D4.1 - Methodological framework for supporting and running the 10 Living Labs

Co-creating new Climate Smart Farm solutions

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Disclaimer

List of Abbreviations

CFD	Climate Farm Demo
NC	National Coordinator
PDF	Pilot Farm Demo
WP	Work Package
LL	Living Lab
M&E	Monitoring & Evaluation
LH	Light House
CSA	Climate Smart Advisors

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Abstract

In Climate Farm Demo 10 Living Labs will be facilitated to co-design new and innovative climate smart solutions in a real-life setting. This deliverable report describes the methodological framework how to set up, run and monitor these Living Labs (LLs).

It provides background, terms and concepts about the origin and use of LLs as facilitated interactive spaces for co-creation. It supports the LL teams in CFD by explaining how a LL could contribute to co-creation of climate smart solutions and the deliverable helps to create a common vocabulary to improve internal communication between the LLs and stimulates mutual learning.

To set up a LL with a common strategy and a plan for action, a roadmap has been developed. It's based on five steps. These steps contain the definition of boundaries and problems, the analysis of stakeholders, the identification of resources, capabilities, collaborations and innovations and the assessment of conditions for setting up a LL. Finally, the LLs will be able to identify actions that need to undertake and understand their climate farm transition through this process. The outcome of this roadmap is a living working strategy and action plan for each LL, to be updated annually.

In CFD facilitators have been appointed for all 10 LLs. Each LL is unique. The facilitator designs 'tailor-made' interventions and provides direction and advice to the LL-participants while also being responsive to participants' views and concerns. To frame the process of development of solutions in the LLs of CFD five stages have been defined. It are iterative stages from an ill-defined problem, an exploration of ideas, a pilot or tested prototype till implementation and scaling. In each stage different supporting tools can be used by the facilitators of the LLs. During the project a number of them will be used and trained related to the specific needs and collective questions of the facilitators of the LLs.

In each LL one person is responsible for Monitoring & Evaluation (M&E) to gain transparency on the co-creation process, to stimulate reflexivity and collective learning and to improve the decision making in the LL. To support the monitor a M&E approach has been developed and described with monitoring of LL-activities, monitoring of key performance indicators & factors, individual and participative evaluations and exchange between the 10 LLs.

Finally, an idea has been given how the 10 LLs will learn from each other in a Community of Practice. Applying this LL-approach in 10 different countries with different contexts provides a rich empirical basis for learning on new ways to co-design new climate smart solutions. In the CoP all 10 facilitators and 10 monitors will come together at a regular base. Main objectives of the CoP will be 1) training in methods and tools to facilitate and monitor a LL and 2) the shared learning and exchange of progress, dilemmas and strategies.

This methodological framework has been designed in such a way that experiences and new tools can be added when used in this project. Supported by the M&E approach, practical LL experiences will be harvested and documented for inclusion in this methodological framework. In the long run this deliverable report could be adapted and made available for use outside CFD as a practical guidebook for Living Labs for Climate Smart Farming.

Chapter 1

Introduction

This chapter introduces the outline of Climate Farm Demo network, work package 4 and the general challenge of climate smart farming. It introduces the methodological framework for setting up and running 10 Living Labs for the purpose of co-designing climate smart solutions.

Introduction

The purpose of this document

This document introduces the methodology for setting up and running a Living Lab (LL) in Climate Farm Demo. It provides some background to Living Labs (LLs) as facilitated interactive space for the co-creation of climate smart solutions. The methodology explains the remits, roles and responsibilities of the LL facilitator and monitor. It aims to support LL facilitators and monitors by:

1. Explaining how a LL in Climate Farm Demo (CFD) could contribute to co-creation of climate smart solutions;
2. Proposing the methodology to analyse the context, to set-up and to run a LL including suggestions for tools that could be used by the LL facilitators;
3. Presenting the approach how to monitor and evaluate the performance of the LL and to collect lessons;
4. Giving an idea how the 10 LLs will learn from each other in a Community of Practice;
5. Provide a structure for the functioning of WP4 and the coordination between tasks that could lead to the formulation of recommendations at the end of the project.
6. Explores the connection of the 10 LLs with the wider CFD network of demo farms, lighthouse farms and advisors to improve the impact of the project

The methodological framework is based on experiences of the partners with LLs in different projects and a sound scientific foundation. The nature of the document is hands-on and practical to be used easily by practitioners. Links to more elaborate methods/theories will be provided for those who want to know more.

This methodological framework is designed in such a way that experiences and new tools can be added as we develop and test them. In collaboration with Monitoring and Evaluation (M&E) a procedure will be developed to harvest and document specific practical LL experiences for inclusion in the methodological framework. In the long run the chapters 2-5 could be adapted and made available for use outside CFD as a Practical guidebook for Living Labs for Climate Smart Farming.

Who is this document for

This document is directed towards a mixture of potential users. Firstly, this methodological framework has been designed to help LL facilitators and monitors within Climate Farm Demo when starting a LL and to create a common thinking framework and vocabulary to make mutual learning and exchange possible. The second target group are other project partners in Climate Farm Demo and in the sister project Climate Smart Advisors involved in Multi-Actor Platforms and science-society-policy interfaces and to support connection of the LLs with the wider CFD network based on mutual added value. The third potential target group are the scientists and practitioners outside the project but involved in LL settings with the intention to stimulate exchange of thinking, experiences and practical tools and to further develop this basis for LL development.

The Climate Farm Demo project

Climate Farm Demo is a unique pan-European network of Pilot Demo Farmers covering 28 countries and all pedo-climatic areas. Its overall aim is to accelerate the adoption of Climate Smart Farming (CSF) practices and solutions by farmers and all actors of the Climate Smart Agriculture Knowledge & Innovation Systems (AKIS) with a view of adapting agricultural production systems to climate change and of achieving a carbon-neutral agricultural sector by 2050, thereby meeting the targets of the EU Climate strategy.

To reach this objective, the project adopts a Multi-Actor approach by connecting 1500 Pilot Demo Farmers and their Climate Farm Advisors (CFAs) at European and national levels to increase knowledge exchange and cross-fertilization in their respective AKIS. The Climate Farm Advisors will support the Pilot Demo Farmers in implementing Adaptation and Mitigation Measures suggested by contextualized guidelines and will assess and monitor their environmental performance thanks to harmonized methodologies and tools. Technical and social innovations covering a broad range of thematic areas will be demonstrated to the wider farming community across six annual demo-campaigns (4500 demo-events) supporting interactive and peer to peer learning. New and innovative Climate Smart Farming solutions will be co-created in 10 Living Labs spread across Europe, and lessons learned from multi-actor innovation will be shared and scaled. A set of public and private rewarding mechanisms will be identified, proposed and demonstrated to the AKIS actors, thus incentivizing the uptake of Climate Smart Farming solutions while ensuring sustainable business models. Strategic and operational cooperation will be organized with projects, flagship initiatives and policymakers at European and national levels in order to share knowledge, organize coordinated actions, and produce policy briefs. Finally, to accelerate the wide spreading and uptake of results, an ambitious dissemination, exploitation and communication strategy will be deployed at EU and national levels. (copied from https://cordis.europa.eu/project/id/101060212).

Co-designing climate smart solutions in Living Labs

Within the CFD network, the 10 Living Labs are creative multi-actor spaces for co-innovating and co-designing new and innovative climate smart solutions in a real-life setting. Multiple actors and stakeholders, such as farmers, researchers, advisors, suppliers, waterboards and policymakers will be involved. The LLs are excellent opportunities to explore new ground, invite different perspectives, create new linkages and bundle creative forces to develop and test new options to be demonstrated in the CFD network and adopted in the wider agricultural community. Complementing and enriching the available collection of adaptation and mitigation measures within the CFD network is an aim. However, the climate smart solutions developed in the LLs could be as well technical as social innovations. Based on an analysis of the climate challenge, the problem, the context and the perspectives of the people involved, each lab will develop their own focus and strategy suitable for their thematic area, climate challenge and specific context. Some LLs may focus on developing a brand-new solution for a wicked problem, where another puts the efforts in further developing an existing idea or initial invention and other focus on contextualizing an elsewhere developed solution to tackle a problem in a specific pedo-climatic area or type of farming system. It is the ambition of all LLs to take advantage of the creative

space and room for exploration, move beyond field research business as usual and really make a difference and contribute to accelerating the adoption of climate smart farming.

To strengthen the co-innovation and co-designing of innovative climate smart solutions, a dedicated monitor and specifically designed M&E approach will provide structure and tools and create reflexive space to strengthen the learning in the LL and the learning form the LL experiences. The principles and tools used by the LLs and exemplified through the lessons learned of the people involved in using them will be made available to be used in other settings. Finally the analysis of the experiences in the LLs, the lessons learned from interactions with the wider network of demo farms, lighthouse farms and advisors in CFD and the results of M&E, will be the basis for developing recommendations for future partnerships engaged in innovation and adoption of Climate Smart farming.

Living Labs versus Pilot Demo Farms

In CFD 1500 Pilot Demo Farmers have an important role to increase knowledge exchange and peer to peer learning in their local agricultural knowledge and innovation system. The 10 Living Labs are intended to cocreate new and innovative climate smart farming solutions. What is the difference and overlap and how can they mutually benefit from each other?

The Pilot Demo Farm in CFD is a farm on a specific location dealing with its market and climate conditions. It implements and demonstrates a certain mitigation or adaptation measure that has been tested and validated. The LLs are initiatives of groups of people (end-users and stakeholders, supported by a facilitator) with the ambition to co-create new and innovative knowledge and innovations. Living Labs are strongly invited to make use of one or several PDF for testing and demonstrations, but that depends on the objectives of the LL and on what has to be developed and tested. It could be a technical or agronomic innovation but also a social innovation, like the development and test of a new legislation, service or a regional cooperation etc.

