frames the co-creation process. That is, each proposal may advance or regress through the process phases depending on the circumstances it encounters.

The relevance of co-creation rests on three aspects: Firstly, it allows for addressing the **growing complexity of current problems**, as the diversity of methodologies and perspectives helps generate more holistic solutions. Secondly, it fosters the generation of **disruptive ideas** and the exploration of new perspectives, leading to solutions with greater potential for effectiveness. Furthermore, by involving different stakeholders in the process, co-creation ensures that solutions are more relevant and meet the real needs of a specific environment and territory. Finally, co-creation helps generate commitment and build solid relationships among the various implicated stakeholders, which can

facilitate the **long-term implementation** of the solutions. Therefore, co-creation becomes a feasible possibility for addressing the growing complexity of the challenges facing society, by articulating collective intelligence and innovation to propose and develop integrative solutions.

As defined by Mastelic (2019) and 2ISECAP (2024), Living Labs usually use a framework to define co-creation processes, called the **LL Integrative Process**. This framework helps specify the steps to follow to arrive at concrete solutions. As shown in **Figure 5**, it consists of 3 phases or spaces: **problem definition, co-design of solutions, and deployment of these solutions.**

The three phases synthesize the process that occurs in Living Labs, which involves understanding and defining the challenges of the real-life setting where the Lab is located, before ideating and selecting solutions that can be prototyped, tested, and evaluated for implementation and scaling. This is why iterating through the phases of the co-creation process is highly relevant for achieving optimal solutions, always thanks to the participation of the involved individuals.

> **Example: What happens if our Living Lab already has a set of ideas or solution proposals?**
>
> If the LL already has a well-defined challenge and a set of ideas have already been identified with local stakeholders, it is possible to proceed directly to their **co-design, prototyping, and testing.**
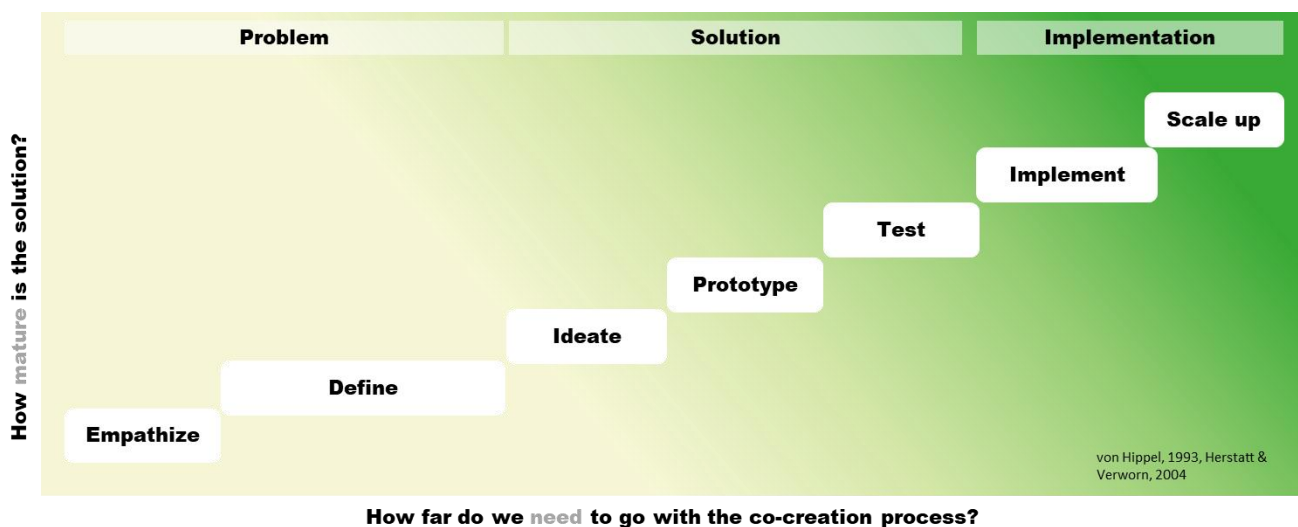
Figure 5: Summary of the innovation process phases adapted from Mastelic (2019). Own elaboration.

1. Problem definition

The first phase of the process aims to bring us closer to the **individuals and the specific territory**, generating knowledge about the socioeconomic and cultural context, the problems, and the challenges to be addressed within the Living Lab. This phase is divided into two steps:

A. **Empathise:** In this context, having empathy refers to approaching the participants or involved individuals in order to thoroughly understand the **needs and problems** they face and that they will consequently try to bring into the Living Lab. As shown by oPEN Lab (2023), some

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methodologies for building empathy are _User Persona_ or _Empathy map_, which help to represent what the different stakeholders involved say, think, feel, and want regarding the challenges, solutions, and the specific territory.

B. Define the challenges: Once empathy has been generated among the individuals connected to the solution and the specific territory, it is essential to define the **problems, causes, and effects**. This is also the time to define the **concrete challenges** derived from these problems, as they will form the basis of the subsequent phases of the innovation process. As shown by oPEN Lab (2023), some of the methodologies for defining the challenges and the context are: _Problem tree_, _PESTEL_ or _SWOT matrix_, etc.

2. Co-design of solutions

Once empathy has been generated among the individuals, and the problem and specific challenges have been defined, the second phase of Design Thinking is the **ideation and co-design of solutions**. Therefore, this phase takes a step forward in addressing the challenges innovatively, whether by generating and selecting concrete ideas, defining shared objectives and visions, or co-designing action plans or specific actions as solution proposals for the challenges. The phase for co-designing solutions, therefore, consists of **ideation, prototyping, and testing.**

A. Ideation: Ideation is associated with **brainstorming** as a tool to identify, categorize, select, and prioritize solution proposals. Every ideation exercise starts from a well-defined problem and becomes a very important process for opening minds and aligning working methods among the participating individuals. It is usually a creative phase where the **quantity of ideas is prioritized over their quality**. To conduct ideation, some methods used to maximize the number of ideas are **Creative Brainstorming** or _brainwriting pool_. Conversely, in order to prioritize them, techniques such as the _COCD box_, the priority diagram, the inside/outside exercise, red and green cards o the _GPS brainstorming kit_ can be used, which help classify ideas based on their viability, originality, or priority. A wide variety of creative tools and methodologies exist for co-designing concrete proposals, such as the _lotus blossom diagram_, which allows for grounding and specifying aspects derived from a single idea.

B. Protoryping and testing: While ideation corresponds to the process of generating proposals, the process of **prototyping and testing** seeks to specify them in greater depth and test them to analyze their development. Testing the solutions is key to bringing concrete solutions to life and to gathering feedback that will improve the final version. Different tools exist for prototyping actions, such as the _desktop walkthrough_, which involves creating a miniature version of the future action, either with construction games or materials like modeling clay. The main idea is to materialize and dimension the prototype to iterate on it relatively easily. Another mechanism would be role-playing, here each involved person can imagine a specific scenario and roles to validate certain parameters of an action. Testing notes, _Storyboard_ or _blink testing_ can be methods for visualizing the implementation of an action and for collecting the different opinions of the connected individuals.

3. Deployment and scaling phase

The final phase of the co-creation processes involves the **deployment of solutions**: implementation and replication. Once an action has been tested and iteratively improved, the last step for implementation is entered. This implementation will take place in real-life settings, once the different actions have been validated and refined. This deployment, as determined by Zipfel et al. (2022), involves **translating theory into practice**. It can be measured using different concepts such as acceptability, adoption, adequacy, feasibility, fidelity, cost, and integration into the territory. All of these are key factors for evaluating the success of an action and monitoring its deployment and replicability. Regarding **scaling**, it is relevant to differentiate between expanding the same initiative (**scaling-out**) and replicating it in another location where it has been implemented (**scaling-up**). This process entails a set of barriers that must be addressed, such as the receptivity of local stakeholders and institutions, governance, etc. Identifying the barriers to facilitate scaling is crucial for deploying the solutions. To do so, it is essential to foster collaboration, generate a sense of belonging to the community, and connect the implicated stakeholders who will make the solutions a reality.