In CFD insights will be provided into: 1) roles and added value of connecting PDFs and Lighthouse farms with LLs for improving the co-innovation process in the LLs and enhancing uptake of new CSF solutions by a broader farming community. 2) the outputs and impacts of LLs to the development of tools, solutions and rewarding mechanisms related to the 12 thematic areas built up together with CFD and CSA.

This methodological framework aims to provide a basis for the Living Lab development and functioning, and support the LL teams (a facilitator, monitor and possibly a key stakeholder from an overarching or adjacent initiative or project) to successfully set-up and run their LL. To further strengthen the learning and support the running of the LLs a Community of Practice will be created through a combination of in person and virtual meetings with all facilitators & monitors of the 10 LLs. The focus of the CoP will be on: training in methods and tools to set up and facilitate a LL; P2P learning on challenges that arise during the LL process; development, checking and guiding of action plans; evaluation of lessons learned.

The umbrella of this methodological framework and the Community of Practice hold the following interrelated elements:

Analyses of situation & conditions and set up of the Living Labs. The analysis will support the LL teams to hold interviews and organize a workshop to develop a clear view of the core challenges, insights into the needs and motives of key stakeholders involved. This is the basis for an initial idea of the strategy to follow, the steps to be taken in the LL and the required capabilities, connections and available resources.

Running of the Living Labs. The LL teams will use and adapt the action plan to facilitate an iterative process of co-design and development of innovative climate smart solutions. It's a reflexive approach focused on the overall purpose of the LL but able to be flexible and to adapt and respond to new insights, creativity of stakeholders. The action plan will be updated at least once a year based on the monitoring and evaluation.

Monitoring and evaluation of the Living Labs. As an integrated part of the Living Lab M&E adds reflexivity and strengthens and inspires the co-design process and the responsiveness to changes, needs and developments in and around the LL. The M&E plan for each LL will include both performance measures to monitor progress in reaching the objectives of the LL, just as performance measures on the LL approach itself. M&E will ensure that the insights, bottlenecks and lessons learnt in each LL are recorded and used in the annual update of the action plan. The lessons learned on LL approach to co-create CSF solutions will be made available to a wider public.

Integrated assessment for recommendations for scaling and future partnerships. The experiences and lessons learned in the M&E will be the basis for the integrated assessment which specifically looks into the readiness of the developed climate smart solutions for scaling and appropriate actions to enhance scaling. Furthermore, it provides insight into roles and added value of combining demo farms with a LL approach for enhancing uptake of CSF solutions by a broader farming community and contributing to the climate smart transition. Local discussions and critical reflection will support the decision on the follow up of the LLs and the whole integrated approach results in recommendations for policymakers, AKIS-partners and future partnerships.

Figure 1 provides an overview how the different elements interact and reinforce each other to contribute to the aim of CFD to accelerate the adoption of Climate Smart Farming.

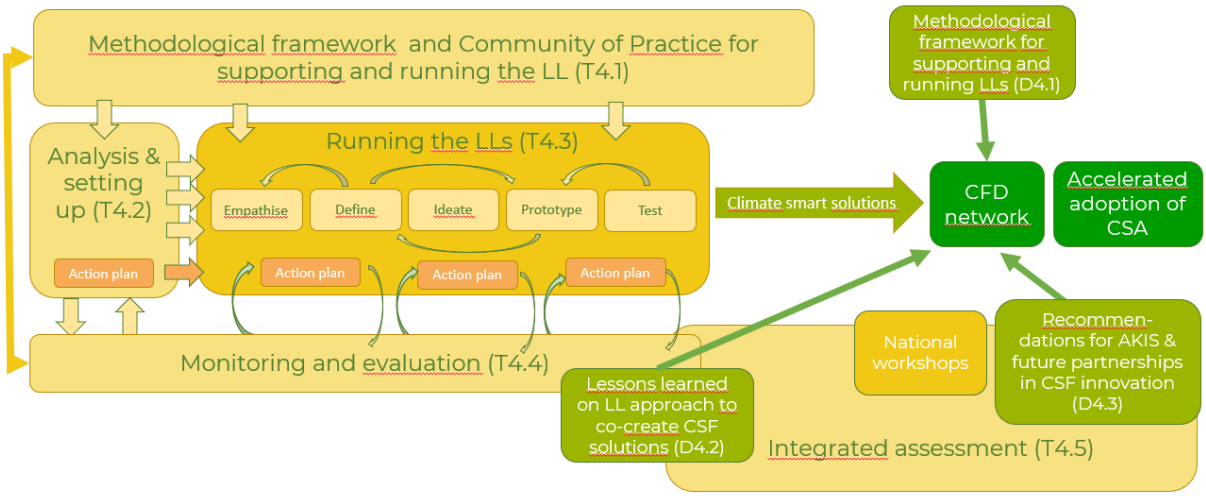


Figure 1: Overview of the methodological framework for Living Lab development and support of the LL teams in CFD

The structure and logic of this document

After this general introduction and overview, this document further dives into and elaborates the world of LLs in Climate Farm Demo. The second chapter introduces the LL approach, its contribution to sustainable transition processes, and more specifically the transition to climate smart agriculture as the focus of CFD. Chapter 3 explains the methods and tools used to analyse the situation and conditions necessary for a successful set up of a LL. Chapter 4 provides guidance for running a LL in CFD and shares methods and tips for facilitating actor engagement and constructive groups processes. Chapter 5 introduces the M&E methodology and chapter 6 provides more details on the purpose and functioning of the Community of Practice. The detailed approach for the integrated assessment for recommendations for scaling and future partnerships is not part of this report. With an eye on the

dynamics in this project and in the context of this project that methodology will be elaborated after month 60 of this project.

Chapter 2

Living Labs in CFD

This chapter provides a general introduction to the Living Lab approach, the role of LLs in sustainable transition processes, and how the LL approach is applied in CFD.

Living Labs in CFD

What is a Living Lab

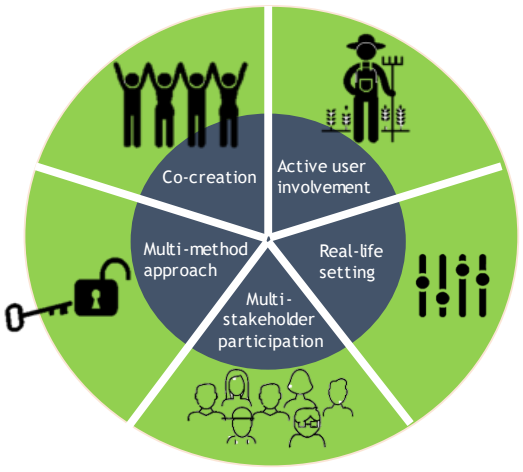
The popularity of Living Labs has grown with the need of accelerating the innovation and adoption of more sustainable practices and the understanding that it is crucial to engage farmers and other stakeholders in jointly developing the solutions to problems they face in their locality or region, considering the specificities of farming systems and their environment (Potters et al, 2018).

The European Network of Living Labs (ENoLL) defines LLs as "user-centred, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings". In CFD the 10 LLs specifically provide facilitated spaces for collective learning and co-creation of climate smart solutions. LLs invite and enable public and private stakeholders to bring together their knowledge, interests, experience, resources and creative capacities. The Living Lab concept is now widely used in the pursuit of sustainable and climate smart food systems, especially in soil health and agro ecology (eg Trivellas et al, 2023).

As the definition of Living Lab is broad and not exclusive, the term Living Lab is being used for a great diversity of innovation ecosystems, projects and processes. In agriculture the appearance of Living Labs diverges from collective on-farm experimentation to long-term consortia of public private partnerships. The five general characteristics of a Living Lab (ENoLL, 2023) and presented in figure 2 are used to characterize the CFD Living Labs:

Co-creation: The purpose of the CFD Living Labs is to collectively create climate smart farming solutions. The involvement of farmers and other actors as equal partners from the beginning is a key feature. Serving a broader audience than the specific participants of the LL, the development of scalable solutions is a deliberate objective of the LLS in CFD.

Active user involvement: The CFD Living Labs actively involve the end user of the climate smart solution from the beginning, as equal partners in proposing ideas, testing, improving and promoting them further.



Source: European network of Living Labs

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Figure 2: Five characteristics of a Living Lab according to ENoLL

Real life setting: The stakeholders develop, test and/or demonstrate in the LLs of CFD the climate smart solutions on real farms or in real situations to get insight into the practical usability in a relevant test context. In CFD a LL aims to develop innovative climate smart farming solutions suitable in specific situations and has the space to follow its own path, however the LL deliberately aims to serve a broader relevance and contribute to the overall CFD goal to boost the adoption of climate smart farming.

Multi method approach: The LL teams all develop their own approach (in the action plan) using appropriate intervention tools and strategies. The Community of Practice will provide training and support to develop and implement appropriate multi method mix for tailor made for each LL.

Multi stakeholder participation: The CFD the 10 LLs involve all relevant stakeholders in different roles as appropriate for a specific LL. Depending on the progress in the LL and stakeholders' interest, influence, inspiration and capacities they may dynamically alternate take roles as informant, tester, contributor or co-creator. The co-creation and scaling of new climate smart solutions is the focus in selecting stakeholders to participate.

Though the LLs are independent spaces for co-creation and develop their own path, the LLs deliberately seek connections and synergies with the CFD network. In this project, specific sessions will be organized during annual meetings focusing on exploring and planning these connections and synergies. In advance, there are three routes. On the one hand the LLs provide new climate smart solutions which can be used and demonstrated elsewhere in the CFD network. On the other hand, the LLs can provide exploration and co-creation space to work on specific challenges that occur within the CFD network. And third, a LL might also organize experimental demonstration events to boost the discussion on future possibilities, get support from others in the network and facilitate the adoption by other farmers.

The origin of the Living Lab concept

A glance at the history of the Living Lab concept and some of the traditions it builds on, is useful for better understanding the rational and potential of the Living lab approach for the development of climate smart agriculture. The term living laboratory seems to be first by used in the early 1990's in educational setting by Lasher and colleagues (Lasher et al., 1991). The actual birth of the concept Living Labs as we know it today, is ascribed to William Mitchell (Dutilleul et al. 2010; Schuurman, 2016) and later further developed in the context of testing of new technologies (Ballon and Schuurman, 2015). After 2005 the LL concept has been introduced in different sectors and settings and has evolved. The concept as we currently use it in the food and agricultural domain originates from development in diverse spheres and builds on different traditions. Below we briefly indicate developments in five different spheres which come together in the current work with LLs:

- **Science and Research**: In the search to increase the **relevance** and adoption of research results and the development of **actionable knowledge**, a variety of experimental and participatory research and action research approaches have been developed.
- **International development cooperation**: In the attempt to be more relevant and **responsive to local needs** development and empower local communities in their livelihoods, donors and development projects have developed a great number of participatory approaches for planning and actions.
- **Product design and development**: In the desire to develop **feasible products** and **better connect to markets**, product designers have developed strategies to user needs and involve end users in designing their products.
- **Problem solving**: From the need to come up with **high quality solutions**, engineers and other professionals have developed practices to involve user experiences and the owner of the problem.
- **Sustainability transitions**: From the notion that sustainability challenges are often **complex wicked problems** which require multiple actors to move forward, a diversity of interactive innovation and multi-actor approaches have been developed.
- **Agriculture**: In the search to develop **productive and sustainable farming systems,** the agricultural sector has a long history of farmers experimentation, agricultural development by nature builds on field experiments and research. Different actors in the production chain have always played different roles in technology development. As sustainability receives more

attention, concepts such as participatory technology development and multi actor approaches became more prominent.

Though similar in tendency of increasing participatory methods and stakeholder involvement, it seems relevant to keep the different underlying principles, assumptions and purposes in mind when developing a LL. In a way the current the LL approach builds in different ways on these convergent developments, different stakeholders will also understand the concept from different perspectives. The ambitious challenge is to come to a coherent strategy which combines the best of these approaches and experiences. In brief LLs have the potential to develop high quality solutions for complex climate challenges, which are relevant, feasible and responsive to end-user needs and contribute to productive and sustainable farming systems. This requires serious commitment and availability of capacity and resources and freedom to facilitate the process.

Common LL vocabulary

The Living Lab methodology introduces some new terms and concepts. Fruitful collaboration between the LLs and in the Community of Practice benefits from a common vocabulary. Figure 3 represents a schematic model of a Living Lab with five central concepts, which are explained below.

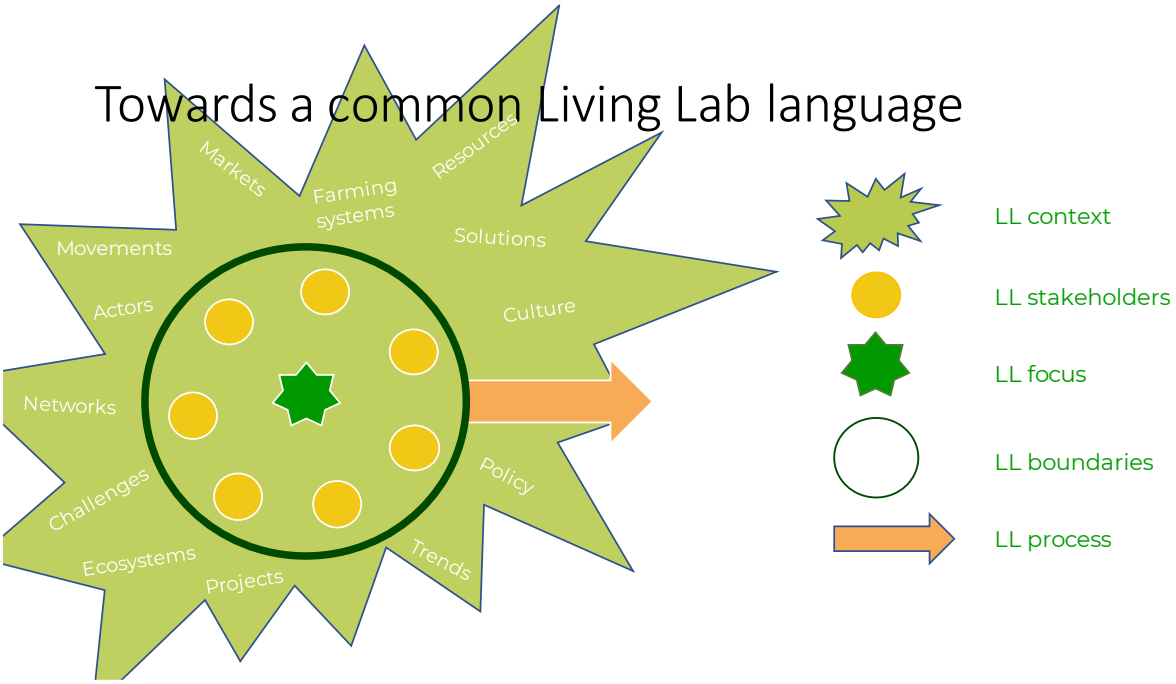

Figure 3. Central concepts of a Living Lab in CFD

LL context: refers to the natural, physical, socio-economic, cultural and institutional setting where the Living Lab is taking place. The context is all aspects which the LL team cannot directly influence, but which do influence the design and functioning of the LL. One can for example think of the ecosystem, climate challenges, local and national culture, existence of other projects, level of education and technology, farming system, political and societal trends, policy, actors, networks, historical developments, movements, markets, available resources etc. etc.

LL focus: refers to the content of the LL. What is the specific climate challenge the LL aims to contribute to. It is important to determine and delineate the challenge in interaction with the stakeholders. In its turn the ongoing definition of the LL focus may require the involvement of other stakeholders to become involved in the Living Lab.

LL stakeholders: refers to the actors which have a perceived interest in the performance, the results and outcomes of the LL or have influence on the challenge which the LL focusses on. Identification of LL stakeholders is discussed in chapter 3. In CFD, the challenge (for the LL team consisting of a facilitator and a monitor) is to manoeuvre in this field of personal interests of stakeholders, to harness motives and initiatives and connect them to the ambitions of the LL.

LL boundaries: refers to the limits of the LL, where the LL ends, and the context begins. Boundaries refer to various dimensions such as the content, the people involved, the resources, the timing. In brief boundaries determines what is in and what is out. Setting the boundaries importantly influences the operations and outcomes of the LL. More on setting the boundaries in chapter 3.

LL process: refers to the dynamics, actions and operations in the LL. It involves the active interventions and activities by the Living Lab team and the LL participants and the resulting dynamics. More on the LL process in chapter 4 and on evaluation of this process in chapter 5.

Introduction to the 10 initial Living Labs in CFD

In Climate farm Demo 10 LLs will be facilitated in 10 different countries. Each lab focuses on a specific topic and sustainability challenge, includes different stakeholders, level of maturity and setting. Table 1 provides an overview of the initial LLs at the beginning of the CFD project. In line with the adaptive nature these features can change and evolve during the development of the LL.

Table 1. The initial 10 CFD Living Labs with climate challenge and indication of Climate smart farming solutions they focus on

Country	Climate challenge	Indication of climate smart farming solution
France	Drought	Climate resistant dairy production
Germany	Mitigate farm emissions	Business models for circular livestock husbandry
Hungary	Resilience, and carbon sequestration	Organic soil building strategies
Italy	GHG emissions and carbon sequestration	Manure handling and Biogas
Netherlands	Drought flooding	Climate proof water management
Portugal	Drought, desertification	Resilient agroecological farming systems
Slovakia	Carbon sequestration	Regenerative farming
Spain	Water stress, GHG emissions & C- sequestration	Small farms climate smart production systems
Sweden	GHG emissions and carbon sequestering	Biogas production
United Kingdom	Carbon sequestration, water, resilience	Agroforestry systems

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Besides the deliberate diversity over thematic areas and climate challenges, the group of 10 Living Labs shows a large variety in appearance and process. Three differences seem worth noting. The first difference is the level of maturity of the LLs some initiatives are just starting, where others are more mature collaborations in diversity of projects. The second difference is the scale of operations, some LLs are located on one central (experimental) farm where others take a territorial approach involving many stakeholders. The role of the farmer and the relation between stakeholders is the last indicative difference. In some of the LLs there is a clear farmers initiative to develop a solution for a certain climate

challenge while other LLs start from research and develop the co-creation process with farmers from there on. These and many other differences influence the functioning and development of the LL. This provides a rich basis for learning and exchange and requires each Lab to follow their own path and pace within this common framework for the development of the LLs in Climate Farm Demo.

Chapter 3

Getting started

This chapter explains the process and provides guidance for setting up the CDF Living labs. It involves the analyses of situation & conditions and set up of the Living Labs and the development of strategy and action plan for the first year.

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Getting Started

Introduction

Detailed guidelines have been developed for the Climate Farm Demo (CFD) Living Labs (LLs) in order to set out a roadmap for the setting up of LLs and the analysis of the conditions necessary for success. LLs will be equipped with a framework in which they can define problems and boundaries, analyse stakeholders, understand core challenges, etc. In terms of innovation, the goal is to promote the co-creation of climate-smart solutions, as well as to analyse the enabling environment around the LLs. To this end, the guideline helps LLs identify what resources, capabilities, collaborations, and innovations they have at their disposal or that they lack. LLs will be able to identify actions that need to undertake and understand their climate farm transition through this process. The outcome is to provide a living working strategy and action plan for each LL, to be updated annually.

This chapter is focussed on the methodology, the purpose and usefulness of 5 different steps to set up a LL and to analyse the situation and conditions of that LL. See figure 4 for the steps that will be explained in the next paragraphs.