3. Definition of Living Labs for Climate Change (LL4CC)

3.1 Definition and general objective

The **Living Labs for Climate Change Adaptation (LL4CC)** are an initiative of the Life eCOadapt50 project. One of the objectives is to establish structures for the co-creation of climate change adaptation solutions in different Catalan territories. Through these Living Labs, the aim is to foster **active participation, collaboration, and innovation** to develop and implement solutions tailored to the specific needs of each territory and each of the economic sectors involved in the project (fishing, agriculture, livestock, forestry, and tourism).

3.2 Operational objectives of the LL4CC

The main operational objectives of the LL4CCs are:

1. **To organize and orchestrate the participation** of local stakeholders and public and private entities in the climate change adaptation process, with the aim of promoting awareness, knowledge, learning, and training among them.
2. **To identify climate change adaptation actions** that may be eligible for internal and external project funding through calls for grants, subsidies, or other public or private financing methods.
3. **To co-create, test, and prototype** the most appropriate climate change adaptation actions for each territory, according to its physical characteristics, the organization of economic activities, and the capacity of socioeconomic stakeholders to implement them.
4. **To deploy demonstrative climate change adaptation actions,** monitor their implementation, measure their impact, and seek to align the actions with the Local Climate Change Adaptation Strategy, the Catalan Climate Change Adaptation Strategy, the National Climate Change Adaptation Plan, and the European Climate Change Adaptation Strategy.
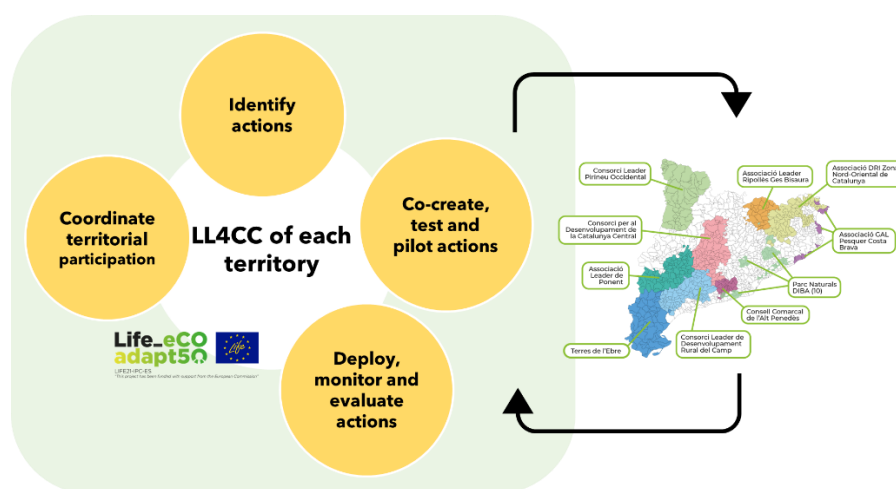5. **To exchange experiences** between LL4CCs within Catalonia.

Figure 6: *Objectives of the LL4CCs in climate change adaptation across the different territories of Catalonia. Own elaboration.*

The creation of the LL4CCs responds to the need to find **favourable environments for debate and active participation** from diverse voices across the territory, with a clear objective: the **co-creation of more inclusive and participatory climate change adaptation actions and measures** for their subsequent implementation.

> The success of the LL4CCs will depend on their ability to **convene and co-design** climate adaptation solutions with diverse stakeholders who possess different experiences, knowledge, and perspectives. **Diversity is a key ingredient for creativity**, as it allows for the exploration of new ideas and approaches that might not emerge from a homogeneous group of stakeholders or from bilateral discussions in the search for climate adaptation solutions with transversal impact.

In this sense, the **LL4CCs are essential** because they:

- **Foster active participation:** By creating favorable environments for debate and active participation, the LL4CCs ensure that the solutions developed respond to the needs and interests of the population.
- **Promote co-creation:** Through collaboration among diverse stakeholders, the LL4CCs enable the development of innovative solutions adapted to the local context.
- **Strengthen the social fabric:** By fostering connection among different stakeholders, the LL4CCs contribute to building more resilient and cohesive communities.
- **Generate networks:** The network of LL4CCs allows for the sharing of experiences, the establishment of synergies, and the optimization of resources, thus boosting the impact of adaptation actions.

In the same way, co-creation within the LL4CCs and the implementation of adaptation actions can foster the following:

- **Identify more effective problems, challenges, and ideas:** The participation of stakeholders with diverse experiences can help to validate territorial vulnerabilities, identify key problems, define challenges, and collaboratively propose ideas for climate change adaptation.
- **Design climate Adaptation solutions:** Co-creation allows the involved individuals to work together to **co-design, prototype, iterate, and deploy** the ideas, taking into account the territory's needs, knowledge, and specific characteristics of the local reality. Therefore, the participation of stakeholders in co-creation not only fosters creativity but also increases the probability that the climate adaptation solutions will be superior and more long-term.
- **Improve governance and decision-Making:** The LL4CCs facilitate collaboration among different institutional, business, research, and social stakeholders, improving governance and decision-making regarding climate change. The implementation of participatory methodologies can help to break established power dynamics and bring forth opportunities for real climate adaptation.
- **Identify complementary funding opportunities:** The solutions co-created in the LL4CCs that are not driven within the framework of the Life eCOadapt50 project can open new funding opportunities, both at local and European levels, public or private, as they are considered innovative projects with high social and environmental impact.

Co-created solutions are more likely to be well-received and supported by all involved stakeholders, as they have been co-designed taking into account their realities, needs, and perspectives. Individuals participating in the co-creation of climate adaptation solutions are more likely to feel ownership over their implementation and, consequently, may feel invested in their success. This can improve their commitment to the action and increase their motivation to make it work, maintain it, and scale it. Furthermore, co-creation can help to identify and address potential and existing obstacles to the implementation of adaptation solutions from the earliest stages of the project. This can save time, resources, and effort in carrying out the specific action.

In general, the LL4CCs can lead to a significant increase in **territorial resilience** to climate change, both from a social and environmental, financial, and governance perspective. Thus, the implementation of co-creation processes from start to finish can be a **lever** to facilitate the adaptation of territories and socioeconomic activities to climate change impacts, minimizing risks and maximizing collaboration opportunities through more innovative and participatory solutions.

3.3 LL4CC constitution

The constitution of the LL4CCs is the first step in translating the idea of co-creation into the different project territories. Before proceeding with the operation of the LL4CCs, however, it is relevant to fulfill the following points:

- **Identification of relevant stakeholders:** The promoting entity of each LL4CC needs to draw up a list of all stakeholders who can contribute to the co-creation process and the execution of the proposed actions. This will start with the stakeholder identification carried out during the drafting of the Life eCOadapt50 project and will ensure the inclusion of all stakeholders, promoting **gender equality**, **representation of all generations**, and the **absence of all forms of discrimination**. Non-territorial partners must identify the individuals within their organization who can participate in the LL4CCs in the different territories (CCOO, UGTCAT, UPCAT, CCB, BOSCAT, CTFC, Diputacions, IRTA...). The list of stakeholders will be available in the project's shared Microsoft Teams space. Section 5 of this document provides a set of exercises for brainstorming the profile of the ideal participant and a database for gathering this information.
- **Guarantees of representativeness:** If it is detected that any group is not sufficiently represented, or is simply absent, and its inclusion is considered valuable and/or necessary to improve the debate process and action identification, a specific call will be issued, directed at the specific group to achieve their representation.
- **Climate change vulnerability framework:** It is advisable to have **climate vulnerability assessments** that identify the climatic risks and hazards of the territories and economic sectors involved in the project. These assessments are key to structuring working sessions and creating tailored action plans. Within the Life eCOadapt50 project, these have been developed in **WP2** (Work Package 2).
- **Internal organization planning:** The LL4CC will determine the individuals who will play a relevant role in the internal coordination of the LL4CCs and their representation at the network level across territories.
- **Operational plan:** The general aspects of the LL4CCs' operation and coordination must be included in the operational plan developed and approved by each territory. The operational

plans must include, at minimum, the content set out in **Annex 1** and must adhere to the formats established by the project. The operational plan will define the contacts and responsible persons, the expected calendar, the format of the calls, the drafting of the agendas, the collection of pre-meeting information, where applicable, and the delivery of pre-meeting documentation, the template and drafting of meeting minutes, and satisfaction surveys.