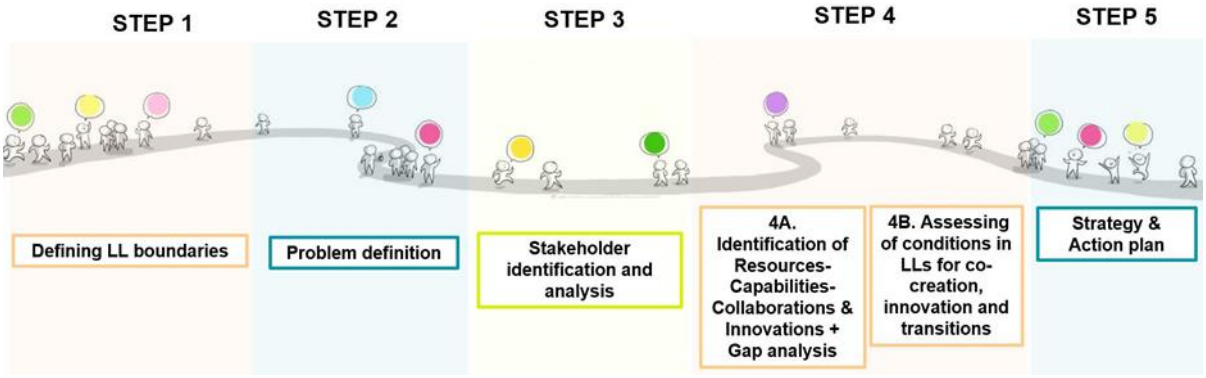

Figure 4. Summary of the 5 steps to analysis of situation & conditions and set up of the Living Labs

Parallel to this description a detailed guide has been made for LL facilitators and monitors of the 10 LL teams. That contains a detailed description including worksheets for each step and operational suggestions for an agenda and timings of a workshop and support in conducting interviews. The five steps were designed to be carried out as a somewhat iterative process in which, in addition to thorough analysis, the relationship with and involvement of stakeholders is strengthened. It starts with delimiting the LL with a small group forming the core. Subsequently, interviews are organised with some of the potential stakeholders chosen for the construction of the LL (LL leaders and facilitators are given such interview guides). Then, their participation in workshops is organised to strengthen and establish the LL, where most of the five steps are expected to be executed. Finally, LL teams will complete and refine the outcomes and the data gathered during that process with the goal of collecting the information and helping the implementation of the action plan.

Step 1. Defining LL Boundaries

The goal is to understand the nature of LLs, their scope of activity, their establishment, and their conditions for success. That is, what is the aim, focus, purpose, and expected impact(s) of the LL? What would success look like?

Characteristic	
Focus, purpose, aim	• **What is the aim of the LL? Use your own words in point form**
Activities & expectations	• **What main activities does/will the LL carry out?**
	• **What are the expected impacts of the LL? i.e., on whom/what does the LL wish to have an impact?**
Context	**(Multiple answers)**
	• **How is the LL organized?** • Around a challenge? (Explain it) • Geographically/regionally? • By sector? • By users? • By stakeholders? • Around a technology(ies)? • Through a coordination entity? (e.g., cooperatives, public administration, etc.)

Figure 5. Questions to define the Living Lab boundaries

Subsequently, the functionality of the task is to set the start for delimiting LLs, and, to allow the actors involved to specify the boundaries of an idea and imagine expected outcomes. In addition to characterise the environment in which LLs find themselves and their circumstances. This step helps to set the stage for the problem definition, stakeholder analysis, and general examination of the LL and its action plan. What is meant by boundaries refers to the LL´s focus or aim, their physical limits, their context, activities, stakeholders, etc., (see Figure 5).

Step 2. LL Problem definition

The end goal to carry out this activity is to describe the situation of farmers and related stakeholders as well as the climate challenges they face and to define the central core climate problem(s) that LL will address. Figure 6 gives the framework that will help to define the problem. In the same way, it helps to

Phase 1 Recognition	Phase 2 Development	Phase 3 Exploration
1.What evidence exists of the LL problem(s)? (includes impacts) 2. What is challenging about finding a solution to the problem? 3. Who are the stakeholders affected and/or involved by the problem, directly or indirectly. 4. How do they interpret the problem?	1. Describe and/or synthesise alternative perspectives and or interests with respect to the problem (social-environmental-economic-institutional…) 2. Develop a comprehensive and/or improved definition of the problem on which relevant stakeholders can agree	1. Are there subproblems? Are they related? How should they be prioritized in the LL (by order of importance or order of solving)? 2. Identify barriers and constraints (technological, social, economic, environmental, institutional…) that the LL has. 3. Discuss and include any conflicts between different perspectives and interests.

Figure 6. Problem definition framework

further define the purpose of LLs and facilitate the integration of the necessary innovation, accelerating the creation and improvement of innovative solutions.

Step 3. Stakeholder identification and analysis

When it comes to getting a picture of the LL situation it is crucial to understand what stakeholders are and who should be involved (see Figure 7), as well as the role and influence that they may have in co-creating and co-designing solutions.

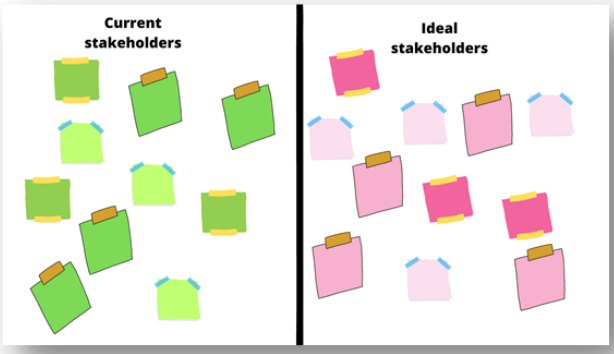

Figure 7. Example of how stakeholders´ identification might look like.

Hence the importance of knowing who they are and having a balance, in terms of representativeness, gender, etc. In addition, the need to maintain a multi-actor approach (MAA) is emphasised throughout the project.

Step 4a. Identifying RCCI + GAP analysis

One of the aims of this step is to increase the knowledge and skills of the actors, exploring, identifying, and fostering future resources, and capabilities. They help to establish and redefine objectives based on available and missing resources, capabilities, collaborations and innovations (RCCI). They all have an essential role in designing and facilitating the creation and adoption of climate-smart solutions as well as in solving problems, innovating, and scaling.

In order to further understand the context and dynamics of the LLs, we introduce the analysis of resources and capabilities, which includes collaborations and innovations and allows us to understand how actors respond to dynamic environments and how individual and collective capabilities and resources influence the transition to a more sustainable agriculture. More information could be found looking for the organisational theory based on resources and capabilities, encompassing the resource-based view of the firm (Barney 2001), dynamic capabilities (Teece, Pisano, & Shuen, 1997; Helfat and Peteraf, 2009), the knowledge-based view, (Kogut & Zander, 1992) and the relational view (Dyer & Singh, 1998).

Similarly the identification of RCCI in the LLs of CFD allows the LLs to correlate objectives with the defined problem(s) and to distinguish between the state in which they are and in which they wish to be according to their resources, capabilities, collaborations, and innovations. That is, what can we achieve with what we have and what gap do we need to bridge to solve our LL climate problem? Finally, it links to the definition of the action plan by establishing the activities to be carried out, using RCCI.

RCCI explained

Resource: Tangible/intangible assets owned or accessed by an entity (e.g., farm enterprise, LL, organisation, etc.) that may be used to create value, achieve an objective, or solve a problem.

Capabilities: Technological and individual/organisational know-how/abilities which allows the carrying out of activities or use of resources.

Both are interconnected and to a certain extent it can be said they are co-dependent.

- Capabilities are needed to mobilise resources.
- Resources are required to develop capabilities.
- Capabilities create further resources.

Collaborations: They can be understood as resources (E.g., Existing collaborations/membership in networks, participation in collaborative arrangements, etc.) and as capabilities (E.g., Shared values and interests, balancing of individual and collective interests, etc.)

Innovations: They can be understood as resources (E.g., Existing innovative solutions, etc.) and as capabilities (E.g., Learning and fostering internal dialogue for continuous innovation, etc.)

With respect to Capabilities, the definition given is insufficient when we refer to them within an ecosystem where it is necessary to consider its dynamics. This is why we move to a less static interpretation, and it is how the term “Dynamic capabilities” arises.

Dynamic capabilities: Ability to reorganise the assets (resources and skills) that the LLs possess not only to be able to respond to changing environments, but also to increase its capacity for adaptation, innovation, and resilience. Nonetheless, Dynamic capabilities are not the only ones.

Functional capabilities: Relates to the ability to solve specific technical-management issues.

Step 4b. Assessing conditions for co-creation, innovation and transition

The objective of this tool is to assess the conditions of the LL for co-creation, innovation, and transition to climate-smart farming, and to inform the strategy and action plan.

This will be reflected in a spider diagram (see Figure 8) that will be obtained as a result of completing the corresponding survey. The LLs will be able to easily assess its situation with respect to its resources, capabilities, collaborations, and innovations, and plan strategy and actions.

Furthermore, it allows comparison over the years of the project, allowing for a self-assessment by the LLs.

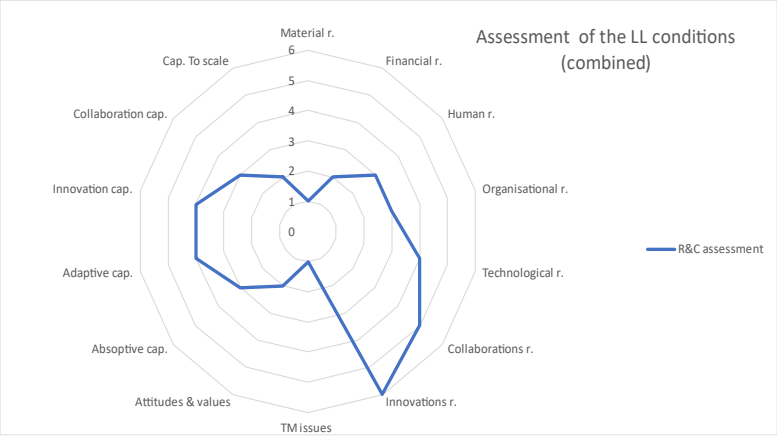

Figure 8. Example of the result of the evaluation.

Step 5. Strategy and action plan

The reason for developing an action plan is that it helps to define concrete actions to achieve the desired climate farm objectives. Actions can be to achieve aims using existing RCCI and/or actions to fill gaps in RCCI needed to achieve aims. In addition, they provide a basis for ongoing planning of activities and provide information for monitoring & evaluation. Based on progress, experiences and lessons learned in the LL and developments in the context of the LL the plan can be adapted at a regular basis. Connections can be planned with demo-events and other events in CFD and CSA. In annex 1 the template for the action plan has been given.

Chapter 4

Running a Living Lab

This chapter explains the process and provides guidance for running a LL, supporting the collaborative research process and support for the facilitation of the stakeholder involvement in the LL. The purpose is to provide guidance and at the same time leave enough room for each LL to define their own path towards their own goal.

Running a Living Lab

Introduction

In the project CFD we see the facilitator of a LL as the person who brings together expertise and persons to tackle more complicated problems, not necessarily problems that can easily be solved by just one discipline. It's about 'organizing' a solution by using several methods. In this chapter we start with a short explanation of the 5 stages that will help to frame the process of co-designing climate smart solutions. The next paragraph will focus on the role of the facilitator and the chapter will end with do's and don'ts' while running the LL. A first selection of prioritized co-design tools and approaches are described in textboxes, but depending on the situation in the LL other tools will be added. Use has been made of texts and experiences on setting up Living Labs in the H2020 project AgriLink as described by Potters et al (2022) and explained for practitioners in a free online course 'Creating innovative agricultural advisory services through a Living Lab' (AgriLink online course, 2021).

Frame the process of co-design

The process of co-designing climate smart farming solutions in CFD is inspired by the method of design thinking (Buchanan, 1992) with iterative steps in which developers seek to understand users, redefine problems and create prototypes and test solutions. To frame the development process of solutions in the LLs of CFD five stages are defined. These stages describe the development of an ill-defined problem to an idea for a solution to a pilot or tested prototype till implementation and scaling of that solution. The stages are presented in figure 9 and are then briefly described.

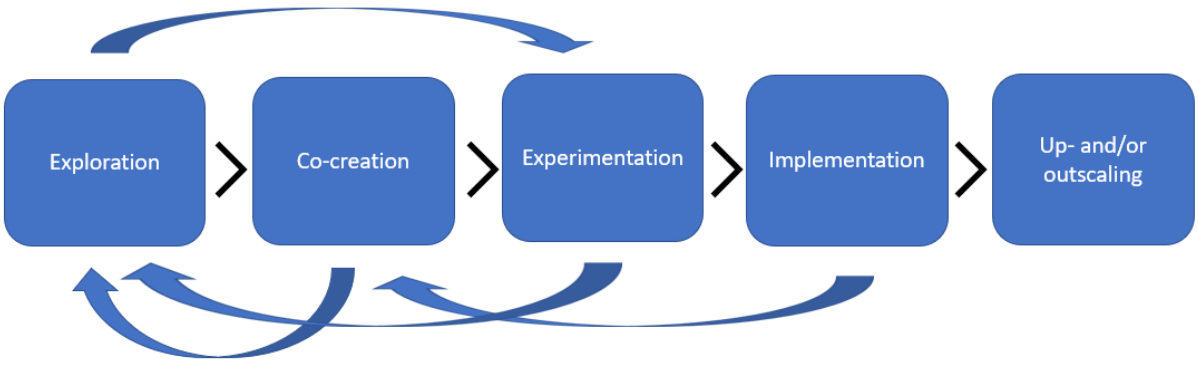

Figure 9. Stages in the development of Climate Smart Solutions in the Living Labs of Climate Farm Demo

In each stage different supporting tools can be used by the facilitators of the LLs. Several useful methods and tools can be found on the internet. During the CoP meetings of WP4 a number of them will be used and trained related to the specific needs and collective questions of the facilitators of the LLs.

Exploration

This stage aims to get to know the current state, motives, problems, first ideas. It's about developing understanding of the situation and requiring a level of engagement and acknowledgement of people and the localities involved. These insights result in a problem statement related to the needs of specific end-users or stakeholders. An expansion of the boundary of the problem situation gives 'room' to consider a wider range of actors and factors which may be relevant to understanding all dimensions of the climate related issue. Related to this phase chapter 3 gives tools and guidelines to analysis the current state and develop a first plan of action.

Co-creation

This stage is characterised by idea generation to help address the problem situation defined earlier and design possible 'future states'. Freedom to be creative and innovative is important to help develop a range of ideas and avoid jumping to conclusions too early on the 'solution'.

A useful method for co-creation that will be used in the LL is the collective brainstorm as described in the textbox.

Experiences in the Living Labs of AgriLink learned that not all LL stakeholders wanted to be engaged in these brainstorming and co-creation activities. For example, because a lack of time, cultural preferences, unfamiliarity with process, lack of trust, uncertainty of the outcome or reluctance to voice their opinions or concerns in open fora. Instead of organising creative 'out of the box sessions' alternative interventions are still possible in which inputs of stakeholders can be achieved. For example, by providing simple, but diverse, ideas developed by a small key group and organise discussion with stakeholders to compare, discuss, and evaluate alternative innovations.

Collective brainstorming: In the exploration phase it can be useful to generate a large number of ideas to solve the defined problem. The broad set of ideas potentially inspires newer, better ideas. Finally, the LL team can cluster them or cut them down into the best, most practical and innovative ones. In a classic brainstorming, ideas will be listed on a flip chart or making use post-its while keeping in mind the following facilitation rules:

- set a time limit;
- start with a clear problem statement or question and stay on the topic;
- defer judgement or criticism, encourage wild ideas and build on each other's' ideas;
- aim for quantity. Clustering and/or selection should be done afterwards.

Experimentation

The experimentation stage is focussed on experimenting with possible solutions to test and evaluate their suitability and potential for wider deployment and use. It could be useful to develop a simple prototype and collect feedback from end users. Experiences in AgriLink learned that rapid prototyping could help to provide concrete focus and energy to the LL in helping to define the problem and determine stakeholder needs and interests. Prototyping enables learning by doing (and potentially failing).

Prototyping: By producing an early, inexpensive, and scaled down version of the solution the LL had the opportunity to bring the first ideas to life, test the practicability and collect feedback of users on this idea. Examples of such simple prototypes are: a PowerPoint, a storyboard, a spread-sheet, a visual representation. Some guidelines for prototyping:

- just start building: if you have many uncertainties about you are trying to achieve just make something. It will help to think about your idea in a concrete manner;
- don't spend too much time;
- remember what you are testing for;
- build with the user in mind.

Implementation

In this stage the developed and tested solution will be implemented in a bigger way. It will be implemented in real life of the proposed end users. This means that the local context in which the solution is implemented is important and consideration must be given to the viability and feasibility of the solution. A plan can be made with objectives, tasks and responsibilities, risk scenarios, control options and evaluation steps.

Up- and/or outscaling

This stage in CFD deals with the question about the potential of a LL to contribute to the intended climate challenges. It could result in replication of spreading of results to other regions and contexts via for example Pilot Demo Farms and demo events (scaling out) or via impacting law and policies (scaling up). It's necessary to clarify what from the LL is meant to have an impact. This can vary from promising ideas, products and practices till new institutional arrangements. The second question is what type of change the LL is aiming for. Is it a change in knowledge level, in motivation or attitude, a concrete application or a change in policy? The scaling process is the mechanism by which this happens or is expected to happen. In project (as part of task 4.5) LLs will assess the readiness of the innovations for scaling and explore appropriate strategies and actions that could accelerate or enhance scaling. Use can be made of the matrix in figure 10 for assessing impact ambitions and envisaged related scaling processes of living labs.

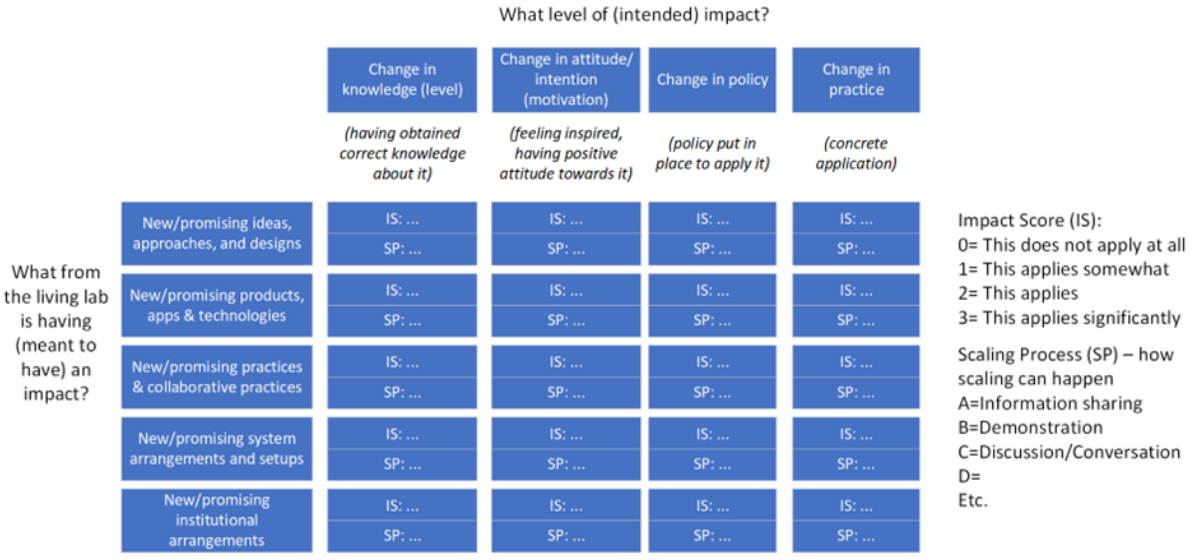

Figure 10. Matrix for assessing impact ambitions and envisaged related scaling processes of Living Labs

Feedback loops

While there is a linear sequence from exploration to up- and/or outscaling, Figure 9 makes clear there are feedback loops where iteration is necessary between stages as understanding and insights develop. Not all LLs in CFD will start from scratch. It could be possible to start with an existing solution or prototype. This can help provide 'concrete' focus and energy and the other stages can be brought into play in due course. It should be clear that iteration is not a failure. Changes in context, legislation or technology or understanding of stakeholder preferences could result in need for a change in problem definition and/or prototype.