- **Action plan:** The LL4CCs in each territory must create **action plans** for climate change adaptation for their respective economic sectors involved in the project. The objective is to have a roadmap that defines future objectives and specifies actions to achieve them. Section 6.2 explains how to transition from the climate vulnerability assessment to the formulation of the action plans.

Once the involved individuals in each territory have been identified and the key personnel for the coordination and representation of the LL4CCs have been selected, the territorial beneficiary entities of eCOadapt50 (**EURECAT, CCAP, the GALs, and the Network of Natural Parks of the Diputació de Barcelona**) will promote the constitution of the corresponding LL4CC following these steps:

- **Convening the Constitutional Meeting:** The promoting entity will convene the first meeting before **November 2023**. This constituent meeting will have a single agenda item: the organization of the territory's LL4CC. The promoting entity will initially assume the moderation and secretariat of the constitutional meeting and will propose an organizational structure for the LL4CC's activity, which will take the form of an operational plan. The necessary information will be sent along with the convocation to ensure that attendees are aware of the different points to be covered in the agenda.
- **Common Agenda for Constitutional Meetings:** To ensure the internal cohesion of the work and the coordination of activity among the various Living Labs, the agenda is expected to include the following points:
  a. Welcome and round of introductions
  b. Explanation of the Life eCOadapt50 project and the objectives of the LL4CC.
  c. Presentation of the initial diagnosis (or framework) of climate change vulnerability in the territory.
  d. Presentation of the LL4CC's organizational proposal, covering both logistical issues (responsible persons and driving entities of the LL4CCs, meeting spaces, expected calendar, schedules, etc.) and sectoral climate change adaptation structures.
  e. Presentation and recognition of the different stakeholders and their positions concerning the issue of climate adaptation.
  f. Open floor for interventions.
- **Feedback and communication of agreements reached to attendees:** Once the meeting has taken place, the meeting minutes and the definitive operational plan will be sent to the coordinator of WP3 and the project coordinator.

The LL4CCs will maintain their activity within the framework of the Life eCOadapt50 project until the year **2030** and may consolidate their continuity afterward with the support of the entity that promoted their constitution and following the criteria defined in their operational plan.

3.4 Governance

One of the main objectives of the Life eCOadapt50 project is to raise **awareness and action** regarding climate change adaptation at the local level, while involving **key territorial stakeholders** in the co-creation of an action plan / roadmap and the implementation of actions.

In this regard, as confirmed in other projects, the existence of a **participation and governance space** where the various territorial stakeholders can propose and reach consensus on climate change adaptation actions becomes crucial for identifying, executing, and mobilizing funds for them. Specifically, the prior references for creating these exchange spaces are the **Territorial Tables (MeTACCs)** and **Sectoral Climate Change Adaptation Tables** created under the LIFE CLINOMICS project.

he 19 territories of Life eCOadapt50 have been constituted into **16 LL4CCs**[2]. Each LL4CC will have **organizational autonomy** to adapt its activities to the characteristics of the social, economic, and political organization of its territory, creating the structures that each territory deems most appropriate. In any case, there will be at least one LL4CC in each territory, with representation from all key territorial stakeholders. Beyond this, other governance spaces may be created for each of the socioeconomic sectors. Thus, the co-creation process of the Living Labs can be carried out in **plenary meetings** of all its members or in **sectoral or sub-territorial meetings** (county or similar) focused on specific themes for each socioeconomic sector of the project or based on a general civic interest.

Throughout the project, **inter-territorial workshops** will be developed where work will be carried out jointly with all the established LL4CCs. These will be spaces for networking and exchanging experiences and knowledge (see Section 6).

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[2] Els Parcs del Garraf, Foix i Olèrdola actuen com un únic LL, i el Parc del Castell de Montesquiu s'ha integrat al LL de l'ALRGB, de manera que en realitat acaben sent 16 LL4CC.

4. Key aspects for the operation of the LL4CC

Each constitutional plenary of the LL4CCs will establish the basic organizational criteria for its operation. It must be noted that they require **meticulous planning and management** to ensure their success. This success depends on several factors. Among these, the following stand out: an appropriate **physical space**, the capacity to **mobilize different stakeholders**, the definition of a clear and robust **co-creation process**, the management of participants' **expectations and compensation**, and finally, the implementation of a system for the **evaluation and monitoring of process results**. These elements, represented in **Figure 7**, are interdependent and indispensable for ensuring that the LL4CCs become **drivers of change** and generators of climate adaptation solutions suitable for the different territories.
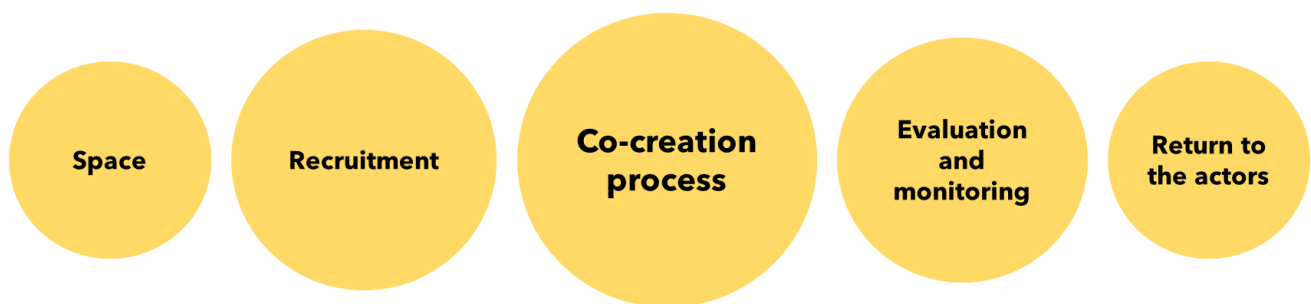
Figure 7: Key aspects for the operation of the LL4CC. Own elaboration.

4.1. Participation space, preferably physical

The time of the LL4CC's constitution will determine whether the new body (**Living Lab**) will be established as a new platform or will leverage an **existing participatory body** that meets all the characteristics and guarantees to act as a Living Lab and adopts the provisions of this methodological proposal.

The characteristics of the territory and the origin of the members of the participatory body will determine the viability of establishing a fixed meeting space or the need to seek various spaces in different parts of the territory to hold sessions throughout the project. Nevertheless, it should be noted that an adequate **physical space** provides an environment conducive to **interaction, creativity, and teamwork**. This space should fulfill the following characteristics:

- **Accessibility:** It must be easy for all involved stakeholders to access, whether physically or online.
- **Flexibility:** The space must be adaptable to the needs of the different activities carried out, ranging from workshops and meetings to exhibitions and demonstrations.
- **Materials:** It must be equipped with the necessary material resources to facilitate communication and teamwork.
- **Atmosphere:** It must be a pleasant, inspiring, and comfortable space that encourages the active participation of attendees.

In addition to these general characteristics, a physical space could include specific elements that favor co-creation, such as:

- **Teamwork zones:** Spaces designed for participants to work together on collaborative projects.
- **Informal zones:** Informal spaces where participants can rest, socialize, and exchange ideas.
- **Exhibition zones:** Spaces where the results of the projects developed in the Living Lab can be displayed.

4.2. Co-creation process and facilitation

A well-structured co-creation process is a tool for addressing the **complex challenges of climate change adaptation** and providing concrete solutions for taking action. However, co-creation is a process complex in its challenges, especially when it comes to managing the dynamics among the different involved stakeholders. This phase is often considered the most sensitive of the process, as it requires special skill to build relationships of trust, manage different perceptions and expectations, and foster collaboration among diverse individuals.

Co-creation is, therefore, a dynamic process that seeks the active participation of diverse stakeholders to build joint solutions. Nevertheless, this diversity of stakeholders, each with their own perspectives, needs, and objectives, can generate tensions and make reaching consensus difficult when striving for the collective construction of solutions. In addition to the diversity of interests, power relations among individuals can be unequal, which may influence the dynamics of the co-creation process and generate a bias in the results. For example, some individuals may have more assigned power or resources, with the capacity to exert more influence. This can cause frustration and demotivation among other participants. Therefore, the way sessions are communicated and facilitated, and how decisions are made, can hinder the building of trust relationships. Finally, the **lack of initial trust** among participants is another challenge to overcome. When stakeholders do not know each other well, they may be reluctant to share sensitive information or expose their ideas, which limits the depth of collaboration.