Facilitation of the Living Lab

The role of a facilitator

In CFD facilitators have been appointed for all 10 LLs. Facilitation is an essential element of a successful LL. It is not possible to provide details of the ideal facilitator since the ideal depends on the needs of stakeholders in a particular context. Each LL is unique, and the facilitator must adjust what they do to meet the needs of the stakeholders and the purposes of the LL. Each LL must be observed, understood, and 'tailor-made' interventions must be designed and developed in conjunction with its many participants and stakeholders. Meetings must be organised and well run, making them as participatory as possible. The facilitator provides direction and advice to the participants while also being responsive to participants' views and concerns.

Key skills of a facilitator include the ability to develop trusting relationships with other participants, an understanding of group dynamics, good communication and a willingness to engage with other peoples' framing of situations, interests, and concerns.

A range of participative techniques and tools can be used by the LL facilitators and will be trained during CoP meetings of WP4 of CFD. Selection of the methods will be based on bottlenecks and needs identified by intermediate M&E reports and articulated during CoP meetings. Attention will be paid to facilitation of the tools and methods linked to the five stages of figure 9. For all these stages important work for the facilitator will cover two main areas: 1) identifying and engaging with stakeholders and 2) the planning and facilitating of meetings and other events involving stakeholders.

Involving stakeholders and keeping them involved

The stakeholders of the 10 LLs in CFD are the persons that has a perceived interest in the performance, the results and outcomes of the Living Lab. There are individuals, sometimes representing the interests of an organisation, such as a farmers' organisation or a ministry. The LL could affect the stakeholders perceived interest in a positive of negative way. Sometimes there are different stakeholders involved in LL activities from the same organisation, resulting in multiple interests. There may not always be clear dividing lines, but in general three different attitudes can be seen related to the LL: positive, wait and see or negative. Based on the attitude adopted, a stakeholder can be characterised as either a mover, a floater, or a blocker, respectively. Such a characterisation is of course only a guideline. In practice, there may not always be clear dividing lines. A stakeholder may also change position under the influence of the change process itself, but also because of external factors such as changes in the law or new technological developments. In CFD, the challenge for the facilitator is to manoeuvre in this field of personal interests, to harness motives and initiatives and connect them to the ambitions of the LL. Stakeholder management is a relevant method for all facilitators of the LLs in CFD dealing with processes concerning change, in which a large number of different stakeholders are involved and whose vested interests are affected.

Stakeholder management is a method for realizing sustainable change by influencing the stakeholders involved. This change is aimed at objectives that are challenging but also achievable for the stakeholders. The person whose task it is to implement this change is called the stakeholder manager.

Stakeholder management can roughly be divided into three phases: 1) the information phase with focus on gaining influence among the relevant stakeholders 2) the consultation phase with focus on influencing attitude and behavior of the stakeholders and 3) the collaboration phase enabling contribution of the stakeholder to implementation of the solution or change.

A condensed and practical overview of stakeholder management can be found in Bulten et al. (2021).

Guidance for designing interactive events and activities

The preparation and facilitation of meetings is an important success factor in running a LL. There are many elements that could go wrong in the organisation of LL-meetings, like: people don't show up at the meeting, no real interaction happens; the discussions remain superficial, one person dominates the discussion; people in the meeting don't agree with each other etc. Inspired by experiences in among others EU-projects AgriLink and Agromix short training sessions will be tailored to be used during the CoP meetings with all LL facilitators and monitors. It are practical sessions including supporting templates, training of facilitation skills (for example via a roleplay) and with an objective to share each other's insights, expertise and experiences with challenges, tools and methods. This with the aim design successful meetings with clear goals, clear roles for the participants and appropriate methods/tools to deal with expected and unexpected group dynamics.

Tips for preparation and organisation of workshops and roles

- Make a clear dedicated invitation so the participants know the purpose of the meeting. and what could be expected. Check/remind 1-2 days before by phone/app or e-mail.
- Make a clear scenario of the meeting with clear subobjectives, methods to reach them and timings.
- Think about roles: facilitator, monitor, spokesperson, secretary, role of participants. Of course, roles could be combined or rotated.
- Organise the room/space in a way that allows for group work as well as plenary presentation sessions.
- Ensure that all necessary materials (flipcharts, coloured pens, post-its, stickers, etc.) are available and at hand.
- Planning the seating arrangements in advance is an important task, mostly to create a balanced and multi-actor atmosphere (you could check the ppt 'CFD COP1 Group dynamics during a workshop' on the WP4 share).
- Once the participants start arriving, name tags should be given with table numbers (if necessary).
- It is important to obtain a signed authorisation for the use of photos for the project.
- Finally, ensure that all opinions are considered throughout the LL workshop, and that the final results are reached by consensus.

Do's and Don'ts while running a Living Lab

The structured evaluation of the set up and running of six Living Labs in the H2020 project AgriLink resulted in a series of practical do's and don'ts that were identified for those considering using a LL (AgriLink online course, 2021). The complete list of do's and don'ts are described in the textboxes below

Do's

- Be realistic of what might be achievable, taking into account existing needs and capacities of likely participants.
- Build trusting relationships to establish trust and speed progress.
- Identify a meaningful and pressing issue of concern relevant for the stakeholders and the end-users to maintaining energy in the LL.
- Seek and establish a mandate.
- Be prepared to limit focus and boundaries to make it more likely to proceed.
- Be inclusive of stakeholders with complementary skills.
- Engage skilled and knowledgeable facilitators.
- Adapt, learn and be open.
- Monitor and keep track of progress and ideas, and use these data and experiences to constantly re-evaluate the approach.
- Assess resources and capacities on a continual basis.
- Communicate.
- Develop skills and practices.
- Coordinate the process.

and will be discussed and elaborated with participants during sessions of the CoP in CFD. The 'do's' and 'don'ts are not a prescriptive list nor are they set out in a preferred order. The aim is to offer insights

into several do's and don'ts that may be relevant at the same time in any LL context and may require coordinated action and responses.

Many of the do's can be inverted to provide a corresponding list of 'don'ts'. However, a few additional elements are worth noting since they highlight other aspects not readily captured by inverting the 'do's'.

Don'ts

- Use confusing jargon or abstract language. Terms as Living Lab, co-creation and multi-actor may have very limited appeal and can be confusing to non-academic audiences.
- Do not be afraid to make mistakes or of changing the aim and focus of the Living Lab.
- Do it alone. The experience for all involved will be improved and insights are likely to be significantly greater if a Living Lab is run and assessed by a team.
- Assume Living Labs are always the answer. It may be appropriate not to embark on a Living Lab or to end it early.

Chapter 5

Monitoring & Evaluation

This chapter provides a general introduction to the Monitoring and Evaluation approach of the LLs involved in CFD. This approach will support reflexivity on the performance of the LL, both within the individual LLs as within the CoP of CFD LLs.

Monitoring & Evaluation

Introduction

In CFD, the objective of Monitoring and evaluation (M&E) of the LLs is to support them in addressing challenges throughout running of the Living Lab by continuous reflection on LL performance. It allows LLs in making a profound judgement about whether something is on track or not by identification of important influences on LL performance. Even more, having a better understanding of these influences and success factors for co-creation might be considered as an important key performance factor on itself. The lessons learned of the LLs, will be exchanged between LL teams in a CoP to learn from each other. M&E approach will support the LLs in updating their action plan at yearly basis. The WP4 team will harvest the lessons learned, to support other LLs beyond the project in their co-creation journeys. In this chapter, we will share an update of existing approaches of M&E of LLs, after we will share how we want to implement M&E within the context of CFD.

M&E of LLs to support reflexivity and decision-making

Monitoring and evaluation (M&E) are concepts that are often used together. Meanings of both concepts vary depending on what is being monitored and evaluated and why. Monitoring usually involves observing, measuring and checking what is going on in relation to planned actions, objectives or expectations. Evaluation involves making a value about whether something is on track or not in a way that takes account of its context. It is usually about the importance, worth, usefulness, success or benefit of something. The concept of 'value' is at the core of evaluation.

LLs might benefit from M&E in different ways. M&E will support a LL in:

- **Gaining transparency on the co-creation process**. As M&E is integrated in LL activities, participants will be involved in the M&E. M&E will provide data and information on the process, which will be shared with the LL participants. This gives them more insights into the process on the one hand and offers them to the opportunity to bring their perspective on how the LL is performing.

- **Stimulating reflexivity and collective learning**: M&E should provide a blueprint of what went right and/or wrong along the co-creation trajectory. Although the action plan sets out the actions for the LL on an annual base, co-creation processes might be subjected to many unexpected circumstances and conditions. M&E will help to pinpoint specific failures, instead of guessing what caused problems. This will stimulate recurrent collective reflecting and learning on how to support co-creation processes.

- **Improving decision-making as LL:** The M&E approach aims at providing the essential information and tools to LL teams to see the big picture and longer-term objectives. The information collected through monitoring will reveal gaps and issues, which will be evaluated to identify solutions and adapted interventions that still fit with the long-term objective of the LL.

This improves decision making on the further process just as on how to use resources and capabilities in the most efficient way.

Towards a framework for M&E of LLs

Both monitoring and evaluation can be formal and/or informal, active and interactive, criteria can be explicit or implicit and they can be carried out as you go and/or at specifically agreed time intervals. Both processes can focus on different levels of activity, using a range of supporting tools and techniques. If we want to apply M&E in the context of LLs, literature provides many tools and approaches for M&E. Different tools and techniques can be used for different purposes. For example, some are suitable for the activities of data gathering (both quantitative and qualitative), some for data analysis, some for stimulating reflection, for action, etc. Key Performance Indicators (KPIs) in monitoring tools also largely depend on 'what' needs to be the subject of M&E. Some tools focus on the organizational aspects of the LL and its context, other tools focus on the process to come to innovation and the LL methodology as such. Other focus on the impact of LLs and to what extent they contribute to broader societal goals.

Deciding on what should be the focus of M&E and how to put this into practice with tools and KPI's largely depends on:

1. Difference in where LLs are in the innovation process
2. Difference in maturity of the LLs (as an organization and its methodology)
3. Difference in obstacles and challenges faced throughout the innovation process
4. Difference and variation in the type of actors involved running from relatively simple to very complex

As described in Chapter 2, Living Labs in CFD are highly diverse with respect to all areas described above. As a result, a M&E tool/KPI relevant to one lab will not necessarily be relevant to another lab. Therefore, we developed an approach which allows flexibility in M&E throughout the different LLs. Tools/KPIs for M&E will be provided by the WP4 team, or by the LLs themselves. These tools will be based on the needs of the Living Labs, on where they are in the innovation process, on the challenges faced in this co-creation journey. What exactly will need to be monitored will differ from lab to lab. This will also evolve through the process that all LLs go through. In CFD, we therefore do not aim to monitor a fixed list of KPIs. We want to start from a broad M&E approach, in which each Living Lab has the freedom to define its own KPIs according to the peculiarities of each individual Living Lab. The WP4 provides support by stimulating reflexivity, facilitating knowledge exchange between Living Labs and providing insights from literature and existing tools according to the specific needs of each LL. In what follows, we describe how we want to approach this.

M&E approach in CFD

M&E in this project is integrated in running of the individual LLs, just as in the CoP of LLs in CFD. The approach is based on reflexive M&E. Basically, this means that LL teams (facilitator and monitor (FM)) and by extension all LL participants are engaged in a critically reflective process throughout the innovation process. Living Lab monitors and facilitators have a key role in reflexive monitoring. The monitor is mainly responsible for monitoring. The facilitator and the monitor, and preferably other

stakeholders in the LL, are engaged in evaluation, based on reflexivity. LL participants will be engaged in evaluation, in providing feedback to the monitoring results and co-deciding on the LL activities and approach. Monitoring results may provide the ground for negotiation between LL participants in search for solutions. These M&E actions will support improvement of decision making that could lead to adaptation of the strategy and fuels the yearly update of the action plans. The approach of reflexive M&E is summarized in the schedule in figure 11, and explained in more detail step by step. It presents a cycle which will be repeated on a yearly basis.

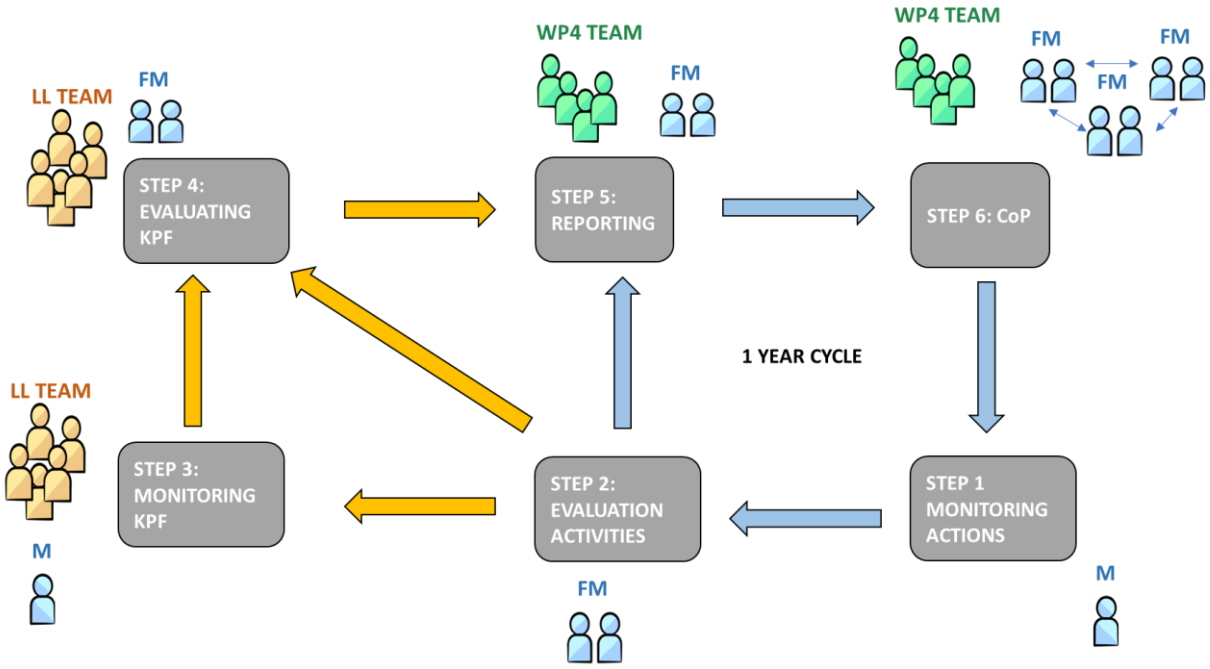

Figure 11. The M&E approach of the Living Labs in CFD

Step 1 Monitoring LL activities: the monitor will keep a LL diary. In this diary, the monitor will describe the actions as included in the action plan. For each action, he will describe the objectives of the action and the approach just as a short evaluation of the action (effective, efficient, efficacy). Annex 2 gives an example of monitoring template. An action might be a workshop, demonstration, real-life testing of innovative practice, interviews, monitoring action, etc.

Step 2 Evaluation of activities: the monitor and evaluator evaluate the actions. Together, they reflect on the diary as a monitoring tool and describe in more depth challenges and lessons learned on the innovation process within the LL. This evaluation is based on a template which includes an assessment of overall performance of the LL based on the action plan (Annex 1) combined with a self-assessment tool to support reflexivity on overall performance (Annex 3). This self-assessment tool helps to explain evaluation of overall performance. This self-assessment tool is developed by the WP4 team by literature study on systemic M&E of LL performance. These studies describe a set of key performance factors (KPF) for co-creation innovation by applying LL approach (Luederitz et al., 2017; Van Geenhuizen, 2018; Bouwma et al., 2021, Potters et al., 2022). We have integrated key performance factors from different papers into a self-assessment tool and structured them along the RCCI framework as introduced in Chapter 3 (Annex 4). This tool stimulates reflexivity of the LL team on the resources, capabilities, collaborations, and innovations they have at their disposal. The tool should give first insights into potential bottlenecks that might hamper the progress of LL actions. Throughout the project, this tool will be adapted, extended by more literature and by own experiences. The tool stimulates reflexivity on the following questions: Link between RCCI and particular challenges/difficulties in the process? How do

they want to take these into account in following stages of LL process? Diary and evaluation will be shared with WP4 team every six months**.**

Step 3 Monitoring of KPF/KPI: Eg if monitor and facilitator might be confronted with stakeholders that are not strongly committed, they might decide to conduct a survey or some interviews to get more insight to understand this observation. This step is not obligatory but might be useful as an additional monitoring step to get a better understanding of some of the key performance factors that might hamper the innovation process. Approach: to be determined by facilitator and monitor, with support from WP4 team. Timing: not specified but to be considered during each CoP meeting when updating the action plan.

Step 4 Participatory evaluation. This step involves an extension of the M&E approach by engaging other LL participants beyond LL facilitator and monitor in step 2. In this project, we encourage participatory evaluation by involving LL participants in evaluation, in providing feedback to the M&E results and agree on the use of the results in improving the living lab. In this step, facilitator and monitor present progress of the process, monitoring results, challenges and potential actions to deal with them. Goal of this step is to reflect together with the LL actors on the next steps in the process. This step is strongly recommended to increase ownership of the process by all stakeholders involved. This step is not obligatory. Approach: to be determined by monitor and facilitator, with support from WP4 team if needed. Timing: not specified.

Step 5 Bilateral exchange with WP4 team. This step includes a bilateral meeting between the facilitator, monitor and WP4 team to discuss the report on M&E, that will be send on beforehand by the monitor. The report will be discussed, just as requests from the LL team: topics to be discussed during the CoP (what do they want to learn from other LLs); needs for co-creation tools, facilitation tools, etc. Timing: every six months and 2 months before meeting with facilitators and monitors (CoP).

Step 6: community of practitioners. In this step, LL teams learn from each other in the CoP. This CoP is described in more detail in Chapter 6 but the content will be partially inspired by the M&E. Each LL team will present progress, challenges, success stories just as difficulties experienced along the way. WP4 team will capture the lessons learned regarding tools used for M&E within the LL. Some training will be organized on tools for interactive innovation, M&E, stakeholder engagement, etc. (based on the requests identified in step 5). We will reflect on potential contribution from other WPs in the project to each of the living labs. The action plan will be updated taking into account lessons learned from the M&E approach. Timing: yearly.

Chapter 6

Community of Practice

This chapter provides a general introduction to the Living lab approach, the role of Living labs in Sustainable transition processes, and how the LL approach is applied in CFD.