It is interesting to note that, due to the **long-term nature** of the project, not all solutions or actions must be implemented in a single year. The co-creation process is therefore a dynamic framework that allows for the definition and prioritization of action proposals over time. This provides flexibility for working in different stages. This continuous and gradual approach also opens the door to the identification and incorporation of new solutions or actions that may emerge as the project progresses. Therefore, dividing this process into differentiated phases brings order, direction, and flexibility, aiding decision-making. Each phase of the co-creation process plays a specific role and contributes to the overall success.

Below is a proposed set of phases that can be optimal for the design of a co-creation process:

1. In-depth research:

During the first stage of the co-creation process, it is advisable to carry out in-depth research on the **territorial context and the effect of climate change**. This includes:

- **Vulnerability analysis:** Identifying, working on, and helping to complete the **climate change vulnerability assessments** conducted for each territory. Assessments developed within the framework of **WP2** of the project are available. However, each LL4CC can contribute to

completing them and adapting them to the territorial realities, identifying any missing knowledge.

- **Review of existing actions:** Analyzing the instruments, plans, and actions that have already been implemented or designed for climate change adaptation in the territory.
- **Study of local knowledge:** Gathering the knowledge and experiences of local stakeholders regarding the impacts of climate change and possible solutions.
- **Existing working groups:** Detecting existing participatory structures in the territory and networks of entities with varying levels of involvement in climate adaptation.

2. Definition of our LL4CC and the co-creation process:

Once the context of the LL4CC is thoroughly understood, it is essential to define the framework of **objectives, purposes, expected results, and indicators** that will guide the activity.

The co-creation process must have concrete objectives and purposes. Therefore, the design of the co-creation process must be driven within the Living Lab and must specify the following:

- **Clear definition of objectives:** Establishing clear and concrete objectives for the co-creation process that are aligned with the territory's needs and priorities. The prevailing criterion should be to specify **few but very comprehensive** objectives, avoiding overlaps and clearly defining the intention of the process.
- **Detailing expected results and purposes:** Detailing the expected results and purposes of the co-creation process involves clearly and specifically defining what is intended to be achieved and what positive impacts are sought. This allows for orienting the materials and the work of the participants, focusing discussions, and ensuring that the results obtained are relevant, useful, and contribute to confronting the challenges of climate change adaptation.
- **Explicit roles and internal governance of the LL4CC:** Establishing a clear and effective internal governance structure that defines the roles and responsibilities of each participant.

In order to define and specify the co-creation process, the **"Tool for the Living Labs"** has been designed. As explained in **Section 5**, this tool aims to serve as an exercise to detail, monitor, and evaluate the key aspects for the functioning of the co-creation processes that occur in the LL4CCs associated with the Life eCOadapt50 project. Each section of the tool provides the necessary information, examples, and nuances to aid reflection and specify the co-creation process.

3. Proposed co-creation session concepts:

Once the horizon of the co-creation process is clear, it is necessary to define how to reach it. Thus, each action resulting from the co-creation process must be designed to achieve a specific objective and ensure the pertinent expected results. Furthermore, due to the **diversity of stakeholders involved**, the complexity of the challenges to be addressed, and the characteristics of the territory in question, careful design and selection of methodologies are needed to foster effective participation, the generation of creative ideas, and the building of consensus among participants.

Although **Section 5** of the document covers the tool for designing the co-creation process, a set of session concepts that can serve as inspiration for the different LL4CCs is proposed below:

- **Initial session:** This session can be fundamental for establishing the basis of the process and fostering familiarity among the involved individuals. It can serve to present the project clearly and concisely, define the objectives, the scope of the co-creation process, and the trajectory of the actions. Furthermore, it should outline the meeting agenda, the methodology to be used throughout the process, and the relevant communication channels. It is highly relevant to generate a **sense of belonging and motivation** among the participants.

- **Workshop 1: Empathy and validation.** The first workshop can serve to conduct an empathy exercise among stakeholders and validate the baseline information (from the research phase) to calibrate it with the stakeholders. This session can help ensure that all participants have a shared knowledge base and understanding of the current situation of the territory regarding climate change adaptation challenges. It is a key opportunity to value the knowledge of local stakeholders and consolidate the next steps of co-creation, while identifying different perspectives and calibrating expectations around territorial vulnerability, challenges, previously planned actions, and the network of stakeholders linked to the LL4CC.

- **Workshop 2: Brainstorming and co-design of actions for climate change adaptation.** This workshop can serve to ideate and design climate adaptation solutions using co-creation dynamics. This is where the collaboration and creativity of the participants are fundamental to identifying innovative and effective actions for climate change adaptation, tailored to the needs of each territory and the vulnerability assessments. The required depth of involvement of the different stakeholders must be considered, ensuring that their contributions are optimal for the workshop's purpose. The creation of sub-groups will be valued if the goal is to seek climate adaptation solutions for specific economic sectors (agriculture, livestock, forestry, tourism, fishing). It is important to emphasize that the workshop does not require starting from scratch, as existing proposals or projects in the territory can be improved and worked upon. To optimize the work, the establishment of working tables based on the **expertise levels** of the territorial stakeholders can be promoted, to ensure that adaptation solutions are as effective and in-depth as possible and that participants feel they are in the correct place.

- **Workshop 3: Prioritization of actions and prototyping of viability.** Once actions are generated, it is necessary to prioritize them and analyze their viability. This session can allow for the selection of the most relevant and realistic actions, taking into account the set of established criteria of the Life eCOadapt50 project and the territorial reality.

- **Follow-up session: Explanation of co-creation process results, definition and/or review of next steps for execution and monitoring of proposed actions.** This session can serve to summarize the results obtained throughout the process, share the decisions made, and define the next steps for the implementation or monitoring of the solutions. It is an opportunity to celebrate successes and motivate participants to continue working together.

It is important to emphasize that each territory can **adapt the proposed co-creation sessions** according to its needs, either reducing or duplicating efforts based on the specific context. Furthermore, as detailed in **Section 2.2.3**, the selection of participatory tools and methodologies can help guarantee the success of this process. It is also fundamental that the participating individuals continuously evaluate the sessions, collect suggestions for future activities, and adapt them to the diverse needs and capacities of the participants.

4. Relevance of good facilitation

Facilitation is the process of guiding and supporting a group of individuals to achieve a specific objective throughout the co-creation workshops. An individual who adopts the facilitator role is responsible for creating an optimal environment for communication, problem-solving, and group decision-making. Below are some recommendations to ensure the success of the facilitation process:

- **Relaxed and safe working environment:** It is very relevant to generate a working environment where different individuals feel comfortable and valued, guided by a team that ensures impartiality and neutrality.
- **Clear and transparent communication:** Establishing open, simple, and dynamic communication channels is essential for building trust.
- **Active and balanced listening:** Paying attention to the opinions and needs of all stakeholders demonstrates respect and fosters dialogue. However, it is relevant to be able to gather and reflect the different perceptions equitably.
- **Empathy:** Putting oneself in the participants' shoes helps to understand their perspectives and build bridges between different viewpoints.
- **Consensus building:** Seeking solutions that satisfy the needs of all stakeholders, even if this means making concessions.
- **Participatory methodologies:** The use of participatory methodologies and proper facilitation must allow a voice to all stakeholders in order to build a sense of shared ownership regarding the solutions and actions that will be worked on in the field of climate adaptation in each specific territory and sector.
- **Celebration of successes:** Recognizing the group's achievements helps to reinforce the sense of belonging and motivate the participants.
- **Constructive feedback:** Offering and receiving feedback from participants honestly and respectfully fosters mutual learning and continuous improvement.

Some LL4CCs may choose to **outsource this function** to a specialized company. This can be an appropriate decision if funding is available. Expert facilitation could maximize the success and operation of the co-creation workshops in the LL4CCs. The facilitating team, as a **catalyst for dialogue**, can help create an environment of trust and ensure results where differences of opinion are managed constructively and where ideas are transformed into concrete and empowering actions to face the challenges of climate change. These are some of the benefits of having an optimal facilitating team:

- **Process management:** An expert facilitating team can guide the group through the different phases of the co-creation process, ensuring that objectives are met and an appropriate pace is maintained. This includes developing the agenda, managing time, encouraging the participation of all members, and ensuring that consensual and balanced decisions are made.
- **Creation of a safe and inclusive environment:** The expert team can foster a safe environment where trust and respect among participants prevail. By creating comfort, it is easier for them to express their opinions and ideas, regardless of their level of experience or knowledge. This is especially important in complex topics like climate change, where different perspectives and degrees of knowledge may arise.

- **Conflict management:** In any co-creation process, differences of opinion are inevitable. The facilitating team can help manage these conflicts constructively, assisting the group in finding common ground and reaching consensual solutions.
- **Dynamization techniques:** The facilitating team should have experience in implementing a wide range of techniques and tools to energize the workshops.
- **Participant empowerment:** Furthermore, an expert can help **empower the participants**, making them actively participate and feel essential both to the co-creation process and to the solutions developed. This increases commitment and motivation.

Expert facilitation must promote **neutrality**, balance voices, and avoid imposing or conditioning the opinions of the participants, ensuring that all voices are heard equitably. In this way, the risk of workshop dynamics being conditioned by biases or personal interests of the organizing entities is minimized, thus favoring the generation of collective and innovative solutions.

4.3. Participant's compensation

Once the co-creation process has been formulated, designing compensation mechanisms for the individuals participating in the LL4CCs can contribute to guaranteeing the **continuity and success** of the co-creation processes. Furthermore, it is an act of recognizing the valuable commitment in time and effort made by each participant in the LL4CC. These mechanisms can foster engagement and ensure the sustained nature of their involvement.

Regarding the types of compensation, two major groups are distinguished. On the one hand, **intrinsic compensations** are those that arise from the participation process itself and are related to the personal and professional satisfactions obtained by participating in a project such as Life eCOadapt50 and the LL4CCs. These are rewards that motivate individuals to remain involved.

Examples of **intrinsic compensations**:

- **Publicly acknowledging their contribution and executing the actions:** Being recognized by the community for their contribution to the project and seeing the co-created actions become a reality.
- **Sense of belonging and territorial rootedness:** The feeling of being part of a project they consider important for the preservation of their territory and being able to contribute to it directly.
- **Personal and professional development:** The opportunity to acquire new knowledge and establish professional contacts.
- **Opportunity to be part of the change:** The satisfaction of knowing they are contributing to solving a global problem like climate change. However, it is essential to ensure the **significance** of the contributions reflected during the co-creation process and the management of expectations regarding the potential impacts that can be generated.

On the other hand, **extrinsic compensations** are those provided to participants as an external reward for their involvement in the project. These can be **tangible rewards**, such as seeing the co-created actions become a reality, or they can be of an **immaterial or symbolic nature**.

Nevertheless, beyond compensation, it is fundamental to foster **civic participation** as an essential pillar for the project's success. The collaborative spirit and voluntary involvement of citizens in co-creation processes can generate a positive impact that goes beyond specific compensations. The willingness to contribute to the common good in the development of climate change adaptation actions for the territory, the satisfaction of being part of a transformative initiative, and the creation of **networks of trust** among stakeholders are all elements that reinforce the solidity and sustainability of the project. Therefore, promoting a culture of participation based on **co-responsibility, effective action, and the desire to generate positive collective impacts** should be a priority in any co-creation process.

Examples of **extrinsic compensations** that can serve as an initial incentive for participation and can help cover or compensate associated expenses:

- **Training:** Offering courses or workshops related to the project's theme.
- **Certificates of participation:** Issuing certificates that officially accredit participation in the project and the hours dedicated.
- **Access to resources:** Providing access to libraries, databases, or online platforms, etc.
- **Economic incentives:** Offering financial compensation to cover expenses for transport, subsistence (meals), and time commitment.
- **Products, services, or experiences** related to the project.

4.4. Convening power and recruitment

Once the co-creation process and potential compensation mechanisms are established, the LL4CCs must have the capacity to **identify, convene, and recruit a wide range of stakeholders** to make the process possible. An adequate selection of participants ensures the diversity of perspectives, knowledge, and interests necessary to generate innovative climate adaptation solutions. Therefore, to achieve diverse and representative participation, it is essential to establish the types of stakeholders and a clear recruitment strategy that allows reaching the right people.

1. **Define the frequency and modality of meetings**

A minimum of **two meetings per year** will be guaranteed, and efforts will be made toward the long-term sustainability of the Living Lab, beyond the project's completion horizon.

Although the **in-person format** will be prioritized for the sessions, the option may be taken to conduct them online occasionally, adopt a hybrid model, and even consider recording the sessions on video and/or live streaming them.

2. Define the participant profile

As shown in the **"Tool for the LL4CCs"** in **Section 5**, it is essential to know which individuals need to be incorporated into the co-creation process and why. Below is a set of questions that can help specify the participant profile to include in the LL4CC dynamics:

- **What diversity of perspectives should be included?** It is necessary to ensure participation from individuals in academia, the business sector, public administration, and civil society, but also to consider demographic aspects (different ages, genders, and cultural backgrounds) to achieve inclusive perspectives.
- **What knowledge and experiences are necessary?** It is relevant to consider whether the involved individuals require basic knowledge related to technical, social, and environmental aspects relevant to climate adaptation.
- **What level of involvement is expected?** Another key aspect is understanding the expected role of the involved individuals to manage expectations and calibrate efforts for both the Living Lab and the participants.

3. Develop a clear and attractive message

To capture the attention of the person targeted for recruitment, a clear message that attracts the attention of the objective audience must be defined. Some aspects that can be detailed to achieve this are:

- **What will the session offer?** It is valuable to develop attractive material that explains, clearly and concisely, both the objectives and the benefits of participating in the session. This can help moderate the expectations and the focus of the sessions.
- **Why is participation important?** It is also relevant to highlight the importance of having participants, particularly emphasizing the need to find joint climate adaptation solutions and actions.
- **How can they register?** Once the participant's attention is captured, it is key to successfully recruit them via a **simple and intuitive registration process**. Some options include online forms, although more analog mechanisms, such as a telephone call or email support, can be used to ensure the registration of participants.
- **Identify Communication Channels.** Once the objective audience has been identified and the message developed, it is necessary to decide whether to amplify the dissemination. Some channels that can be used are the following, although they must be specifically adapted to the target audience:
  a. **Social Networks:** Using the social networks of the project, the organization, and other collaborating organizations to disseminate information about the participatory sessions.
  b. **Institutional Websites:** Publishing the calls on the websites of the involved bodies.
  c. **Local Media:** Collaborating with local media to reach a wider audience, such as radio or television, among others.
  d. **Associations and Entities:** Contacting sectoral associations and entities to receive their support and disseminate information among their members.

The communication of the co-creation process has certain implications that must be considered. Firstly, all territorial interest must be channeled through registration mechanisms for the events. In

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this regard, it is relevant to ensure that participants' data will be treated with **confidentiality**. Secondly, different recruitment scenarios must be considered, and the strategy adapted based on the results. Thirdly, a **harmonious message** must be conveyed to avoid fostering different and unfocused expectations around the process and the expected results.

4. **Personalize the invitation and incentivize participation in each session and between workshops**

Once registrations are channeled, it is time to address the interested and registered individuals. Therefore, messages must be **personalized** based on each person's interests and profile. Technical or excessively formal language should be avoided when maintaining contact with registered stakeholders.

Furthermore, it is important to create a **welcoming and pleasant atmosphere**: Frame the co-creation dynamics as engaging and relaxed spaces. Offering healthy snacks and drinks during breaks is recommended to maintain the participants' energy.

5. **Follow-up with Invited Individuals**

Once contact has been established with registered individuals, it is key to consolidate the stakeholders' participation in the co-creation process and the execution of the actions. To do this, it is necessary to:

- **Send reminders:** Before each session, send personalized emails or messages reminding them of the date, time, and location of the meeting.
- **Confirm attendance:** Verifying participants' attendance confirmation a few days before the session can be key to ensuring their participation. For cases where it is necessary, such as for stakeholders affected by the **digital divide**, it may be useful to establish telephone calls to confirm attendance and resolve any doubts, always with their consent.