Community of Practice (CoP)

The purpose and principles of the CoP

In CFD ten LLs will be initiated in creating Climate Smart Solutions. Applying this approach in so many countries and contexts provides a rich empirical basis for learning on new ways to co-design new solutions. In WP4 all 10 facilitators and 10 monitors will come together at a regular base in a sort of community of practice (CoP) as presented in figure 12. Main objectives of the CoP will be 1) training in methods and tools to facilitate and monitor a LL and 2) the shared learning and exchange of progress, dilemmas and strategies. The task leaders of WP4 will form the LL support unit. They facilitate the CoP, organise CoP workshops and virtual meetings, give guidance in tools and methods and support the M&E to draw collective lessons.

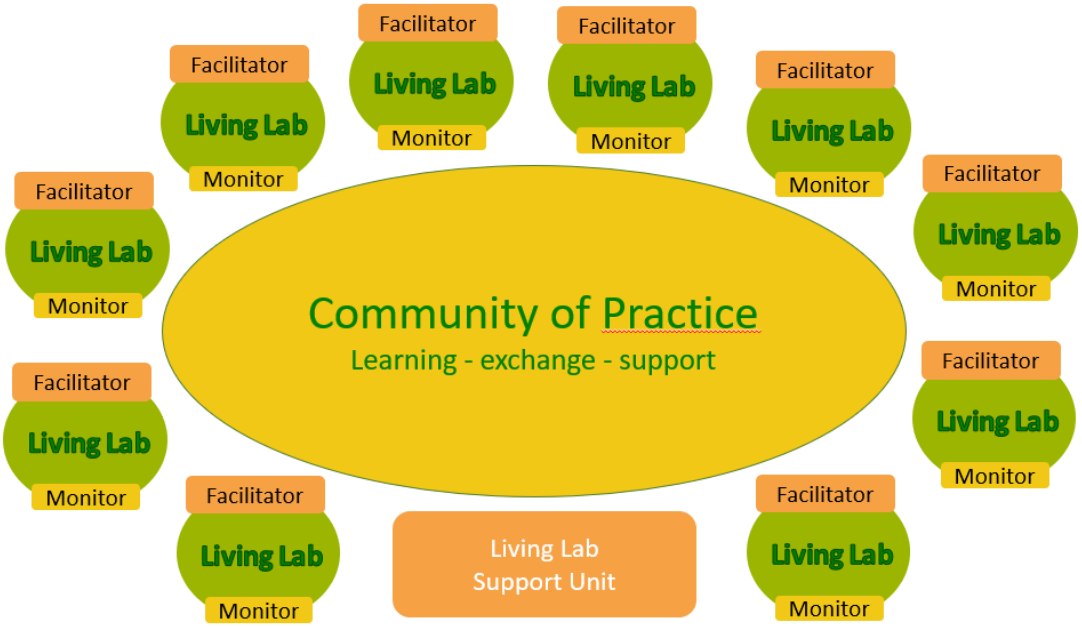

Figure 12. Overview of the Community of Practice of Living Lab facilitators and monitors in CFD

Meetings of the CoP

During the project around 5 live meetings and 10 virtual meetings will be organized with all facilitators & monitors of the LLs.

The live meetings will be interactive workshop of one-two days with focus on:

- Training: with short introductions of concepts and tools followed by practical exercises to apply the concepts or tools to the own LL. This with the ambition that at the end of the meeting the facilitators and monitors know and have applied several concrete tools and instruments;

- Sharing and inquiring: LL teams present their progress and dilemma's and with support of P2P mentoring, diagrams and conversation mapping questions will be deepened, solutions will be explored;
- Reflection and learning: with support of M&E results insight will be gained in own and collective learning about roles and practices in the 10 LLs. Questions and issues can be put on the agenda for upcoming CoP meetings;
- Preparing and planning: the LL teams will create oversight of the next steps to take, have described own plans, actions and internal deadlines for the coming months after the CoP meeting.

Live meetings could be organised in combination with a cross visit, or interactive sessions with local LL partners.

The virtual meetings will be short online sessions of 1-3 hours to enable more informal discussions between the LL teams and the LL support unit. It will be meetings to clarify any key questions, to support and stimulate progress and to assist individual LL teams in shaping their LL.

Besides the formal exchange via e-mail a WhatsApp group will be created to allow users to share successes, pictures, ask quick questions, give tips and to keep everyone in the loop.

Tools to support CoP meetings

Several tools will be used to support the CoP-meetings depending on the agenda and the needs. A useful method to support social problem solving is conversation mapping.

Conversation mapping: the conversation map helps to maintain the interaction with others while exploring an issue or a solution by taking into consideration the perspectives and interest of others. In CFD the conversation map is a map of a conversation between 4-8 people. The starting point is an agreed topic of conversation: 'the conversation trigger'. This is written in the middle of large paper. Each person has different colored pen to use. One person starts by recording his/her view about an aspect of the central 'trigger'. Another person describes their response and writes their views relating to this, linked by single line branching out, followed by others till the theme is explored fully. In the project AgriLink conversation maps were used on triggers like: From your point of view, what ought innovation support services to look like? How do we build and maintain trust among the LL participants? How to develop a business model for your service.

Another method that will be used during the CoP meetings will be peer to peer mentoring. The 10 LL teams work with a variety of groups and will develop a broad range of expertise. Via short P2P mentoring sessions, this expertise can be made available for various professional issues related to the development of a specific LL.

Peer to peer (P2P) mentoring is a form of dialogue between a person who has a certain professional question and peers who are willing to listen and assist in deepening the question and sharing their expertise to explore solutions. This can be done in short sessions of 30-45 minutes in groups of 4-6 persons. One person brings in a dilemma related to the development or situation in the LL. Peers of other Labs listen and assist in the reflection on thinking and acting, resulting in better insights on the topic and ideas for new interventions. The five steps and timings set out below could be followed to create an effective process.

1. Introduction of the dilemma by the problem owner (5 minutes).
2. Exploration of the dilemma by open questions by peers: why, how, when. This is about fact finding. In this stage the peers postpone to voice their own ideas and do not give advice (10 minutes).
3. Possible reformulation of the dilemma and write reformulated dilemma on paper.
4. Peers analyse the central problem. Each formulates one advice (what would I do in this situation) (5 minutes).
5. The problem owner evaluates the results: is there an improved insight into the problem and a useful advice?

Background information and a condensed description how this was used in the project AgriLink can be found in an EU practice abstract (Schoorlemmer, 2021).

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Annexes

Annex 1: Template Action Plan of the Living Lab (step 5, chapter 3)

Note: actions can be to achieve aims with existing RCCI and/or actions to fill gaps in the RCCI of the LL in order to achieve aims

LL Aim/Purpose/Climate problem:

(Eventually split in sub objectives):

-
-
-

Actions	Actors involved	Key resources	Key capabilities	Key innovations	Possible KPI's	Timing
ACTION 1:						
ACTION 2:						
ACTION 3:						

Annex 2: Monitoring template – keeping the diary on the action plan (step 1, chapter 5): monitor

Date – Time frame of the action
Describe the action and the objective as described in the yearly action plan.
Describe the outputs produced directly resulting from the action (built capacities, resources, knowledge, innovative solutions, commitment, etc).
Describe how you the action was organized and established: Who was involved? Describe the approach, setting, etc
What was an eye opener?
What was a challenging in completing this action?
How would you evaluate the action in the co-creation process and explain? • effective? Does the action contribute to the higher level purpose (climate smart solutions)? • efficient? Are resources properly used? • efficacy? Does the action do what it meant to?

Annex 3: Evaluation template (step 2, chapter 5): Facilitator and monitor

Annex 2 – Evaluation template (STEP 2): Facilitator and monitor

	Agree				Disagree
	1	2	3	4	5
The LL process of development of climate smart solutions is on schedule (cfr action plan)					
	Very bad				Very good
	1	2	3	4	5
How would you score the overall performance of your LL?					
How would you score the overall satisfaction of the stakeholders in your LL?					

Go throughout the assessment questions of key performance factors. Reflect on how specific key performance factors impacted your answers to the questions above. Which of these key performance factors have been really important in achieving your results?
Which of these key performance factors are not enough present/developed in your LL and might need more attention in your LL in order to support the further steps in the process?
Do you plan actions to consider to gain more insight into these KPF? Please describe your approach? (STEP 3 and 4 in the M&E approach of chapter 5)

Annex 4: M&E of LL performance: Key performance questions on RCCI

	Agree				Disagree	NA
	1	2	3	4	5	
Capabilities						
The LL is able to overcome difficulties and complications						
The LL is able to deal with unpredictable events or environments						
The LL is relevant to the ambitions/interests of all stakeholders involved						
Stakeholders do experience a sense of urgency, are aware of the need for transition						
Stakeholders agree on possible solutions to the climate smart issue						
The LL is able to explore and absorb feedback from end users						
The LL has necessary technical and management capabilities to put ideas into action						
The LL indicates how solutions can be applied to other contexts or scaled out to broader applications						
Collaborations						
The LL is connected within the wider CFD network						
All relevant stakeholders are engaged in the LL						
In my LL, decisions are made jointly						
In my LL, stakeholders trust each other enough to have good collaboration						
In my LL, stakeholders live up to their mutual commitments and shared values						
The LL is capable of motivating stakeholders to engage in its activities						
In my LL, end users are engaged from the very early stage of co-creation activities						
Innovations						
The LL generates outputs/outcomes in alignment with LL ambitions/objectives						
The LL ensures transparency throughout the process						
The LL fosters reflexivity and learning throughout the process						
The LL activities are aligned with the ambitions/objectives of the LL						
The LL is fostering change in practice among its participants						
The LL is building capacities among its participants to generate climate smart solutions						
The impact of the LL goes beyond the stakeholders engaged in it (change in behaviour, policies, values, rules, etc)						
Resources						
The LL is able to secure sufficient material resources to support its actions						
The LL is able to secure sufficient non-material resources to support its action (digital tools, management tools, facilitation tools, etc)						
Solutions are tested in real-life setting						
The LL is able to secure sufficient financial resources to support its actions						
The LL has enough human capital to tackle the climate issue the LL is dealing with						

CLIMATE FARM DEMO

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