4.5. Evaluation, monitoring and documentation

To trace the impact and conduct appropriate monitoring of the entire co-creation process, the **Perception Barometer** exists. This is a study that evaluates the level of knowledge, interest, and involvement of stakeholders in the eCOadapt50 project through a survey. The survey identifies the degree of sensitivity and differences among stakeholders, and their predisposition toward adopting climate adaptation strategies.

The Barometer is carried out at **three moments** in the project (beginning, middle, and end), and allows for assessing the progress of the territories and sectors in relation to their knowledge of the effects of climate change, as well as the evolution of their training and involvement needs. For more information on the structure and content of the survey, as well as the results obtained, the Barometer reports, published by the Diputació de Barcelona, can be consulted.

Another tool available for evaluating the co-creation process of the LL4CCs is the evaluation form provided in **Annex 2**. As a template, it is essential to adapt it to the reality of each session.

The preparation of documents such as **minutes, reports, or simple technical summaries** is very relevant, and they should be shared with the attendees. This serves as a testament to the work carried

out, the results obtained, and the lessons learned. These documents ensure that all participants and interested parties have a clear view of the process and the results, providing a solid foundation for future projects and facilitating the communication of results to a wider audience.

Therefore, the LL4CCs must establish mechanisms to:

- **Measure the impact:** Quantify the changes generated by the co-creation process, both at an individual and collective level.
- **Identify best practices and learn from the experience:** Detect the actions and strategies that have been most effective and extract the lessons to replicate or improve the actions for the replicability of the solutions.
- **Readjust the process:** Make the necessary changes to optimize the functioning of the LL4CC.
- **Report and document progress:** Prepare reports that will serve for strategic decision-making, process documentation, and the dissemination of best practices. Apart from progress documents, it is very important to inform everyone who participated in the process of the final result and how it materializes into actions on the territory.

To measure and trace the co-creation process, a set of **data collection tools** exists. It is important to combine them to obtain a more complete view of the co-creation process. For example, participatory dynamics, surveys, or interviews can be used to gather information on participant satisfaction.

5. LL4CC structuring and articulation tool

To enable the LL4CCs to function, a **tool** has been developed to define and consolidate all the key information necessary for orchestrating the LL4CCs. The main objective of this tool is to support the **planning, monitoring, and evaluation** of the Living Labs for Climate Change Adaptation (LL4CC) associated with the Life eCOadapt50 project. Through it, the baseline information required to launch an LL4CC can be clearly and concisely specified. Each section of this table functions as a **block of the LL4CC**. Therefore, each section provides the information, examples, and necessary details to aid reflection and specify the co-creation process. A visual summary of the tool can be seen in **Figure 8**.

A. LL4CC identity: Who we are, mission, and vision of the LL4CC.

This section seeks to define the essence of our LL4CC. Here, its name, its mission (its purpose), and its vision (where it aims to arrive) are established.

B. Objectives: Objectives, expected results, and indicators of the LL4CC.

This section aims to specify the objectives, expected results, and indicators that the LL4CC intends to achieve. This strategic framework must be linked to the mission and vision.

C. Participants: Profile.

This section seeks to detail the ideal profile of the individuals who will participate in the LL4CC and to brainstorm the entities that should be involved.

D. Participants: Database.

This section is key for detailing the profiles of the individuals who will need to be involved, as well as the different contact interactions, their role, and potential involvement and feedback.

E. Generals aspects of the co-creation process: Sessions, place, team and stage of the innovation process.

This section seeks to preliminarily define the most basic aspects for charting the course of the co-creation process. It covers the **number of workshops, associated team members, stage of the innovation process, and the space** where the sessions will be held.

F. General formulation of the sessions: First draft of the workshops.

This sixth section aims to define the different sessions in general terms to obtain a **high-level view** of the co-creation process.

G. Calendar: Temporality of the sessions.

The seventh section of the tool seeks to specify the estimated **start and end dates** for each session.

H, I, J, K, L i M. Sessions: Definition of each session.

This set of sections aims to define, in detail and precisely, each session of the co-creation process.

Figure 8: *Figure summarizing the content of the Tool for the LL4CC. Own elaboration.*

6. Interterritorial coordination and support

The head of **WP3** (Work Package 3), the **University Research Institute on Sustainability, Climate Change, and Energy Transition (IU-RESCAT)** of the Universitat Rovira i Virgili (URV), together with the head of **WP5**, **ARCA**, and the **Diputació de Barcelona**, are responsible for establishing a communication channel between the project's Living Labs. Their goal is to promote **coordination and cohesion** among them, facilitate the **dissemination and replication of best practices** (as sought in WP10), and foster the achievement of synergies. To this end, the URV promotes three initiatives:

- Organization of inter-territorial plenary meetings.
- Recommendation to draft an action plan with climate adaptation measures.
- Coordination of the Technical Advisory Board (TAB).

6.1. Interterritorial plenary meetings

At least **one annual plenary meeting** is held with all Living Labs of the Life eCOadapt50 project to share the most substantive elements of their activity. These sessions can also focus on a specific economic sector of the project.

The joint sessions of the LL4CCs can be developed in a **mixed format (in-person and streaming)**, ideally ensuring the video recording of the session. Ideally, the presence of the project partners and at least the individuals designated by each LL4CC as responsible for the Living Lab and/or the economic activity sector should be guaranteed.

6.2. Action plans

Each LL4CC should draw up a document that defines the **climate adaptation action plan** for its territory and the involved economic sectors. The development of these plans responds to a dual necessity:

1. **To guarantee a structured adaptation strategy**, avoiding the fragmentation of initiatives and optimizing available resources. The limited economic resources for action execution within the project make it essential that the implemented actions are **demonstrative and prioritized** according to objective criteria.
2. **To serve as a management tool** for planning the Living Labs' topics. Having an action plan allows us to move from **vulnerability to action** (see figure below), identifying challenges and opportunities that outline objectives or action axes. Furthermore, it allows for the identification of vulnerabilities or axes that have not yet been addressed.

Figure 9: From climate vulnerability to action. Own elaboration.

Action plans should be primarily designed by the **Living Lab (LL) facilitators**. They must then be presented to all LL stakeholders with the purpose of **validating and enriching** them. At least one meeting should be dedicated to reviewing and co-defining the starting points to ensure that all territorial voices are represented.

The actions formulated can be proposed by any member of the LL4CCs, although they must go through the **co-design process** to include the maximum diversity of perspectives. They can also be encouraged by the facilitating agents or those responsible for coordination. Following this, **pre-action sheets** must be completed using a template provided by the Living Lab facilitators. These are concise documents that summarize the objective and scope of the action intended for promotion.

However, this procedure can be reversed. In practice, there is often an initial action proposal that already has a pre-action sheet, and it is subsequently put through the co-design process with the rest of the stakeholders.

In an initial phase, the pre-action sheets are sufficient for maturing the idea and establishing an initial **prioritization** based on **relevance and feasibility** (economic, technical, institutional, etc.). These pre-action sheets must:

- **Serve as a basis for discussion and prioritization** within the Living Lab: Involved stakeholders can evaluate the feasibility and relevance of each action.
- **Facilitate the transition to demonstrative actions:** Selected pre-action sheets can evolve into more complete **demonstrative action sheets**, although sometimes the extensive sheet can be completed directly.
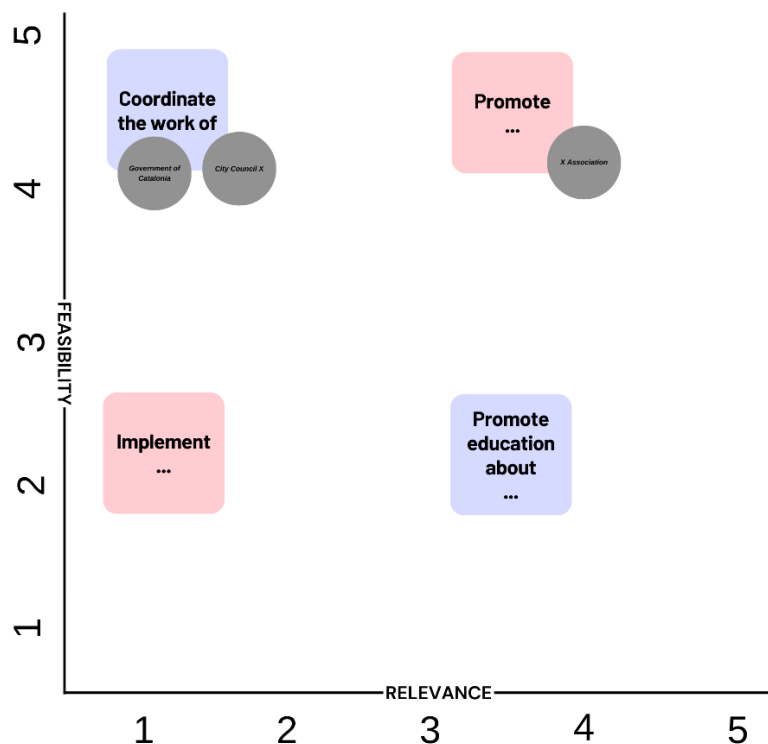

Figure 10. Possible Feasibility-Relevance axis for the preliminary assessment of climate change adaptation actions. Own elaboration.

As presented in **Figure 10**, one could work with a two-axis mind map where each attendee of the Living Lab places the actions in the zone of the graph that they deem appropriate (using adhesive notes or similar; or web platforms that allow this – such as Mural or Canva). This would be a way to transfer the debate on the priority of multiple actions (qualitative) into a mosaic that allows us to **quantify and hierarchize** the priority.

Those actions scoring highest on the **Viability – Priority axis** will be the ones that can be developed in greater depth (by completing the **demonstrative action sheet**) and submitted to the **Technical Advisory Board (TAB)** for review, suggestions for improvement, and evaluation.

6.3. Technical Advisory Board (TAB)

A group of scientific and technical individuals with expertise in various subjects is available and assigned the task of reviewing and making suggestions for improvement on the climate adaptation actions that emerge from the different LL4CCs. They may also be asked to participate in an inter-territorial plenary meeting at certain times.

The **TAB** receives those actions submitted by the LL4CCs to evaluate their alignment with the sectors and territories of the project, the action's contribution to **climate change adaptation**, **feasibility**, **transversality**, **replicability**, **innovation**, and **eco-social benefits**, as shown in the following table. Furthermore, the actions' potential to be **nature-based solutions** is evaluated, as it is one of the project's objectives to launch demonstrative actions considered as such.

Module I: Climate change adaptation

Criterion	Sc.	Explanation
Response to vulnerability risks (AC1)	3	The action addresses **very high or high risks** in the territory, contributes to the adaptation measures included in the territorial vulnerability analysis, and is expected to have a **high potential** to contribute to adaptation (due to its territorial scope, transversality, degree of adaptation, etc.).
	2	The action addresses **very high, high, or medium risks** in the territory and/or contributes to the adaptation measures included in the territorial vulnerability analysis (but is not expected to have a high potential to contribute to adaptation).
	1	The action does **not** address very high, high, or medium risks in the territory, **nor** does it contribute to the adaptation measures included in the territorial vulnerability analysis.
Durability and Territorial Interest (AC2)	3	This is an action with a **high durability** over time, ensuring that the adaptation benefits will be maintained in the long term without the need for constant reformulation or additional investment. Furthermore, it addresses **territorial interests** and not strictly individual interests.
	2	The action presents a **medium durability** over time, with limited or shorter-duration benefits, and with only partial territorial interest.
	1	The action presents a **low durability** over time, with very limited or ephemeral impacts, and with scarce territorial interest.

Module II: Feasibility

Criterion	Sc.	Explanation
Economic feasibility (EF)	3	The action has **secured co-financing** and is expected to have continuity without depending on short-term subsidies (≤5 years) if its duration is longer.
	2	The action has **secured or foreseen co-financing** and is expected to have continuity without depending on medium- or long-term subsidies (>5 years) (even with a lower potential), *or* co-financing is pending but the action is expected to have continuity without depending on short-term subsidies (≤5 years).
	1	The action is **not expected to be able to continue** without depending on subsidies, *or* it is expected to have continuity without depending on medium- or long-term subsidies (>5 years) but co-financing is pending.
Technical feasibility (TF)	3	**No impediment** to the action's implementation is foreseen due to **technical aspects** (logic of the general action plan, technical and technological means, location, etc.).
	2	The action's implementation could be **limited or delayed** due to **technical aspects** (logic of the general action plan, technical and technological means, location, etc.).
	1	The action's implementation could be **significantly compromised** due to **technical aspects** (logic of the general action plan, technical and technological means, location, etc.).
Social feasibility (SF)	3	There is **social support** and a **willingness to involve key stakeholders** which is expected to facilitate the action's implementation.
	2	The action's implementation could be **limited or delayed** due to a **lack of social support** or limited involvement of key stakeholders.
	1	The action's implementation could be **significantly compromised** due to **social opposition** or the absence (or lack of willingness to involve) of key stakeholders.
Political/institutional feasibility (IF)	3	There is **political or institutional support** which is expected to facilitate the action's implementation.
	2	The action's implementation could be **limited or delayed** due to a **lack of political or institutional support**.
	1	The action's implementation could be **significantly compromised** due to **political opposition** or a lack of political or institutional support.

Module III: Transversality

Criterion	Sc.	Explanation
Internal transversality (IT)	3	The action contributes to climate change adaptation in **three project sectors**.
	2	The action contributes to climate change adaptation in **two project sectors**.
	1	The action contributes to climate change adaptation in **only one project sector**.
External transversality (ET)	3	The action contributes to climate change adaptation in one or more project sectors **and two additional sectors external to the project**.
	2	The action contributes to climate change adaptation in one or more project sectors **and one additional sector external to the project**.
	1	The action **does not** contribute to climate change adaptation in other sectors external to the project.

Module IV: Replicability

Criterion	Sc.	Explanation
Sectoral replicability (SR)	3	The action is **easily replicable across all sectors**, taking into account sectoral specificities.
	2	The action is **replicable in some sectors**, taking into account sectoral specificities.
	1	The action is **not replicable in other sectors**, taking into account sectoral specificities.
Territorial replicability (TR)	3	The action is **easily replicable across all of Catalonia** or, in the case of the fishing sector, across the **entire Catalan coast**, taking into account the local specificities of each territory.
	2	The action is **replicable in some territories of Catalonia**, taking into account the local specificities of each territory.
	1	The action is **not replicable in other territories**.

Module V: Innovation

Criterion	Sc.	Explanation
Innovation in governance (GI)	3	The action's **governance is participatory** involving different types of stakeholders who have been involved **since the design phase**, and **equitable and participatory decision-making** is foreseen. Participatory and inclusive decision-making models, implementation of transparency mechanisms, knowledge exchange, etc., are established.
	2	The action's governance is participatory involving different types of stakeholders, but this participation has **not necessarily been present since the design phase**, and/or is mainly limited to some phases of the process (such as execution or implementation). Although collaboration among different types of stakeholders is encouraged, participatory and transparent mechanisms are more limited or less structured, reducing the impact of governance innovation.
	1	The action's governance involves **only one type of stakeholder**, without including other sectors, groups, or perspectives in the process. This results in a **lack of transversality, equity, and innovative participatory mechanisms**, with a centralized or unidirectional decision-making model that does not foster inclusion or co-responsibility.
Technical, econòmic, and/or commercial innovation (TI)	3	The action represents **clear innovation at the Catalan level** concerning technical, technological, economic, or commercial implementation.
	2	The action represents **relative innovation at the Catalan level** and/or **clear innovation at the territorial level** (LL4CC scope) concerning technical, technological, economic, or commercial implementation.
	1	The action represents **irrelevant innovation at the Catalan level** and relative or irrelevant innovation at the territorial level (LL4CC scope) concerning technical, technological, economic, or commercial implementation.

Module VI: Benefits

Criterion	Sc.	Explanation
Ecological benefits (EB)	3	The action is expected to have a **notable positive impact** on the **conservation or improvement of biodiversity** and the ecological functions of ecosystems.
	2	The action is expected to have a **notable positive impact at the environmental level** (saving natural resources, improving environmental quality, etc.), but not specifically on the conservation or improvement of biodiversity and the ecological functions of ecosystems.
	1	The action is **not expected** to have a notable positive impact at the environmental level.
Social benefits (SB)	3	The action is expected to have a **notable impact on the provision of ecosystem services** (provisioning, regulating, and cultural) **AND** that it either generates **direct jobs with fair conditions**, **OR** increases **equity** in the distribution of costs and benefits among territorial stakeholders, **OR** generates some benefit for **vulnerable groups**.
	2	The action is expected to have a **notable impact on the provision of ecosystem services** (provisioning, regulating, and cultural), **OR** that it generates **direct jobs with fair conditions**, **OR** increases **equity** in the distribution of costs and benefits among territorial stakeholders, **OR** generates some benefit for **vulnerable groups**.
	1	The action is **not expected** to have a notable impact on the provision of ecosystem services (provisioning, regulating, and cultural), nor to generate direct jobs with fair conditions, nor to increase equity in the distribution of costs and benefits among territorial stakeholders, nor to generate any benefit for vulnerable groups.

Module VII: Can the action be considered a nature-based solution?

Criterion	Sc.	Explanation
Environmental	Sí	Improvement of biodiversity, water quality, and soil quality through natural or biological processes.
	No	
Social	Sí	Contribution to quality of life, social integration, and/or environmental education and awareness actions.
	No	
Economical	Sí	Stimulus for sustainable economic activity, creation of green employment, or boost to the circular economy.
	No	

6.4. Implementation of actions

Only the most **robust actions with the greatest impact** should proceed to the implementation phase. It is essential to remember that economic resources within the framework of the project are **limited**. Therefore, the demonstrative actions must have a **direct and visible impact** on reducing the climate vulnerability of the territory and serve as a **model for future implementations**.

The remaining actions that cannot be implemented will remain in the **Action Plan** of each territory, and complementary funding will need to be sought for their execution.

In this regard, a procedure for the implementation of actions has been designed and is available to all project members. Specifically, two documents have been prepared, depending on the nature of the project partner:

- Procedure for the Implementation of Demonstrative Actions for supraterritorial entities.
- Procedure for the Implementation of Demonstrative Actions for partners facilitating Living Labs.

7. References

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Annex 1: Operational plan content

To maximize the homogenization of the structure and content of the Operational Plan that will govern the LL4CC's operations, the following set of considerations is foreseen:

1. Contacts and Responsible Persons:

- Identify the contacts and responsible persons for the LL4CC and any other structures created (sectoral, thematic, etc.).
- Specify the individuals responsible for organizational and operational tasks.

2. Logistics of the Participatory Processes:

- **Communication:** A procedure for egalitarian communication among participants and beneficiary entities will be established, covering the issuance of meeting invitations and the channels for submitting contributions to the agenda and the drafting of minutes.
- **Maintenance and update** of the database of stakeholders to be invited to the governance structures, defining their roles in each one.
- **Calendar:** A minimum of **two plenary meetings per year** will be guaranteed. However, the frequency of meetings will be determined by the territories' need and interest, the complexity of climate change impacts in the different territories, the specific territorial characteristics of each sector, and the budgetary and logistical limitations of each partner.
- **Provision of essential material** for the correct development of the sessions: materials, premises, equipment, etc.
- **Preparation and delivery of working materials** for the sessions, adapted to the platform's theme and/or objective.
- **Management and follow-up of meetings:** invitations, agendas, minutes, surveys, etc. Define the individuals responsible for carrying out these tasks. The minutes must record the **number and type of stakeholders** who participated in each meeting. A list of invited individuals and an attendance signature list for those present must be collected at each session. Attendance for those participating online must also be recorded.
- **Preparation of the corresponding reports** on the participatory process and feedback reports to the participants.
- **Establishment of interrelation** with the LL4CCs in the territory and the sectoral groups from other territories.

3. Evaluation, proposal, and promotion of actions and measures:

- Collect the proposed **Climate Change Adaptation (CCA) actions** arising during the sessions and forward them to the partners responsible for **Work Packages 4 and 5** for registration and validation.
- Establish a **prioritization strategy** for actions regarding their development.
- **Promotion of public and private initiatives and investments** in climate change adaptation, providing institutional support, and fostering the participation of territorial stakeholders.
- **Detection of needs** of the economic sectors regarding CCA (training, resources, information, data, etc.) and seeking ways to address them.

- **Collaboration with regional and local PAESCs** (Sustainable Energy and Climate Action Plans) to prioritize climate change adaptation actions and propose new ones where appropriate.
- **Proposal of actions** for submission to grants and calls for aid to secure external funding for the project.

4. Monitoring and dissemination (CCA Observatory):

- **Monitoring and coordination** of the implementation of climate change adaptation actions.
- **Preparation of dissemination documents** on the state of development of climate change adaptation initiatives.
- **Establishing communication** with the public regarding climate change adaptation strategies and planned actions.

5. Contributions from external territorial stakeholders:

External knowledge stakeholders and representative stakeholders of the socioeconomic and political structure from among the eCOadapt50 beneficiaries may be invited when appropriate, as well as other experts deemed of interest.

Annex 2: Session evaluation form

Session name:

Date:

Instructions: Below you can rate the session you have just participated in.

Full name:

_____

1. **What did you like most about the session?**

_____

2. **What would you change for the next session?**

_____

3. **What is your overall rating of the activity/meeting/workshop?**

Not at all valuable	Slightly valuable	Neutral	Quite valuable	Very valuable

4. **What is your opinion on the participatory process?**

_____

A. Logistics and space

To what extent do you agree with each of the following statements?

(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, NA = Not applicable)

Statement	Rating
I received the information about the meeting and all relevant materials with sufficient notice.	☐
The objectives of the meeting were clear.	☐
The meeting had the correct duration and format.	☐
The meeting was well organized and presented.	☐
The space was adequate.	☐
The food provided was appropriate.	☐

Space for additional comments on the space and logistics of the meeting:

_____

B. Participation

To what extent do you agree with each of the following statements?

(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, NA = Not applicable)

Statement	Rating
The presentations and lectures were interesting, clear, and understandable.	☐
During the meeting, I learned new things, or made new contacts with other people.	☐
I felt comfortable throughout the session.	☐
Participating in the event seemed useful to me.	☐
Potential differences or conflicts among participants were addressed constructively.	☐
My expectations for the meeting were met.	☐
The session was a source of inspiration and hope.	☐
If I were invited again, I would return.	☐

Space for additional comments on participation in the event:

_____

C. Co-creation

To what extent do you agree with each of the following statements?

(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, NA = Not applicable)

Statement	Rating
The participatory dynamics helped to finalize proposals and achieve the event's objectives constructively.	☐
I see the usefulness of holding collaborative sessions of this type.	☐
I had sufficient opportunities to participate and contribute my ideas to the meeting.	☐
As a result of this meeting, I better understand the perspectives of the other people.	☐
I had sufficient time to assimilate the dynamic and reflect on it.	☐
The people I collaborated with were open to listening and considered different points of view.	☐
The result of the dynamics seems optimal/correct to me.	☐

Space for additional comments on the meeting dynamics:

_____

D. Conclusions

1. To what extent do you agree with each of the following statements?

(1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, NA = Not applicable)

Statement	Rating
At the end of the meeting, a clear summary, conclusions, and next steps were provided.	☐
I am motivated to continue participating in the project.	☐
Participating in the session increased my knowledge of the subject matter.	☐
I am aware of the contributions that I and other participants can make to the project's objectives.	☐
I would recommend joining the working groups to people around me.	☐

Space for additional comments on the conclusions of the meeting:

_____

2. Which aspects of the meeting did you find most interesting/useful?

(Select all that apply with an X)

□ Interacting, learning, and sharing with other stakeholders.
□ Content of the meeting, topics, and associated debates.
□ The presentations by the meeting organizers.
□ The participatory dynamics and facilitated discussion.
□ The ability to contribute collaboratively to the territory's climate change adaptation.
□ Other: _____

3. What message do you take away after participating in today's event?

_____

4. Did you find anything or anyone missing during the session?

_____

5. What would make you feel valued and/or compensated for participating in sessions like this?

_____

6. This space is for you to express anything you still wanted to say: