Valorization Legumes Related Ecosystem Services

D1.5: Establishment of VALERECO LLs and LL boards

(version 2)

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[1] *Please consult the Grant Agreement: R: Document, report; DEM: Demonstrator, pilot, prototype, plan designs; DEC: Websites, patents filing, press & media actions, videos, etc.; DATA: Data sets, microdata, etc; DMP: Data management plan; ETHICS: Deliverables related to ethics issues; SECURITY: Deliverables related to security issues; OTHER: Software, technical diagram, algorithms, models, etc.*

[2] *Please consult the Grant Agreement: PU – Public, fully open, e.g. web (Deliverables flagged as public will be automatically published in CORDIS project's page); SEN – Sensitive, limited under the conditions of the Grant Agreement; Classified R-UE/EU-R – EU RESTRICTED under the Commission Decision No2015/444; Classified C-UE/EU-C - EU CONFIDENTIAL under the Commission Decision No2015/444; Classified S-UE/EU-S – EU SECRET under the Commission Decision No2015/444*

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VALERECO Consortium

No.	Participant organization name	Short name	Country
1	GEOPONIKO PANEPISTIMIO ATHINON	**AUA**	GR
2	ESC DIJON BOURGOGNE	**BSB**	FR
3	DELPHY BV	**DELPHY**	NL
4	UNIVERSIDADE DE COIMBRA	**UC**	PT
5	REFRAME FOOD ASTIKI MI KERDOSKOPIKI ETAIRIA	**RFF**	GR
6	INSTITUT ZA RATARSTVO I POVRTARSTVO INSTITUT OD NACIONALNOG ZNACAJA ZA REPUBLIKU SRBIJU	**IFVCNS**	RS
7	GOTTFRIED WILHELM LEIBNIZ UNIVERSITAET HANNOVER	**LUH**	DE
8	STICHTING WAGENINGEN RESEARCH	**WR**	NL
9	INSTITUTO NAVARRO DE TECNOLOGIAS E INFRAESTRUCTURAS AGROALIMENTARIAS SA	**INTIA**	ES
10	AgriFood Lithuania DIH	**AFL**	LT
11	UNIVERSITA DEGLI STUDI DI FIRENZE	**UNIFI**	IT
12	UNIVERSITA DI PISA	**UNIPI**	IT
13	AG FUTURA TECHNOLOGII DOOEL SKOPJE	**AGFT**	MK
14	SCUOLA SUPERIORE DI STUDI UNIVERSITARI E DI PERFEZIONAMENTO S ANNA	**SSSA**	IT
15	HELVETAS Swiss Intercooperation	**HELVETAS**	CH

Table of Contents

List of Figures

List of Tables

List of abbreviations

Living Lab(s)	LL(s)
Ecosystem Services	ES
Living Lab board(s)	LL board(s)
European Union	EU
Work Package	WP
Work Package Leader	WPL
Grant Agreement	GA
Consortium Agreement	CA
Project Officer	PO
Project Coordinator	PCO
Reporting Period	RP
Living Lab Reporting	LLR
Research and innovation	R&I
Communication and Dissemination	C&D
Description of Actions	DoA
Project Steering Group	PSG
Life cycle assessment	LCA
Common Agricultural Policy	CAP
Digital Legume Information Hub	DLIH
Decision Support System	DSS
Key Performance Indicators	KPI

1. Introduction

VALERECO target is to promote adoption and understanding the value of legume crops towards transition to sustainable, productive, climate-neutral, environment-friendly, and resilient farming systems. The project aims to quantify and enhance the environmental and economic value of ES provided by 4 minor or underutilized and 8 major legume crops. It seeks to encourage diversification of farming practices throughout the EU and Associated Countries, which can contribute to healthier and sustainable diets and climate change resilience. The identification will be achieved through: (1) a thorough analysis on the ecosystem-services legacy and (2) the investigation of gateways for penetration of legumes and their associated ES to the new CAP.

The valorization will be implemented through the establishment of nine Living Labs (LLs) to conduct: (1) behavioural design strategies to promote the adoption of legumes in production and consumption, (2) on-station participatory trials to assess the performance of major and minor-underutilised legume crops in diversified farming systems, (3) to demonstrate and co-create technical economically and environmentally assessed solutions for legumes inclusion in cropping systems. The dissemination will be realized through: (1) the development of a Digital Legume Information Hub (DLIH) to upscale and maximize the uptake of VALERECO's results, (2) the development of a Decision Support System (DSS) to support the decision-making of farmers and advisors for legumes adoption, and (3) the generation of capacity building material made available to the public through an E-learning Platform.

The overall objective of VALERECO is to promote adoption and understanding the value of legume crops towards transition to sustainable, productive, climate-neutral, environment-friendly, and resilient farming systems. The project aims to quantify and enhance the environmental and economic value of ES provided by these crops. It seeks to encourage diversification of farming practices throughout the EU and Associated Countries, which can contribute to healthier and sustainable diets and climate change resilience.

1.1 Task 1.4: Establishment of the Living Labs

This Task will develop the framework of the VALERECO LLs by providing the guidelines (D1.4, D1.5 and D1.6) for establishing and monitoring across the 9 LLs including the on-station participatory trials and demo sites, and the setup of the LL boards. In this context, 9 LL boards will be established, consisting of 10 members representing the several types of stakeholders (VALERECO partners, farmers, advisors, researchers, consumers, and policymakers) animated by a facilitator. This framework will also provide concrete suggestions about the external stakeholder types and proportions to invite to the DLIH (WP5), engagement methods and tools (engagement tools, communication channels, key timelines, and ethical issues). Special emphasis has been placed upon the development of this template (D1.4, D1.5 and D1.6) for clarifying the roles and responsibilities of VALERECO partners and LL members and reporting the R&I and demonstration activities across all the LLs (GA on page 79).

The Task 1.4 is leaded by AUA (Prof. Ilias Travlos) and UNIPI, SSSA, UNIFI, UC, IFVCNS, DELPHY, WR, INTIA are participating in that. The Deliverable D1.4 "Establishment of Valereco LLs and LL boards (version 1)" is due in Month 3 of the project (i.e., 31 August 2024). The procedure for drafting, reviewing, delivering, and submitting D1.4 will follow the steps outlined in D7.1"Project Management Handbook."

VALERECO is committed to achieving and delivering the following target numbers and Key Performance Indicators (KPI) related to the ES of legumes, LLs, and LL boards:

Table 1. Expected results of VALERECO and Key Performance Indicators with their associated target values

KPI – Target value	
Develop a knowledge base on the ecosystem services provided by legumes	
Knowledge database on the ecosystem services associated with legume crops	At least 18 ES identified (2 per LL)
	>10 beneficial effects of legumes inclusion in cropping systems
	>18 gateways for penetration of ecosystem services to the new CAP (3 per country with LLs, x6 countries)
	>20 linked projects
Establishment of Living Labs to co-create and demonstrate economically and environmentally feasible solutions for legumes incorporation into cropping systems	
Technical assessments of legume-inclusive cropping systems	90 stakeholders engaged in the co-creation activities of the LLs (10 per LL)
	900 stakeholders reached in the demo activities of the LLs (100 per LL)
	9 technical assessments for inclusive cropping systems (1 per LL)
Cost – benefit analysis	Identification and quantification of >3 variants related to legume crops investment costs (e.g., seed, on-field agricultural practices)
	>3 variants for beneficial effects (e.g., reduced N fertilization, soil water retention and organic matter content, yield) expressed in monetary terms
Life Cycle Assessments	9 LCA analyses (1 per LL)
Promotion of diversified legume-derived ecosystem services across the value chain	
Behavioural Design Framework	900 surveys with farmers & consumers (100 per LL)
	12 nudges & 24 scenarios
	600 participants
	4 behavioural design strategies & empirical assessment with 1,200 farmers across the member countries
Experimentation of innovative uses of legumes for promoting biodiversity driven ES in diversified farming systems	
Agroecological crop management strategies	4 minor or underutilized & 8 major legume crops tested
	>3 eco-physiological indicators, >10 bio-metric indicators and >2 indicators quantified for measuring yield data
	>8 agroecological strategies assessed
N2 impact maximisation strategic levers	> 5 factors identified, studied, and quantified addressing legumes N transfer
	> 9 soil biodiversity indicators assessed (at least 1 per LL)
Assessment of weed community regulating effect of legume crops and associated biodiversity	>9 legume-based systems assessed for weed suppression (1 per LL)
	Identification and quantification of >10 nature conservation-oriented variants testing different legume types and management options (>5 legume species x 2 environmental conditions)

Climate change adaptation capability review	>5 field trials to identify drought resilient legume species
	>8 key traits identified for genetic improvement of legumes
Develop a digital legume information hub to upscale and uptake of VALERECO's results	
Decision Support System	1 DSS tool recommending legumes management strategies
Digital Legume Information Hub	1 VALERECO Platform (DLIH) providing information and data for >10 topics for crop diversification based on legumes
E-Learning Training Platform	1 e-learning platform with >10 modules for 5 types of actors
Policy recommendations at EU, national and regional level	8 policy briefs (1 EU level; 6 national/regional (participating countries in LLs; 1 Associated countries)

Table 2. Dissemination and communication activities (KPI)

Scientific Publications	10 publications in peer-review open-access journals
	>15 publications in scientific conferences
Technical Publications	>10 technical publications/ articles
	>10 blog contributions
	>3 inventories/guides
Policy Contribution	8 policy briefs (set of recommendations)
	>2 (online) policy recommendation workshops
	>50 workshop participants
	>5 position papers validated through scientific publications
Capacity Building	>9 capacity building training sessions
	>9 knowledge transfer workshops
	>100 training attendees
	>350 workshop participants
	>3 joint events with relevant EU projects and initiatives
Ecosystem Building	>3 booths in exhibitions and fairs
	>8 Community outreach presentations
	Organisation of >10 joint activities/data sharing with EU/national projects/initiatives

1.1.1 Connection with other Work Packages

Task 1.4 belongs to WP1 "A knowledge base on the ecosystem services provided by legumes". WP1 will be the framework to establish VALERECO's LLs, explain knowledge background of ecosystem services and other benefits provided by legumes and what its role and place in agroecosystems is, identify gateways for penetration of legumes ES to the new CAP and facilitate synergies with other projects and networks.

In detail, WP1 and Task 1.4 will feed other WPs:

WP1 → WP2 & WP3 & WP4 & WP5 & WP6

- Guidelines for establishing and monitoring across the 9 LLs including the on-station participatory trials and demo sites
- Set up of 9 LL boards, consisting of 10 members representing the several types of stakeholders (VALERECO partners, farmers, advisors, researchers, consumers, and policymakers) animated by a facilitator.
- Suggestions about the external stakeholder types and proportions to invite to DLIH (WP5)
- Engagement methods and tools, communication channels, key timelines, and ethical issues
- Development of a template for clarifying the roles and responsibilities of VALERECO partners and LL members and reporting the R&I and demonstration activities across all the LLs

WP1→ WP2

- The knowledge base on ecosystem services provided by legumes will support the identification of producer and consumer perceptions in relation to decisions to promote legumes
- Optimizing the design of behavioral strategies to promote the adoption of legumes in production and consumption.

WP1 → WP3

- On-station assessment of the impact of agroecological practices based on cropping system diversification on the delivery of the key legume ES (identified in WP1) under field experimental conditions.
- The preferences and needs of key stakeholders involved in the LLs will be included in the experimental protocols and co-evaluation of results.

WP1→ WP4

- The economic, environmental, and technical assessment of ES will be based on the knowledge background (WP1) and stakeholder needs. The establishment of Living Labs defines the strategic validation of legume ecosystem services and designs the essential framework for the Living Labs (LLs). This initial planning determines what is valued and how the demonstration should proceed. WP4 assesses and implements this strategy by conducting demonstration events in the LLs. Crucially, WP4 carries out the Cost-Benefit Analysis (CBA) and Life Cycle Assessment (LCA) to quantitatively assess, in economic and environmental terms, the legume benefits identified in WP1, transforming strategic goals into practical, validated outcomes.

WP1 → WP5

- Decision-making with regards to biodiversity and environmentally friendly legume cultivation, primarily aimed at farmers
- Communication of legume benefits
- Making the ES of legumes tangible for key stakeholders along the value chain and deriving policy recommendations to make better use of these benefits

WP1→ WP6

- Foster the development of the project's ecosystem
- Engagement of stakeholders along the value chain through appropriate demonstrations, dissemination and communication activities, synergies, and exploitation plans.

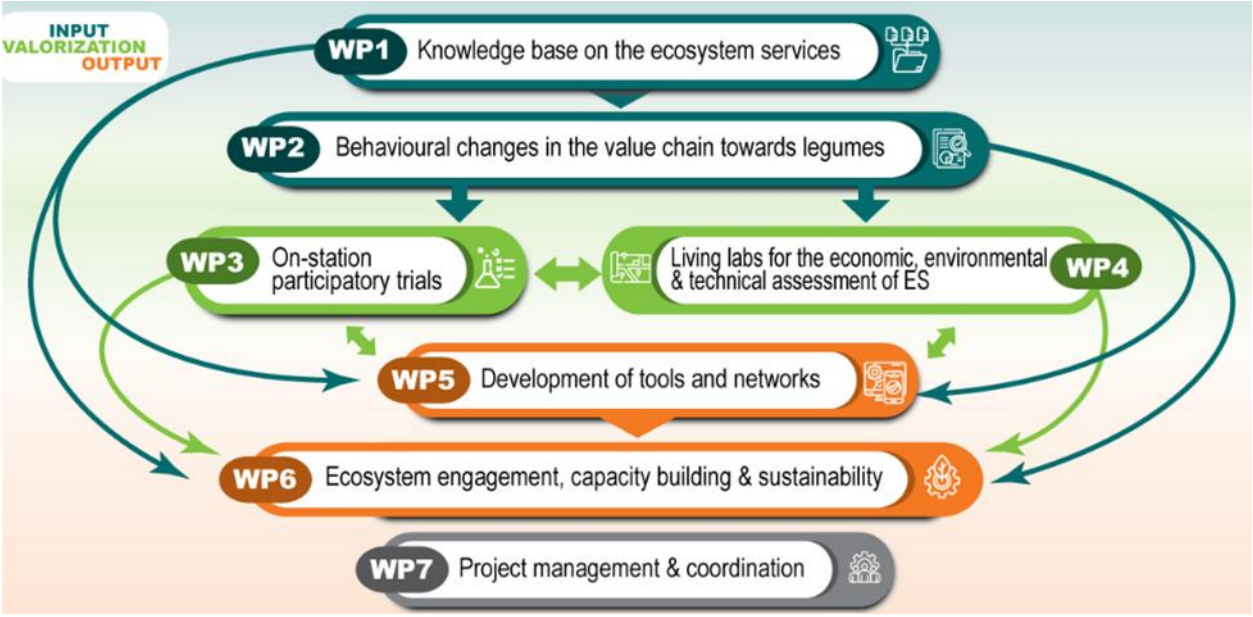

Figure 1. Work Packages inter-connection (PERT chart)

2. Establishment of LLs and evaluation of ES provided by legumes

The first action of VALERECO will be the valorization of ES through the establishment of 9 LLs in 6 countries by: (1) identifying potential stakeholders to take part in the LL boards (details in the Valorization in LLs subsection), (2) providing a common methodology to be followed in the LLs for the implementation and monitoring of activities (D1.4, D1.5 and D1.6), and (3) establishing on-station participatory trials to assess and demonstrate the legumes ES. Ecosystems contribute essential services to the economy and society. These include the provision of food, filtration of air and water, pollination, climate regulation, protection against extreme weather events such as heat waves and flooding, and many more.

VALERECO will explore the benefits of ES from the incorporation of legume crops into cropping systems, which can promote a range of ecosystem services that facilitate sustainable farming practices, support biodiversity, and contribute to mitigating climate change. Legumes play a vital role in stabilizing yields, providing beneficial ecosystem services, enhancing biodiversity, improving soil health indicators, promoting human and animal nutrition, pest control, pollination, and more. Our approach is that legume crops will contribute to the ES.

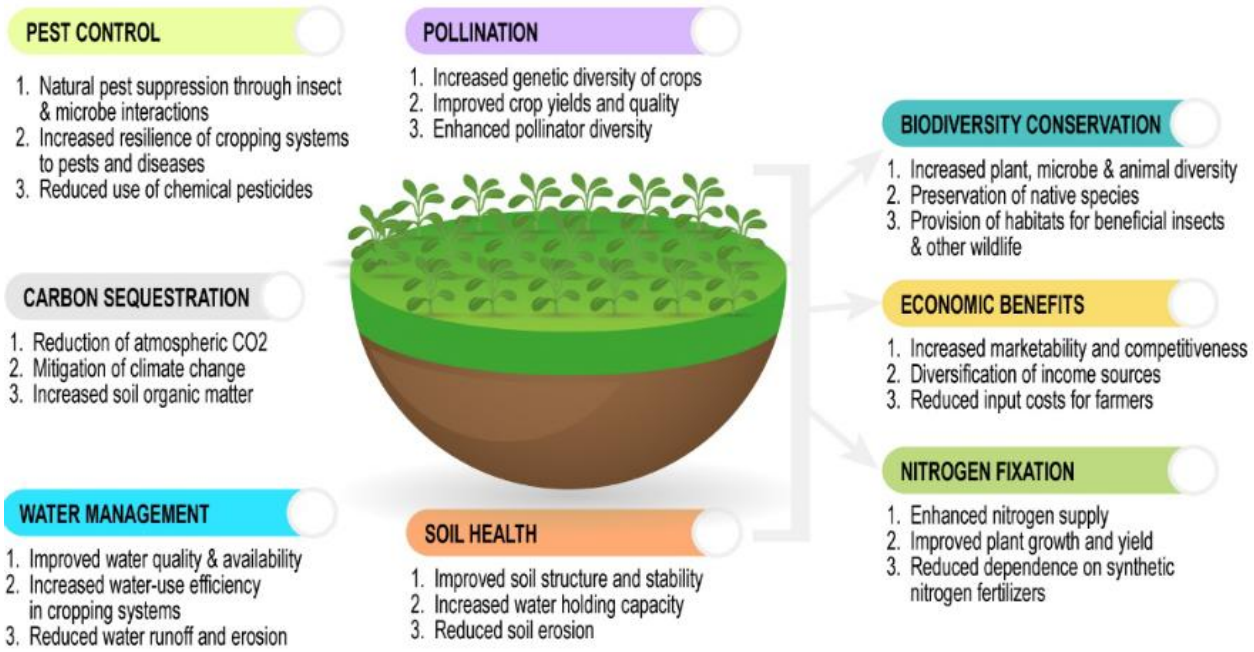

Figure 2. Ecosystem services provided by legume crops

2.1 Stakeholders

VALERECO relies heavily on stakeholders' knowledge, as individual farmers and their associations from all participating countries will be involved by sharing knowledge, co-creating LLs and socio-economic analyses, and providing feedback. Several stakeholder groups will benefit from Valereco outcomes including farmers, advisory organizations, policymakers, industry members, education, and food value chain partners interested in sustainable production.

To ensure the sustainability and adoption of the proposed frameworks in the medium to long term (post-project), stakeholders' network will consist of members representing the several types of stakeholders (VALERECO partners, farmers, advisors, researchers, consumers, and policymakers) animated by a facilitator and linked projects and networks. This will facilitate access to up-to-date knowledge, tools, and techniques applicable to specific conditions and needs.

2.2 Engagement methods and tools

2.2.1 Procedure

VALERECO's first activity will be to identify the most promising actors and stakeholders at the regional, national and EU levels inviting them to define the research priorities of the project, to co-create knowledge and the experimental protocols, and to interact intensively with them towards the adoption to identify ES.

The second action point will be the official approach of the stakeholders and other projects to exchange data/protocols/knowledge and co-design capacities, transferring practical knowledge to the large-scale LLs of VALERECO. The aim will be to exchange knowledge, implement synergies where possible and deliver added value communication, dissemination, and exploitation activities towards all stakeholders, including EU policymakers and scientific communities.

2.2.2 Outreach & methods

VALERECO will ensure a good representation of stakeholders across different EU countries, farming systems, and crops. The proposed proportion of stakeholders participating in the VALERECO should be gender balanced (approx. 50% female), mostly young, and could be the indicative percentages below:

- 40% farmers (i.e., *farmers are persons who own and/or manage a farm, and they could be conventional, organic, biodynamic, agroecological, regenerative farmers etc.*)
- 10% agricultural advisors (i.e., *agricultural advisors provide technical leadership in design, development, planning, and implementation for agriculture and food sectors*)
- 10% consumers (i.e., *consumers could be all citizens independently from their identity, work, or class status, who consume products, buy, and use up goods and services*)
- 20% researchers (i.e., *researchers are individual scientists or research groups from universities, research institutes or technological centers which offer knowledge about ES and/or conducting research on agroecology and its principles*)
- 10% policymakers & industry actors (i.e., *policy makers are public authorities and individuals from different policy areas who can foster new politics, regulations or means to empower the sector, industry actors could be individuals and/or companies in the agri-food sector, such as from the crop protection sector, market, food processing, machinery etc.*)
- 10% other projects, networks & initiatives

2.2.2.1 Local and regional level

The VALERECO LLs will go through a co-creation framework of systematic and intensive activities to ensure a participatory and multi-actor approach from different stakeholders throughout the value chain. The VALERECO partners' experience in demonstration will be used to promote peer-to-peer learning and informal knowledge exchange among stakeholders to respond to specific needs and precise demand. Involved farmers of the LLs will share their experiences with other practitioners through different field events. Each LL will organize at least 2 field demonstration events to show the results of VALERECO in practice. These events will be adapted to each LL's culture.

The outreach at local and regional level will be realized through:

- The establishment of the LLs and the close collaboration with the farmers
- The LL boards and the co-creation activities (annual virtual meetings & co-assessment workshops)
- Cross-visits
- Demonstration activities in the field (e.g., open field days)
- Sharing the dissemination material
- Participation in local events (e.g., agricultural fair)

2.2.2.2 National Level

At the national level, it is crucial that successful knowledge transfer workshops are conducted. In this knowledge transfer workshop, multiple actors from several stakeholder groups should be invited to assess the progress of the VALERECO project, evaluate and give feedback concerning the DLIH (Digital Legume Information Hub). The outreach methods applied at national scale are the same as for the local and regional scale.

However, it is important to mention that there is a specific barrier that we ought to overcome regarding the involvement of farmers, actors, and other stakeholders (GA, page 136).

2.2.2.3 EU Level

At EU level, the DLIH will upscale the impacts of legumes on ES and agrobiodiversity through the DSS also providing nature- conservational assessment of the legume agroecosystem under various conditions, policy recommendations, capacity building material (WP5,6) that strengthens crop diversification and longer rotation cycles.

Successful agroecological initiatives across the EU will be monitored and approached to participate in the DLIH and presented as case studies to highlight the potential for transition to a larger scale. Potential individual participants in the DLIH will be approached through various dissemination and communication activities, as well as co-creation activities, as described below:

- Cooperation meetings with other (Horizon) projects, described in Task 1.5
- Meetings with representatives from international initiatives and organizations
- Implementation of VALERECO webinars
- Participation of VALERECO partners in international conferences, congresses, and seminars
- Parliamentary session will be organized at the end of the project VALERECO

2.2.3 Engagement tools

VALERECO will develop a clear plan for how to approach, invite, and engage external stakeholders. This plan is based on five (5) axes:

DLIH: VALERECO will increase visibility and impact of the project's results through the development of the DLIH, engaging with stakeholders, including crop producers and livestock farmers, processors, distributors, and retailers. VALERECO will guarantee the uptake of legume-based cropping systems through VALERECO's DSS that will support decision-making and attract farmers and advisors to embrace hands-on solutions. VALERECO will provide policy recommendations and scale up through close cooperation with national and international projects, networks, and organizations to ensure that the capacity building material reaches a wide audience.

Social media and publications: (i) continuous posting on VALERECO social media (LinkedIn, X, Facebook, YouTube); (ii) scientific publications; (iii) technical articles; (iv) articles in farmers' journals

Living Labs: (i) demo farm events (e.g., field days); (ii) co-creation activities with the LL boards, where external stakeholders will be invited to participate in the knowledge transfer workshops in each LL; (iii) close collaboration with farmers which can serve as multiplier at local scale

Collaborations: In collaboration with Task 1.5, three (3) cooperation meetings will be held with other EU funded projects: (1) at the beginning of M3, (2) on M18 and (3) on M36. These meetings will: (1) provide further elements for the scanning of ecosystem services provided by legume crops to be mapped within Tasks 1.1, 1.2, (2) enhance cross-project collaboration, promoting mutual evaluation of project activities and outcomes, and (3) join efforts on communication activities and dissemination of results among similar projects.

National/international events: (i) Participation of VALERECO partners to national/international events (such as agricultural fairs and exhibitions) by utilizing farmers' most trusted dissemination channels will serve as multipliers at the regional, national and EU levels; (ii) Participation of VALERECO Partners in conferences, congresses seminars etc. could be an effective way to attract researchers, industry actors, policymakers and agricultural advisors (iii) Knowledge transfer workshops in the VALERECO project.

2.3 Communication channels

Several communication channels will be used to deliver the message to the stakeholders and approach them to participate in the DLIH and the rest of the activities in the VALERECO project. Communication activities and tools will be implemented, throughout the life of the project and beyond, making results accessible to internal and external stakeholders, as well as to the media and public. Communication activities will be customized for different countries, regions, and subgroups of the population, making use of the skills and resources of partner organizations.

Specifically, the communication tools and channels are:

- DLIH
- E - newsletters
- Social media
- Videos
- Website

It is important to highlight the key messages for each stakeholder group to convince them to participate in the VALERECO activities.

Table 3. Target groups and key messages

Target	Key benefits/message
Farmers & Agricultural advisers	Exploit the advantages of legume crop rotation. Gain the knowledge to start benefiting from crop diversification and consumer interest in your production.
AgriFood Industry	Benefit from the legume value chain, getting direct input for actor demand. Stay up to date on the latest evolutions in the market, supported by research.
Scientific and Research Organizations	Capitalize on the knowledge produced within the project to promote the growth of sustainable farming systems. Drive research and guide producers and consumers towards climate resilient practices and habits.
Policy makers & regulators	Redesign policies and governance frameworks to support the adoption of leguminous crop rotation, helping farmers and consumers shift towards protein sufficiency.
General Public	Support the transition to plant protein, with in-depth information to upgrade your diet with nutrient-dense alternative sources. Influence food systems to adopt pro-environment impactful practices.

2.4 Key timelines

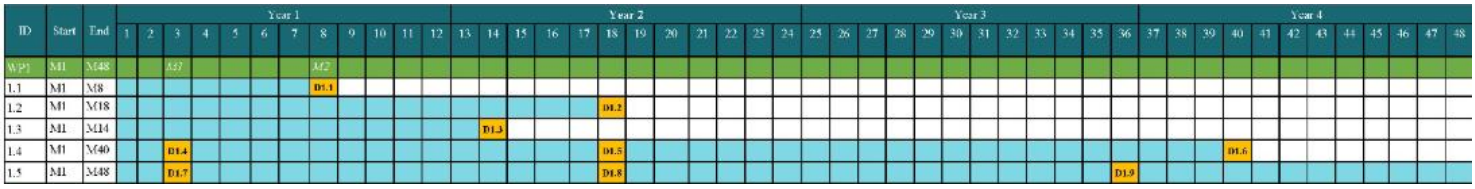

Figure 3. Gantt Chart for WP1

Task 1.4 has these deliverables. Specifically:

- Establishment of VALERECO LLs and LL boards (Version 1) [due to M3 – August 2024]
- Establishment of VALERECO LLs and LL boards (Version 2) [due to M18 – November 2025]
- Establishment of VALERECO LLs and LL boards (Version 3) [due to M40 – September 2027]

All consortium beneficiaries should contact periodically the Task leader (Ilias Travlos; travlos@aua.gr) and if necessary, the WP1 leader (Alies Haange; A.Haange@delphy.nl. The reporting about the co-creation activities in WP1 will be described in Section 3.7 below.

To ensure the quality of the deliverable to be submitted, the following procedure (described in the Project Management Handbook, D7.1) to review each deliverable has been defined:

- Three weeks prior to the submission of the deliverable, the task leader responsible for the generation of the deliverable will send the deliverable to the Project Coordinator and after having implemented the required changes, the WP leader will receive it for further revisions.
- The WP leader will send the deliverable to the partners that participate in the relevant WP or the entire consortium (if the deliverable is linked with horizontal activities). Once the deliverable is sent, there is one week for collecting comments/suggestions from the reviewers. These comments will be included in the deliverable review sheet. The WP leader will send the review to the Task leader in charge of the deliverable that has been reviewed.
- Ten (10) days before the submission, the partner responsible for the deliverable concerned will send the final version to the WP leader. The WP leader will send the document to the project Coordinator at least one week before the due delivery date. The Project Coordinator will be responsible for uploading the document in the participant portal and submit it to the Commission online and will send an email with the deliverable to the Project Officer.

There are some critical risks, which have been identified and are associated with the establishment of the LLs and LL boards (WP1). A risk mitigation plan has been already designed for them and is presented below:

Table 4. Critical risks and risk mitigation measures associated with WP1 and Task 1.4

Risk No. (*from GA*)	Description	Proposed Mitigation Measures
5	Low interest and feedback from stakeholders to participate in VALERECO ecosystem	Apart from already established stakeholder networks in each region, LLs will leverage additional connections and synergies across agricultural networks, to ensure that a low level of participation will be avoided. Initial involvement of a larger group of stakeholders than needed by means of personal contacts and related project consortium members. Targeted identification of potential participants and their specific interests and contact details, careful planning of the activities in line with availabilities of potential participants, ensuring that issues to be covered are topical and are of interest to them.
8	Delays in the delivery of Deliverables	Deliverables have been evenly shared among the partners. Reallocation of resources when critical deliverables are expected to be delayed is foreseen
10	Difficulty to create consensus among all partners	Regular meetings with the partners, WP leaders and coordinators. Project Management Handbook. If the need arises, the routine of the calls will be intensified.

Based on the experience gathered during the first reporting period (RP1), Critical Risk 5 (Low interest and feedback from stakeholders to participate in the VALERECO ecosystem, currently rated Likelihood: Medium, Severity: Medium) has been reassessed in light of actual engagement patterns observed across the nine Living Labs. While stakeholder participation has generally been active, some variability in attendance and engagement levels has been noted, particularly in terms of ensuring full Board meeting attendance. The mitigation measures outlined in the Grant Agreement remain fully relevant and are being actively implemented. Specifically, all Living Labs leverage their existing stakeholder networks and build additional synergies with regional and national agricultural networks to broaden the pool of engaged actors. A larger initial group of stakeholders than the minimum target has been approached in most LLs to mitigate potential drop-out. Stakeholders have been carefully identified and selected based on their interests, their relevance to the Living Lab objectives, and their availability. Activities, meeting schedules, and discussion topics are planned to match stakeholders' availability and professional interests, ensuring that engagement remains practical, relevant, and attractive. Topics addressed in Board meetings and demonstration events are kept closely aligned with regional agronomic needs and value chain concerns, to sustain motivation and continued participation. This adaptive approach to stakeholder engagement is not static; it will be continuously refined based on the participation patterns and feedback actually observed during the project. The mitigation strategy for Risk 5 will be updated in D1.6 (Version 3, M40) to reflect the cumulative engagement evidence and any additional measures implemented in response to observed trends.

2.5 Ethical issues

Gender dimension

Gender issues are strongly associated with the future shape of climate-neutral and sustainable agriculture globally. The EU policies and the CAP strategic plans aim to improve the gender balance and the participation of women in farming, an intention that is encompassed in the VALERECO project's methodologies to increase the female participation in decision-making processes related to agriculture

in Europe. The gender issues will be a key concern of the whole consortium, tightly embedded in the research agenda and the dissemination activities of the project. VALERECO gender balance during the project will be annually reviewed by the coordinator (AUA) and a Gender Equality Plan will be developed. The project management guidelines will include specific gender-related issues that will be based on global women rights.

- Boost participatory approach to the research loop: Any survey data for the development of a knowledge base (WP1) will be collected from proportionate rates of female and male heads of farms.
- Integrate societal and behavioural aspects: Gender aspects will be considered in socio-economic and behavioural research in WP2 by analyzing factors intersecting with gender that affect legumes adoption and generate biases.
- Tailor-made dissemination: Ensure the inclusion of females in agriculture through the surveys (WP2), Living Labs (WP1, 4) and the dissemination activities of the project (WP6). Gender Dimension & Inclusiveness Report.
- Ensure internal gender equality: The participation of women in governance and scientific bodies in VALERECO will promote the equal balance of genders. The ratio of female/male researchers will be also considered.

Compliance with ethical principles and relevant legislations

Involvement of stakeholders and the linked feedback and participatory processes are very important within this proposal. This includes several aspects where ethical and gender issues must be checked (e.g. the selection of stakeholders, their consent for participation in the workshops, data privacy and protection). In line with the ethics self-assessment, actions will be executed for involvement of humans and for the protection of personal data.

The work will be in line with the relevant EU legislation, where of the main are:

- EU Directive 95/46/EC (and its revision) of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data;

- EU Regulation No 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data;

- Electronic communications EU Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications);

- EU Directive 2006/24/EC of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks.

The consortium will not discriminate against persons of any race, religion, or gender. The partners are fully aware of the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers and will pay specific attention to equal opportunities and gender balance in the project team. Gender balance will also be respected in the selection of stakeholders.

The consortium will not discriminate against persons of any race, religion, or gender. The partners are fully aware of the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers and will pay specific attention to equal opportunities and gender balance in the project team. Gender balance will also be respected in the selection of stakeholders. Personal data - The Data Management Plan will provide detailed information on the procedures that will be implemented for data collection, storage, protection, retention and destruction and confirmation that they comply with national and EU legislation. More specifically, details on the type of data collected, the retention period, and whether it will be destroyed at the end of the project will be provided. A special effort will be made to collect as little restricted and personal data as possible. The personal data involved will be the identification, profession and the opinions and answers given by the participants. All data will be handled only by qualified researchers under strict confidentiality agreements, who will ensure that data access, data protection and privacy standards are in compliance with national and EU regulations. All the users included in the different trials will sign an informed consent in which they will be duly informed about how their personal data will be treated. Should any sensitive data be obtained during the project, the project will see to it that it be made anonymous and rigorously protected for the duration of the action and destroyed at the Conclusion.

Data used in the project will be subject of a paper analysing the potential conflict with respect to privacy. When processing personal data, the consortium will comply with the GDPR principles. This means that at the outset, when the data cannot be anonymized fully, in the development of the project, Article 5(1) of the GDPR, enshrining the principles of personal data protection, will be considered. Before the beginning of an activity raising an ethical issue, the beneficiary will confirm that any ethics committee opinion required under national law has been obtained and is kept on file.

The Consortium confirms that compliance with ethical principles and applicable international, EU and national law in the implementation of research activities not originally envisaged (or not described in detail) in the DoA will be ensured. The Consortium also confirms that any ethical concerns raised by those activities will be handled following rigorously the recommendations provided in the European Commission Ethics Self-Assessment Guidelines.

2.6 Maintenance

The longevity of the VALERECO will be realized through:

- VALERECO Platform (DLIH) that will be a ‘One-Stop-Shop’ for legumes ecosystem services containing training and capacity building material, technical solutions for legumes adoption, knowledge database on ES, policy recommendations, incorporating the developed DSS as an independent web tab. This Platform will be VALERECO’s long-term legacy, leading to the reduction of N fertilizers and herbicides alongside the transition to sustainable, safe, productive, climate-neutral, and resilient farming systems, and the restoration of ecosystem services.
- VALERECO aims to scale up its outcomes and have a strong long-term impact at EU, national and regional level by: (i) supporting the EU initiatives and the national authorities for the significant reduction of fertilizers and herbicides and the increase of adoption rates of legume crops, (ii) encompassing agroecological principles that aim to bring resilience to agri-food value chains worldwide, and (iii) assisting the sustainability of agri-food production systems through the development of sustainable frameworks and networks. EU hosts a range of environmental, cultural, and economic situations, that will be integrated by setting up LLs spread across

Europe. Furthermore, the successful design and implementation of EU and national adapted policies should have a global impact as it will be revealed in the global competitiveness report.

3. VALERECO LLs

3.1 Introduction

VALERECO brings together eleven (11) countries ranging from the Atlantic area to Nordic and Continental areas through Mediterranean areas to ensure a balanced representation of different production systems (Figure 4). VALERECO will identify the ES related to legumes-based diversified cropping systems and evaluate their potential in 9 LLs across EU through the economic, environmental, and technical assessments of 3D diversification strategies in on-station participatory trials.

Figure 4 VALERECO's partners geographical distribution (LL-Living Lab)

The core of VALERECO is the establishment of 9 LLs across the EU to develop a legume-crops ecosystem of multiple actors who will be future adopters and designers of legume-based diversified cropping systems. The VALERECO LLs is a hybrid (physical and digital) legume-based space that links various stakeholders across the agri-food value chain. The VALERECO LLs are multi-actor open-innovation spaces that will:

• Understand the ES provided by legume crops & the barriers to crop diversification and crop rotation

• Identify ES of legume crops that need to be valorized, identify key entry points of legume crops into the new CAP and build on synergies with other relevant projects

• Investigate the perception of downstream actors across the agri-food value chain on the ES of legume crops and explore the market competitiveness of legumes

• Deploy behavioural design strategies to provide nudges for non-monetary interventions towards legumes adoption in healthier and more sustainable diets and frameworks for legumes adoption and consumption

• Provide indicators for the agroecological practices based on 3D diversification strategies in legume-based cropping systems in on-station participatory trials & evaluate the N fixation, weed pressure suppression and climate change adaptability of legume varieties of major and minor/underutilized legumes

• Provide indicators for the economic and environmental benefits of legumes ES in diversified cropping systems

• Demonstrate and disseminate the agroecological performance of legume crops and the technical feasibility of their inclusion into diversified cropping systems to highlight the ES provided by leguminous crops

Table 5. VALERECO Living Labs

Country	Indicative Crops	Code number
SSSA (Italy)	Chickpea	IT_LL01
UNIFI (Italy)	Chickpea, Sulla, Pea, Clover	IT_LL02
UNIPI (Italy)	Chickpea, Vetch	IT_LL03
AUA (Greece)	Sulla, Lentil	GR_LL04
WR (Netherlands)	Red and white clover, Lucerne	NL_LL05
DELPHY (Netherlands)	Faba bean, Lupin	NL_LL06
INTIA (Spain)	Faba bean, Pea, Chickpea	ES_LL07
UC (Portugal)	Chickpea	PT_LL08
IFVCNS (Serbia)	Chickpea , Soybean	RS_LL09

LLs will act as umbrella because they will allow:

• The evaluation, quantification, and provision of the ecosystem services

• Upscaling, further compliance with needs and goals and thus valorization

• Multi-actor participatory approach with feedback from the stakeholders, demonstration activities and further enhancement of the multiple roles of legumes and adoption of their cultivation and use.

These will create sustainable impact and wider recognition of the essence for legumes ES and become the orchestrators among different stakeholder groups (farmers, advisors, industry, consumers, researchers, policymakers). The impacts of legume ES and their agroecological performance will be rigorously quantified and evaluated in on-station participatory trials, exploring the weed suppression and climate change adaptation capability of legumes also through UAVs. Multiple stakeholders will be engaged in co-creation activities and demonstration events in VALERECO's LLs to valorize the proof-of-concept of legumes-based diversified farming systems.

3.2 Guidelines for the establishment of LLs

At the beginning of the project, LLs will be established by VALERECO partners and local farmers, aimed to set up LL boards and demo sites. Below you will find brief guidelines in steps for establishing the LLs.

- Identify the stakeholders to participate in the LLs
- Identify the LL board members
- Find the location for the field trial of each LL
- Begin the experimentation, the R&I activities and the assessments & evalutions (WP1,WP3)
- Organize the first virtual and/or physical meeting with the LL board (M6)
- Collect consent forms and expression of commitment sheets
- Collect, analyze and report data from the 1st growing season in the LLs
- Follow the guidelines, templates and instructions sent by WP1,2,3,4,5,6,7 leaders
- Report the activities of the LLs and the LL boards (LLR1)
- Organize the first annual technical meeting (M12) and the second virtual and/or physical meeting with the LL board (M18)
- Assist the technical and financial report of the consortium (RP1) on M18

- Collect, analyze and report data from the 2nd growing season in the LLs
- Follow the guidelines, templates and instructions sent by WP1,2,3,4,5,6,7 leaders
- Report the activities of the LLs and the LL boards (LLR2), M24
- Organize the the second annual technical meeting (M24) and third virtual and/or physical meeting with the LL board (M30)
- Collect, analyze and report data from the 3rd growing season in the LLs (*might be at 3rd reporting period as well if there are summer crops)
- Follow the guidelines, templates and instructions sent by WP1,2,3,4,5,6,7 leaders
- Report the activities of the LLs and the LL boards (LLR3), M36
- One knowledge transfer workshop (AUA, IFVCNS, LUH, AFL, AGFT, HELVETAS)
- One demonstration activity per LL (*second growing season)
- One training session per LL
- Organize the third annual technical meeting (M36)
- Assist the technical and financial report of the consortium (RP2) on M36

- One demonstration activity per LL (*thrid growing season)
- One knowledge transfer workshop (UC, RFF, INTIA, AFL)
- Assist the technical and financial report of the consortium (RP3) on M48

The experimentation in the LLs will provide evidence-based proof of the performance of legumes and their ecosystem services. Each partner should carefully select appropriate fields for the successful establishment of the field trials for each LL. Cross visits of the consortium partners will be organized at the same time as the project meetings (to save costs) and will include demo events of the LLs to promote the exchange of experiences between the countries.

3.3 Experimental design

3.3.1 Establishment of the on-station trials

All 9 LLs will include field trials (Italy 3, Netherlands 2, Greece 1, Portugal 1, Spain 1, Serbia 1). There should be one trial per LL, lasting for 3 years beginning in M6 (November 2024) or earlier, and it could be implemented on-station or on-farm based on the LL needs. It is necessary to repeat the trial exactly in the same field during the 3 years. The LLs will include 2 demonstration activities per LL for two growing seasons (growing season 2025-2026 and 2026-2027 of the project), based on the set of treatments in the LL trial. In order to compare the suggested crop rotations, a monoculture of non-legume crops or rotation without legumes is also necessary. For the assessment of potentially drought-resistant varieties (Task 3.5), LLs should include at least 2 genotypes (varieties) of at least one legume. UAV flights will be done once per year by AUA, DELPHY, IFVCNS, INTIA, SSSA and UC with protocol decided in common by the involved partners. Based on the GA, the priorities of each LL and the present preconditions-guidelines, each partner should suggest the several treatments discuss and finalize them with the coordinator (Ilias Travlos) and the WP3 leader (Daniele Antichi).

3.3.2 Preconditions regarding the experimental layout of the on-station trials

Each trial should include two factors: factor 1: four to seven (4-7) crop rotation regimes and/or monoculture schemes (control system) and b) Factor 2: three to five (3-5) crop/weed management practices (or drought stress levels). The crop rotations-monocultures (Factor 1) should include at least some of the schemes described for each partner in Table 1 (l. 123 of GA) in a way to allow the spatial and temporal replication and the cultivation of legumes every year. A monoculture of non-legume crops (e.g., wheat, maize) or rotation without legumes is also required. Each main treatment plot should cover an area of at least 225 m^2. For the assessment of potentially drought-resistant varieties (Task 3.5), LLs should include at least 2 genotypes (varieties) of at least one legume. Where feasible, the inclusion of some common treatments with other LLs (for pairing reasons) is also welcome. Factor 2 should consist of three to five (3-5) treatments such as: A: sole crop with mechanical weeding, B: sole crop without extra weeding, C: intercropping without weeding, D: cover crops without extra weeding in the following cash crop, E: cover crops with additional weed management in the following cash crop. Intercropping should include a legume along with cereal (which is grown under monoculture in block 3 (factor 1). Cover crops can be used either as green manure (incorporation into the soil) or mulch (left on the soil surface). For the case of UNIFI trials, a special focus on drought resistance evaluation will be given and the treatments can be adapted accordingly. Each combination of Factor 1 with Factor 2 should have three replications. Consequently, the total number of subplots will be at minimum 4 x 3 x 3 = 36 and at maximum of 7 x 5 x 3 = 105. Each subplot should cover an area of at least 15 m^2 resulting in a total area of 540-1575 m^2 or 0.054-0.1575 ha.

3.3.3 Measurements

Table 6. Measured Parameters and Frequency

Measurement Frequency	Measurements
Three times per growing season (beginning, middle, before harvest)	Biometric Indicators **(≥10)**
	Eco-Physiological Indicators **(≥3)**
	Weed measurements
Once per growing season	Yield and Yield Parameters
	Quality traits **(≥3)**
	Biodiversity Indicators **(≥1)**
	Soil parameters
	N-fixation parameters

Measurements in each trial (in each sub-plot of every main plot) will include the following:

a) ≥10 biometric indicators (such as crop density, crop canopy cover, plant height, number of leaves, leaf area, number of side shoots/tillers, dry weight of aboveground plant part, N content, height of the bottommost reproductive branch, soil visual cover, dry weight of root system, length of growth stages)

b) yield and yield parameters (grain and biomass yield, harvest index, weight of 1,000 grains, number of grains per pod, number of pods per unit area)

c) ≥3 eco-physiological indicators (such as relative chlorophyll content by means of Dualex, photosynthetic activity, NDVI and SPAD)

d) ≥3 qualitative aspects of crop production (such as protein yield, oil and starch yield, specific weight, wet gluten, and forage quality indicators like ethereal extract, NDF, ADF, ADL)

e) ≥1 biodiversity indicator (diversity of soil microbiota, mycorrhizal inoculum potential, microbial community assessments (e.g. earthworms), soil biological quality index, insect/spider/mite diversity)

f) Weed frequency, density, soil visual cover, weed biomass

g) Soil parameters (like soil texture, organic carbon, total N, available P, pH, exchangeable K, organic matter, bulk density)

h) N-fixation parameters by means of nodulation measurements ^{15}N natural abundance technique or acetylene reduction assay

Also, some drought tolerance related traits (like relative water content and other defined by UNIFI), pest-disease and pest infestation and pollination can by also assessed. From all the above, biometric indicators (a), eco-physiological indicators (c) and weed related characteristics will be measured three

times per growing season (beginning, middle, before harvest) and for the rest parameters one measurement is enough (e.g. at harvest for yield parameters or after a disease infestation for a relevant estimation). For the case of UNIFI trials, a special focus on drought resistance evaluation will be given and the measurements can be adapted accordingly.

3.4 Guidelines for monitoring the LLs

The pilot site monitoring of LLs will be conducted both in situ regarding the agronomic, agroecological performance of legumes and LCA assessments (incl. societal, economic, environmental) by VALERECO partners and virtually through annual meetings of the LL boards.

The LL manager (VALERECO partners) will be responsible for collecting all required info and data and monitoring the LLs. Also, LL boards will i) monitor the governance and activities of the LLs, ii) co-assess the potential of legumes and their ES and iii) external stakeholder types and proportions to invite to the DLIH (WP5), promote interactions between all relevant stakeholders by ongoing communication and annual meetings (see Annex 1 and 2).

3.5 Maintenance

The LLs will continue throughout the project duration to create the framework for valorization of legumes and their ecosystem services and to enable evidence-based business modelling and policy making. The co-creation activities in VALERECO go beyond implementation in the field and create the conditions for the long-term recognition of legumes and their ecosystem services.

VALERECO partners will work closely with the local and regional stakeholders to keep the LLs alive, when the field trials will be completed, after the end of the project. This will be facilitated through future funding from other national or European projects and/or future commitments for open field days and data collection.

More information will be provided in the updated versions of D1.4, after the collection of feedback from the annual virtual meetings of the LL boards.

3.6 Roles and responsibilities

All Living Lab partners will be responsible to carry-out the same co-creation activities per Living Lab, namely the interviews and questionnaires, the virtual/physical meetings, the workshops, and the training sessions. In addition, VALERECO partners are responsible for the Research and Innovation activities conducted in WP1, WP2, WP3, WP4, WP5 and WP6.

In detail, the roles and responsibilities in the LLs are presented in the Table below.

Table 7. Roles and responsibilities of the Living Lab

Role	Responsibilities
Living Lab manager	• Be the main contact person for the LL in the communications with the Task leader, the Work Package leader, the Project coordinator, and the Project Officer • Represent the LL in Project Steering Group (PSG), other Consortium Bodies (e.g., General Assembly), project meetings etc. • Organize the workload for the LL with the responsible persons and experts

	• Keep on file all original documentation, consent forms, recordings, audio-visual material, authorizations, certifications, meeting minutes etc. up to five (5) years after the end of the project • Report, send and submit all deliverables, data, results, outcomes, reports, and documents related to the LL, when indicated and/or requested (e.g., data for the LCA at the end of the growing season for the main crop) • Report on the progress in all Living Lab Reporting (LLR) periods (*details in Section 3.7*) • Responsible for conducting agronomic assessments, socioeconomic and environmental (LCA) assessments and drone annotations and digital tools assessments. • Draft and report periodically the results and outcomes of the previous assessments and evaluations • Be responsible to ensure that Open Science and FAIR principles are followed in all activities in the LL • Ensure and verify that all ethical, gender equality, security, privacy, data protection etc. regulations and issues are respected • Identify scientific, operational, administrative, and financial risks in the LL and propose risk mitigation measures. Contact the Task leader, the WP leader, and the Project Coordinator early to facilitate the risk response • Collect and/or write-prepare the Practice abstracts and Best Practices for the LL. Deliver them to the Task Leader and the WP leader • Be responsible for carrying out the translations of interviews and questionnaires • Collect signed consent forms from the respondents and interviewees, and follow the guidelines sent by WP2 leader on how to conduct the questionnaires and interviews • Respect all ethical, gender dimension, privacy, security regulations and issues • Be responsible for the Research and Innovation activities in the on-station trials of the LL, as described in WP3 and the documents that Task leaders and WP3 leader will circulate • Collect, monitor, retain, analyze, and report the data, results, outcomes, impacts of the Research and Innovation activities & Communication and Dissemination activities conducted in the LL, related to WP3 • Responsible to organize and implement the three (3) virtual and/or physical technical meetings of the LL and take notes • Collect, monitor, retain, analyze, and report the data, results, outcomes, impacts of the Research and Innovation activities • Communication and Dissemination activities conducted in the LL, related to WP6
Drone user(s) and digital expert(s)	• Be responsible for the Research and Innovation activities (i.e., drones use) in the field trials of the LL, as described in WP3 and the documents that Task leaders and WP3 leader will circulate

	• A protocol for UAV flights will be established to provide the framework for the measurements that will be conducted by partners (AUA, DELPHY, IFVCNS, INTIA, SSSA, UC, WR) in the context of T3.2-T3.3. • Arrange any ethical and security issues regarding drones use and flights and/or liaise with the drone service company for that. • Keep on file any authorization and certification regarding approvals and other issues. Liaise with the LL manager to follow the instructions sent by WP3 leader
Moderator of the LL	• Report the meeting minutes to the LL manager • Keep the minutes on file up to five (5) years after the end of the project • Responsible to write the drafts and final versions of every document, report, deliverable and send them to the LL manager • Responsible to organize, host, moderate, implement and report the three (3) virtual and/or physical meetings of the LL board. • Responsible to continuously check, monitor, and keep on file any ethical, gender equality, consent form, data protection, security, privacy, non-disclosure etc. regulations and issues, respecting and following the consortium, institutional, national, European, and international rules, and templates

The VALERECO partners that are responsible for LL establishment and monitoring have the following responsibilities:

- Liaise with the LL manager to monitor and ensure the timely, effective, and proper use of resources and budget dedicated to the LL.
- Report to the Task leaders, Work Package leaders and Project Coordinator all required deliverable and reports.
- Identify early any potential risks and propose risk mitigation measures to the Task Leader, Work Package Leader and Project Coordinator.
- Report all activities in the Reporting Periods (RP).

3.7 Reporting

The reporting of Research and Innovation (R&I) and communication and dissemination (C&D) activities will be done systematically across all Living Labs. Specifically, the main contact person for each LL (or simply LL manager) will report every twelve (12) months to the Task leader (AUA) the activities that were completed in the LL. The LL manager should use the template in (Annex 4) of this document. The Task Leader should remind all LLs one month before the LLR.

- **LLR1**: M12 (May 2025)
- **LLR2**: M24 (May 2026)
- **LLR3**: M36 (May 2027)

The main contact persons per LL (LL managers) are presented in the Table below.

Table 8. Valereco Living Lab managers

Living Lab	Name	Email
IT_LL01	Anna Camilla Moonen	Camilla.Moonen@santannapisa.it
IT_LL02	Federico Martinelli	federico.martinelli@unifi.it
IT_LL03	Lorenzo Gabriele Tramacere	lorenzo.tramacere@unipi.it
GR_LL04	Nikos Antonopoulos	n.antonopoulos@aua.gr
NL_LL05	Klaas van Rozen	klaas.vanrozen@wur.nl
NL_LL06	Alies Haange	A.Haange@delphy.nl
ES_LL07	Lucia Sanchez	lsanchez@intiasa.es
PT_LL08	Rui Oliveira	rsoliveira@uc.pt
RS_LL09	Jegor Miladinović	jegor.miladinovic@ifvcns.ns.ac.rs

3.8 Summary of the 1st Living Lab Reporting period

During the first year of VALERECO, the nine Living Labs became fully operational, establishing a solid foundation for collaborative research and stakeholder engagement across several European countries, as indicated by the completion of the Annex 4 (Living Lab Reporting). Each Living Lab launched its experimental trials on key legume species, such as chickpea, faba bean, lentil, sulla, clover, vetch, lupin, lucerne, and soybean, adapted to local soil-climatic conditions. The first experimental year focused on evaluating the different legume species, soil management practices, several weed-crop agroecological management practices and the general contribution of legumes to sustainability and their environmental ecosystem services.

All Living Labs held successfully their first annual LL board meeting before the establishment of their field trial in order to co-design experimental approaches and define research priorities together with farmers, advisors, researchers, industry, and policy actors. Despite challenges related mainly to extreme rainfall and delayed sowing in some regions, the trials progressed well, and initial data collection is underway. Early discussions highlighted the agronomic value of legumes, particularly their role in improving soil fertility, reducing external inputs, and enhancing biodiversity.

Communication and dissemination activities were active from the start, including their first technical meeting, field days, and social media outreach, which significantly raised the project's visibility among farming communities and policy networks. The first year has successfully established the participatory framework and shared vision required for the next phases, when data integration, cross-site analysis, and demonstration activities will intensify.

3.8.1 IT_LL01

Context and History

The IT_LL01 Living Lab was newly established under the VALERECO project in central Italy (Tuscany, Pisa province). It does not build on a pre-existing formal LL structure, though it leverages CiRAA's established research and farming networks. Its geographic scope is regional (Tuscany) with a thematic focus on evaluating chickpea-based diversified cropping systems and associated ecosystem services. Key factors affecting legume adoption in this area include climate variability (extreme rainfall and heat events), limited market infrastructure for grain legumes, and the need for improved knowledge on weed management in legume rotations.

Board Composition and Selection

The LL Board was established with members representing all target stakeholder categories including VALERECO partners, farmers, advisors, researchers, consumers, policymakers, and industry actors. The Board is co-facilitated by Paola Cassiano. Board members were identified through a combination of the LL manager's existing professional and research networks and targeted outreach to local organisations. Researchers, farmers and advisors were approached through established collaborations at CiRAA, while the policymaker, consumer representative and industry actor were specifically recruited from relevant regional organisations.

Board Meeting Summary and Stakeholder Dynamics

The first LL Board meeting was held online in May 2025 with 8 participants plus the LL manager. The meeting covered the purpose and role of the LL, objectives and activities of the Board, the experimental design and setup, and planned activities for the 2024-2025 growing season. Board members exchanged views on challenges with grain legume uptake in cropping systems. All members agreed that analysing issues along the entire value chain, aligning agronomical decisions with transformation and consumer requirements, was a particularly relevant priority.

A risk was identified regarding incomplete Board meeting attendance. To mitigate this, the LL manager plans to hold two smaller board meeting sessions to allow all members to contribute. Facilitation aims to make Board meetings as useful as possible for the participants, leaving them enough space and time to share experiences and propose activities.

Species and Experimental Setup

The experimental trial focuses on chickpea (*Cicer arietinum* L.) and is conducted on-station at the CiRAA research center, sharing the experimental area with IT_LL03. Two chickpea varieties are tested: cv *Sultano* and cv *Pascià*. The trial is a strip plot design with three blocks, one block on each field. The main factor is 'cropping system' with two levels (three-year rotation without legumes; three-year rotation with legumes), and the split plot factor are 6 crop management systems (control; no mechanical weeding, intercropping; cover crop managed as dead mulch; cover crop managed as green manure; no-till system with no additional weed management). All crops are present in all years. Therefore, this results in 36 plots in per block. The cover crop used before chickpea is camelina [*Camelina sativa* (L.) Crantz]. One farmer has expressed willingness to conduct a simplified on-farm trial; the practical arrangements are currently being discussed.

Guideline Functionality and Adaptations

The D1.4 and D1.5 guidelines were considered practical and fit for purpose. The overall experimental framework and stakeholder engagement procedures were followed as planned. Stakeholder engagement was organised around general objectives and shared interests, helping to maintain motivation for continued participation in discussions and to encourage use of the interactions and the new network established through the process. The main risk that materialised was related to incomplete Board meeting attendance, which is being addressed by planning smaller, more flexible meeting sessions to ensure all members can contribute.

Dissemination and Inter-LL Exchange

An Agroecology Field Day was held in May 2025, attracting approximately 80 participants who visited the VALERECO field trial. LL Board members were also present. Beyond the active collaboration with IT_LL03 at the shared CiRAA experimental area, exchanges with non-Italian VALERECO Living Labs have

so far taken place primarily through project-level coordination mechanisms such as consortium meetings and the Project Steering Group.

3.8.2 IT_LL02

Context and History

The Living Lab (LL) is located in Central Italy (Tuscany), characterized by a Mediterranean climate with hot, dry summers and mild, wet winters. The experimental activities are conducted in an on-station field trial under controlled agronomic conditions. The LL focuses on evaluating the role of legume-based crop rotations in improving maize productivity and resilience, particularly under contrasting irrigation regimes and weed management practices. The experimental system includes multiple legume species and cultivars selected for their potential contribution to soil fertility and drought tolerance. Key factors influencing legume adoption in this context include their potential to improve soil nitrogen availability, reduce input costs, enhance sustainability, and contribute to climate resilience. However, adoption is also influenced by agronomic complexity and market-related constraints. The Living Lab was newly established within the VALERECO project and does not pre-exist as a structured stakeholder platform. Its scope is both geographic (regional agricultural systems in Tuscany) and thematic, focusing on sustainable cropping systems and ecosystem services provided by legumes.

Board Composition and Selection

The Living Lab Board consisted of participants representing farmers, advisors, researchers, and consumers. Board members were primarily identified through existing academic and professional networks, including ongoing collaborations and stakeholders already engaged in related projects. At present, no policymakers or industry representatives are part of the Board. This represents a limitation in terms of policy integration and market-oriented perspectives. To address this, future actions will include actively involving regional agricultural authorities and private sector actors (e.g., seed companies, agri-food industry stakeholders) to strengthen the multi-actor dimension of the Living Lab.

Board Meeting Summary and Stakeholder Dynamics

The 1st Board meeting was held in January 2025, in a hybrid format. During the meeting, the three-year experimental plan was presented and approved, and detailed discussions were held on plant and soil measurements, including transcriptomic analyses for drought response. Stakeholders showed a general convergence of interests around improving sustainability, crop performance, and the role of legumes in agricultural systems. The meeting was facilitated through structured presentations followed by open discussion sessions, allowing participants to contribute their perspectives and raise questions. Stakeholder engagement was active, with participants contributing to discussions on experimental design, measurement protocols, and expected outcomes. The quality of engagement was qualitatively assessed through participation in discussions and feedback provided during the meeting.

Species and Experimental Setup

The trial investigates rotations of legume crops with maize: sulla (*Hedysarum coronarium* L.), Alexandrian clover (*Trifolium alexandrinum* L. – cultivars Alex and Tigri), Persian clover (*Trifolium resupinatum* L.), pea (*Pisum sativum* L.), and chickpea (*Cicer arietinum* L.). The trial consists of 6

treatments with 3 replicates, on plots of 15 m^2. The treatments are based on combinations of irrigation (irrigated vs. non-irrigated) and weed management (weeded vs. non-weeded), allowing the evaluation of interactions between crop rotation and environmental stress factors. At this stage, on-farm implementation is not yet included but is considered a potential future step to validate results under real farming conditions.

Guideline Functionality and Adaptations

The D1.4 and D1.5 guidelines were generally practical and provided a solid framework for establishing the Living Lab. The main challenges were operational (finding cooperative companies, sourcing soil analysis services, seed procurement), which were resolved through inter-LL collaboration and regional networking, without requiring formal deviation from the guidelines.

Dissemination and Inter-LL Exchange

At this stage, dissemination activities have been limited and mainly focused on internal communication within the Living Lab and the VALERECO consortium. However, active interaction with other VALERECO Living Labs has already taken place, particularly through the coordination of molecular analyses. The UNIFI Living Lab is involved in performing transcriptomic analyses on samples generated across all other Living Labs in the project, which required alignment on sampling protocols, preservation methods, and experimental design. This exchange represents an important form of inter-Living Lab collaboration, contributing to methodological harmonization and integration of results across different case studies. Further dissemination and inter-LL activities are expected to increase in the next phases of the project.

3.8.3 IT_LL03

Context and History

The UNIPI LL was established at CiRAA, partly by engaging both new stakeholders and people already involved in other Regional, National and European projects (i.e., PRINT, Organic Yields UP, LegValue, IWMpraise) focused on, or indirectly related to legumes use.

The LL is located in the Tuscany region, in a typical coastal plain of central Italy, under a Mediterranean climate, with mild winters and hot, dry summers, in a typical arable context based on cereal production. In this area, farms are typically conventional and small to medium in size (50–200 ha), and in the past legumes were commonly cultivated. However, in the last decades their adoption has significantly decreased, mainly due to yield instability, difficulties in weed and disease management, market instability, and climate change pressures. The aim of the LL is to increase knowledge about legume cultivation and their provision of ecosystem services, and to identify scalable solutions for introducing legumes into typical cereal-based rotations, mainly at the regional scale, with potential for broader national application.

Board Composition and Selection

The Board consists of members representing *Valereco project*, *farmers, advisors, researchers, policymakers, and industry actors.* Members were identified internally among stakeholders with direct expertise or interest in legumes and contacted directly by the LL manager. A consumer representative is still being sought among engaged stakeholders.

Board Meeting Summary and Stakeholder Dynamics

The 1st Board meeting was held online in December 2024. The Board discussed legumes in diversified systems and multilevel diversity (QBS-ar, pollinators, crop diversity, cover crops). The seed company expressed interest in commercial advantages and willingness to explore on-farm trials with a farmer. A technical meeting (4 June 2025) shared observations on waterlogging and strip-tillage challenges.

During the meetings, stakeholders are directly involved. After a brief presentation of the trial and preliminary results, a roundtable is organized, during which each participant is invited to comment and raise issues, proposals, and questions. This approach stimulates discussion, which is moderated by the LL manager.

Species and Experimental Setup

The experimental layout complies with two factors completely randomized block with three replicates (18 m^2 size each plot). One factor consists of two different crop rotation schemes, each comprising three crop sequences and structured around both spatial and temporal crop rotation: (i) *Cicer arietinum* L. cv. *Sultano* and *Pascià* - *Vicia villosa* Roth cv. *Villana* - *Triticum turgidum* L. subsp. *Durum* cv. Inizio; (ii) *Hordeum vulgare* cv. *Mochina 9* - *Triticum turgidum* L. subsp. *Durum* cv. Inizio - *Sorghum bicolor* L. Monech subsp. *bicolor* cv. *PR88Y47*. The second factor consists of six crop management diversification strategies: (i) sole crop with mechanical weeding; (ii) sole crop without extra weeding; (iii) intercropping without weeding; (iv) sole crop no-till sown on a cover crop dead mulch; (v) sole crop established on tilled soil after a green manure, plus additional weed control; (vi) sole crop no-till sown without a preceding cover crop.

The trial focuses on vetch (*Vicia villosa* Roth) and chickpea (*Cicer arietinum* L.) at CiRAA, with intercropping with barley, strip-tillage, and cover crop techniques. Vetch suffered waterlogging in sole-crop plots but performed well in intercropping.

Guideline Functionality and Adaptations

The guidelines were sufficient and practical; no formal adjustments or deviations were needed in terms of either engagement of the board or the trial that is part of the Living Lab. The problem of waterlogging during winter in our context is widespread and not limited to one or two winter crops. Therefore, as far as possible, efforts are being made to improve water management at the field level by cleaning the main ditch that serves all the fields in the area. Moreover, plans are in place to clean the smaller ditches serving our fields and to till the soil using a mole plough to improve the drainage of surface water. Last but not least, the LL team will aim to be as timely as possible in preparatory tillage and crop sowing.

Although some challenges were encountered in applying the technique at the plot level, valuable data were obtained from the strip-tillage plots. Efforts will continue to refine strip-till operations, both to reduce risks and to improve overall performance.

Dissemination and Inter-LL Exchange

Dissemination included ASA/CSSA/SSSA (San Antonio, November 2024) and Agroecology Day at CiRAA (May 2025, ~80 visitors). A blog post on the VALERECO website. IT_LL03 shares CiRAA with IT_LL01, with active cross-visits. Also, the LL manager is also the VALERECO representative for the Portuguese LL Board; thus, he actively attends all their Board meetings, bringing his experience from the Italian LL and exchanging points of view and possible solutions to the issues raised.

3.8.4 GR_LL04

Context and History

The trial is located in the Thiva region of Central Greece and is conducted on an existing farm. The VALERECO trial covers an area of approximately 0.15 ha. The surrounding landscape is characterized by arable farming systems dominated by cereals and cotton. The area experiences a typical Mediterranean climate, with hot, dry summers and wet winters. The Greek Living Lab was established under the VALERECO project and does not build on a pre-existing formal Living Lab structure. Nevertheless, it draws on established collaboration networks between researchers and farmers. Its main objective is to improve knowledge on legume cultivation and the ecosystem services provided by legumes, while identifying scalable solutions for integrating legumes into conventional cereal-based crop rotations at regional level, with potential for replication at national scale.

Board Composition and Selection

The Board consists of farmers, advisors, researchers, consumers, policy actors, and industry actors, providing balanced coverage of all target categories. The farmer who provided the trial land was directly engaged, and advisors, researchers, the policymaker, consumer, and industry actor were identified and contacted directly by the LL manager through professional and institutional networks.

Board Meeting Summary and Stakeholder Dynamics

The 1st LL Board meeting was held online in November 2024. Converging interests were identified around the agronomic value of legumes for improving soil fertility and supporting crop diversification. Diverging perspectives emerged mainly regarding the practical feasibility of weed management in low-input systems. The facilitation approach combined structured presentations with open discussion moderated by the LL manager. This exchange was followed by an in-person meeting in May 2025, which provided an opportunity to share updates on trial progress and maintain stakeholder engagement.

Species and Experimental Setup

The trial focuses on sulla (*Hedysarum coronarium* L.) and lentil (*Lens culinaris* Medik.). The experimental layout complies with two factor completely randomized block with three replicates (12 m^2 size each plot). One factor consists of seven different crop rotation schemes. The second factor consists of five crop management diversification strategies: (i) sole crop with mechanical weeding; (ii) sole crop without extra weeding; (iii) intercropping without weeding; (iv) sole crop on a cover crop dead mulch; (v) sole crop established on a cover crop dead mulch, plus additional weed control.

Guideline Functionality and Adaptations

The guidelines were sufficient and practical. No formal adjustments were required. The main challenge identified related to stakeholder engagement logistics, which is being addressed through flexible scheduling and individual follow-up.

Dissemination and Inter-LL Exchange

Dissemination activities included European conference presentations and regional events. A field day in May 2025 engaged 30 participants including Board members. Inter-LL exchanges have taken place through project-level coordination, including consortium meetings. Dedicated bilateral exchanges with other Living Labs are being planned for the next reporting period.

3.8.5 NL_LL05

Context and History

The Living Lab (LL) has been newly established within VALERECO and is linked to WUR Field Crops in Lelystad, along with related projects such as Farm of the Future, CropMix, PPS Green Manure, and PPS Plant-Parasitic Nematodes. It represents a new partnership aimed at exploring the cultivation of lucerne (alfalfa) in the province of Flevoland for arable farmers. The soils in Flevoland consist mainly of young marine clay and the region was created through land reclamation from the sea in the central Netherlands. The climate is temperate maritime, with mild winters, cool summers, and a relatively even distribution of rainfall throughout the year. However, climatic conditions are becoming more variable, with relatively wet winters and warm summers increasingly accompanied by periods of heat, drought, and heavy rainfall. Agriculture in the region is dominated by large-scale conventional arable farms producing high-value crops such as potatoes, onions, flower bulbs, and sugar beets, often rotated with cereals. Including lucerne in these rotations generally results in lower direct financial returns compared to the cash crops and fits less well within short, intensive rotations aimed at maximizing economic output per hectare. Flevoland has extra challenges due to high soil prices. For this reason, the project focuses on this arable farming context, given both the challenges and the potential benefits lucerne may offer in terms of soil structure improvement, nitrogen fixation, and biodiversity enhancement. Organic farmers already integrate more lucerne into their cropping systems for these reasons. At the same time, the project also considers the livestock sector in the region, where lucerne would need to compete with grassland and maize as key sources of animal feed protein.

Board Composition and Selection

The LL Board currently includes participants representing industry actors (drying firm and seed company of lucerne), a policy/consultancy actor, conventional and organic lucerne farmers, legume experts, trial/project coordinators (WUR), and consumers. A financial actor stimulating legumes in crop rotations is an agenda member of the Board. In the last Board meeting at 20th of January 2026 more potential actors were mentioned. The board members are stakeholders and were approached specifically on their lucerne related work and involved already in 2025 designing the LL trial.

Board Meeting Summary and Stakeholder Dynamics

The 1st Board meeting (in person, November 2024) played a key role in shaping the Lelystad trial. The focus shifted to lucerne (*Medicago sativa* L.) instead of monoculture clover, cereal undersowing was introduced, and two winter-hardy lucerne varieties were selected. Discussions also addressed potential risks, including wireworm (*Agriotes* spp.) infestations—known for damaging potato tubers and early-stage crops—as well as nematode and *Verticillium* concerns.

The 2nd Board meeting (June 2025) included a field visit. Key topics included the control of root-sprouting weeds through drought and repeated mowing, the timing of mowing, and differences between seed-propagated and perennial weeds. Pest-related discussions focused on thrips in lucerne, their potential movement to onions, and the impact of mowing on their populations, including the relevance of *Thrips tabaci*. Farmers' meetings and questionnaires further highlighted the importance of timely and intensive lucerne cultivation to prevent issues in subsequent crops. In 2026, additional measurements will be explored to assess effects on neighboring crops.

Board meetings combine structured dialogue, based on a pre-defined but flexible agenda, with field visits to the living lab trial. A facilitator ensures balanced participation and equal opportunity for all members to contribute their expertise.

Species and Experimental Setup

Two lucerne varieties were selected with winter hardiness as the primary selection criterion, as drought resistance was considered less relevant for the Flevoland context. The specific variety names are documented in the trial records. The experimental design compares lucerne, red clover, sainfoin, a grass/clover mixture (conventional fodder reference), and barley (arable reference) over two years, with the key objective of evaluating the effect of these preceding crops on subsequent cash crop performance in year 3.

Guideline Functionality and Adaptations

The initial trial set-up proved impractical; however, its substantial redesign through stakeholder input demonstrates that the Living Lab (LL) framework effectively enabled genuine co-creation. The assessment guidelines and proposed methodologies were considered sufficient and practical, with final decisions guided by LL Board input, the needs of Flevoland farmers, and project requirements for additional knowledge generation.

Dissemination and Inter-LL Exchange

Communication included social media and WUR website blog. Contact with PPS Green manures led to sainfoin treatment. Inter-LL exchange beyond the Dutch Living Labs has so far remained limited to project-level coordination, including consortium meetings and protocol harmonisation. More dedicated cross-country exchanges are planned for the next reporting period.

3.8.6 NL_LL06

Context and History

LL has been newly established at Ekofarm De Lingehof and represents a newly initiated strategic partnership designed to actively engage new stakeholder groups, while capitalising on the partners' existing experience in regional, national, and international projects. It is located in the Betuwe region, a river landscape in the central Netherlands. The region has a temperate maritime climate (Cfb), characterised by mild, relatively wet winters and warm summers that increasingly include periods of heat, drought, and heavy rainfall. Farms are typically conventional and based on fruit production, greenhouse horticulture and arable farming. Farm sizes vary arable farms are comparable in size to other Dutch arable farms, with the national average farm size currently exceeding 32 hectares. Historically, crops such as faba beans were widely cultivated, but their production declined significantly due to the increasing availability of imported soybean. In recent years, however, legume cultivation has gained renewed attention, driven by the protein transition and sustainability policies. The main aim of the Living Lab is to increase knowledge on legume cultivation and their associated ecosystem services, and to identify practical and scalable approaches for integrating legumes into existing cropping systems at farm and regional level, with relevance for wider uptake across the Netherlands.

Board Composition and Selection

The formal Board meeting (January 2025, Delphy HQ, Wageningen) brought together participants representing Lekker Lupine, the farmer/owner of EKO farm De Lingehof (trial host), agronomists, trials farm staff, communication specialists, and legume growers. The board members were selected from our existing network. In the short term, the Board will be further expanded to include a researcher, while consumers and a policy maker are currently being approached for participation in the Living Lab Board.

Board Meeting Summary and Stakeholder Dynamics

The 1st Board meeting was held in January 2025 and began with a lupin product lunch, linking the discussion to the value chain. Stakeholder interests were largely convergent. Farmers, advisors, researchers, and VALERECO partners agreed that the 1st experimental year had broadly met expectations and that the experimental approach should continue. Challenges were regarded as learning points rather than failures, and all groups expressed a shared interest in the field trial results and related data analysis. Farmers and advisors focused on practical issues such as field logistics, sowing time, and applicability of results, while researchers and project partners emphasised cautious interpretation and the need for further data before drawing conclusions on ecosystem services. These differences were constructive and helped define shared priorities for improvement in the second experimental year.

Species and Experimental Setup

The trial focuses on lupin (*Lupinus* spp.), including white/blue lupin, with at least two varieties tested across the experimental years, and faba bean (*Vicia faba* L.), on an operational organic farm (De Lingehof). The core experimental focus on lupin and faba bean is consistent with the original proposal. Lupin is included in the trials every year, forming a continuous legume component, faba bean is introduced from Year 2 onwards, expanding the legume scope in line with field logistics and crop rotation planning. This phased inclusion reflects practical on-farm considerations while remaining aligned with the objectives and experimental framework defined. The Living Lab evaluates a broad range of agronomic practices relevant to sustainable legume-based systems, including mechanical weed control and three treatments: monocropping in rows, intercropping in rows with summer cereal (oats) and monocropping with compost tea. Each combination of crop rotation and management practice is replicated three times, allowing robust comparison across systems. The experimental layout, plot sizes, crop rotations, and management practices are explicitly designed in collaboration with the farmer and aligned with practical constraints such as machinery use and field dimensions. By carrying out the experiments under real farming conditions, the Living Lab directly addresses the need to test legume-based systems in practice rather than under controlled conditions.

Guideline Functionality and Adaptations

The guidelines were considered sufficient and practical, proving robust enough to accommodate the extremely challenging 2024 growing season without requiring formal deviation. The insight about lupin-lucerne interaction was treated as a learning outcome informing future trial adjustments.

Dissemination and Inter-LL Exchange

Two additional meetings were held beyond the annual Board meeting: a digital grower meeting (22 April 2025) and a B2B event (20–21 June 2025). Dissemination was also conducted through social media on Delphy's and Lekker Lupine's channels.

At this stage, no dedicated bilateral exchanges have taken place with other VALERECO Living Labs beyond regular project-level coordination. Joint activities with other LLs are being explored for the next reporting period.

3.8.7 ES_LL07

Context and History

The Spanish LL is located in the Navarra region of northern Spain, characterised by a Mediterranean climate with hot, dry summers and mild, wet winters. The cropping system is based on the rotation of legumes and cereals that is commonly practiced in the region where the trial is being conducted. The project focuses on evaluating the role of legume-based crop rotations in improving the productivity of cereals and legumes, reducing fertilizer use, and controlling weeds. The trial includes different crop rotations, including the three main legume species adapted to the region's agroclimatic conditions, compared with a cereal rotation under different weed control regimes and different nitrogen fertilizer applications, with the aim of demonstrating the ecosystem services provided by legumes in the rotation, thereby encouraging their adoption. LL was established as part of the project, with the aim of creating a network among the various stakeholders in the legume value chain. It seeks to highlight the agronomic and environmental benefits of legumes.

Board Composition and Selection

Participants were recruited through a multi-channel approach. The local agricultural cooperative served as the primary vehicle for farmer engagement, facilitating direct contact with its member farmers. Additional participants (researchers, agro-industry professionals, advisors) were recruited through INTIA's existing professional and advisory networks.

Board Meeting Summary and Stakeholder Dynamics

The 1st Living Lab Board meeting, held in December 2024 in a hybrid format, attracted 18 participants, including farmers, agro-industry professionals, cooperative technician, researcher from UPNA, advisors, and representatives from Stratus project, and highlighted strong stakeholder interest in legume adoption. Efforts are currently ongoing to expand the Board composition in the next reporting period by incorporating consumer representation and a policy maker.

A technical meeting followed in April 2025, with 12 participants and a field visit, focusing on nitrogen fixation and weed management. In addition to the formal LL meetings, farmers and other stakeholders remain in continuous contact with INTIA's technical staff, fostering ongoing dialogue, stakeholder engagement, and active participation in the experimental activities.

Species and Experimental Setup

The trial investigates faba bean (*Vicia faba* L.) Cv *Semiancha*, pea (*Pisum sativum* L.) Cv *Fresnell*, and chickpea (*Cicer arietinum* L.) Cv *Kasin* in rotation with cereal. Initial rotation modified due to October rains preventing faba bean sowing. The experimental activities are conducted in an on-station field trial under controlled agronomic conditions. Four crop rotations incorporating legumes are currently being evaluated from agronomic, environmental and economic perspectives, along with three different weed management practices for each rotation.

Guideline Functionality and Adaptations

The guidelines were considered practical and provided a solid framework for trial establishment. The main adjustments needed were operational: the rotation was modified due to heavy October rainfall preventing timely faba bean sowing, and weed management required adaptation. These changes were accommodated within the guideline framework without formal deviation.

Dissemination and Inter-LL Exchange

Dissemination activities included participation in the UPNA conference (April 2025, approximately 65 participants), the PAC Network conference (May 2025, approximately 60 participants), and the publication of seven social media posts. In addition, the Stratus project was presented at the Board meeting. Bilateral exchanges with other VALERECO Living Labs are planned to prepare future cross-Living Lab exchanges, with a particular focus on collaboration with Living Labs operating under similar Mediterranean climatic and agronomic conditions.

3.8.8 PT_LL08

Context and History

The Portuguese Living Lab (PT_LL08) is located in central Portugal, with activities linked to experimental sites representative of Mediterranean agroecosystems. The region is characterized by a Mediterranean climate, marked by mild, wet winters and dry summers. During the reporting period, unusually prolonged rainfall significantly affected field operations, delaying sowing activities. The farming systems in the region are predominantly mixed and cereal-based, with increasing interest in integrating legumes into rotations to improve soil fertility and reduce external inputs. Farm sizes are heterogeneous, including small- to medium-scale operations typical of Portuguese agriculture. The Living Lab was established within the VALERECO project and does not build on a pre-existing formal LL structure, although it benefits from existing academic-farmer networks. Its scope focuses on evaluating chickpea-based systems under local conditions, integrating agronomic performance with environmental sustainability and stakeholder engagement.

Board Composition and Selection

The LL Board included participants in its 1st meeting comprising: the LL manager, VALERECO partners, farmers, advisors, researchers, and consumers. Board members were identified through existing professional networks, including academic collaborators, extension services, and local farming contacts. Selection criteria focused on expertise in agronomy, legume production, advisory roles, and stakeholder relevance. Although the initial composition ensured representation across the main stakeholder groups, it did not yet include policymakers and industry representatives. Additional efforts will therefore be made to engage stakeholders from the policy and agri-food industry sectors through institutional networks and targeted outreach activities.

Board Meeting Summary and Stakeholder Dynamics

The 1st Board meeting (November 2024, online) focused on defining the experimental design and overall approach. Stakeholders contributed actively, with the farmer emphasizing the importance of locally adapted species and seed availability, while advisors and researchers highlighted practical feasibility and comparability with other European LLs. A technical meeting in May 2025 addressed progress and challenges, particularly delays caused by extreme rainfall. Board members committed to supporting farmer engagement for surveys (WP2) and outreach. Engagement quality was monitored through participation levels, feedback during meetings, and stakeholder contributions to outreach activities.

Species and Experimental Setup

The experimental system is based on chickpea (*Cicer arietinum* L.) within a cereal–legume rotation, specifically incorporating wheat. Additional practices include intercropping with oat and the use of Sudan grass as a summer cover crop. Five weed management treatments were implemented. The trials

are implemented under field conditions representative of local farming systems, ensuring relevance to real agricultural practices. The selection of chickpea reflects both agronomic suitability and stakeholder interest, although the specific varieties (*Casal Vouga* and *Tipo C*) are determined based on local availability and adaptation.

Guideline Functionality and Adaptations

The Living Lab followed the planned guidelines; however, extreme and prolonged rainfall caused significant delays in sowing, with chickpea planting postponed until late March 2025. Despite this disruption, the guidelines proved sufficiently flexible to accommodate adjustments without requiring formal deviation. The delay primarily affected the timeline rather than the experimental design. Ongoing monitoring and data collection were adapted accordingly.

Dissemination and Inter-LL Exchange

Dissemination activities included presentation of the VALERECO project at the X International Congress of Agroecology (Viseu, September 2024) and communication through LinkedIn posts targeting farmers, researchers, and other stakeholders. Inter-Living Lab exchange occurs through project-level coordination, including comparison of results across European LLs and participation in joint meetings. While no dedicated cross-visits were conducted during this reporting period, alignment of methodologies and shared monitoring frameworks supports knowledge exchange across LLs.

3.8.9 RS_LL09

Context and History

The Living Lab is located in the Vojvodina region of Serbia, which is characterized by a moderate continental climate. The cropping system is based on diversified cereal–legume rotations, incorporating strip intercropping and green manure strategies to enhance sustainability. Agriculture producers are categorized as small and medium up to 20 ha, and over 20 ha as large. Key factors addressed in the LL trials include genotype selection, strip intercropping, green manure, and ecological focus areas. LL board was formed in November 2024, to support all activities on the level of LL. LL is oriented toward all identified stakeholders, especially agriculture farmers dealing with soybean and chickpea.

Board Composition and Selection

The Living Lab Board brings together a diverse group of stakeholders across the agri-food value chain, including farmers, advisors, researchers, consumers, policy representatives, and other relevant actors. Members were selected based on their expertise and active involvement in the agricultural sector, ensuring a balanced representation of perspectives to support co-creation activities and informed decision-making.

Board Meeting Summary and Stakeholder Dynamics

The 1st Board meeting (online, November 2024) involved 10 participants, including producers, industry/certification actor, researchers, consumer, and a sustainable systems expert. The meeting covered project information and the experimental setup. Winter cover crops had already been sown, with barley, soybean, and chickpea planned. Board members were invited to visit the trials and contribute to joint activities, including potential publications. A key discussion point concerned the level of field trial implementation and how Board members could contribute to the planning of LL activities.

A 2nd Board meeting (6 June 2025) gathered 7 participants (farmer, consumer, advisors, and researcher, among others). This meeting focused on presenting the activities carried out during the first year and collecting feedback to support further improvements.

Species and Experimental Setup

The primary legume species are chickpea (*Cicer arietinum* L.) and soybean (*Glycine max* (L.) Merr.). The experiment follows a randomized complete block design with three replications, evaluating five different management strategies for soybeans and chickpeas. The treatments include: (1) mechanical weed control using conventional methods, (2) no mechanical weed control to assess natural weed suppression, (3) intercropping; (4) green manure combined with weeding, integrating organic matter inputs with mechanical control, and (5) green manure without weeding, focusing on natural soil enrichment processes.

Guideline Functionality and Adaptations

No risks were identified and there was no need for adaptation of planning; data from trials were collected and all activities were performed according to the plan.

Dissemination and Inter-LL Exchange

Dissemination activities have been extensive, including a field day (August 2024, ~300 participants), 59th Conference of Agronomists and Farmers of Serbia, extension provider training (~110 participants), two peer-reviewed soybean publications, IFVCNS website in Serbian and English. In addition, in September 2025, during the Annual meeting of Belis project (grant no. 101081878), the open stakeholder day was organized, team members of Valereco project participated and exchanged activities and expected outcomes. Inter-LL exchanges were facilitated through data protocol preparation and during Project Steering Group Meeting (24th February 2025).

4. Living Lab Boards

4.1 Introduction

What is the Living Lab board?

The management of the LL will be implemented by LL boards that will meet virtually and/or physically twice a year to assess the R&I and C&D activities of the LL, as well as the evaluation of legumes and their ES tested in the LL. The LL boards will consist of the VALERECO partners, farmers, advisors, researchers, policymakers, industry, and consumers. The aim is to orchestrate a dialogue in multi-actor activities between all relevant stakeholders and to monitor the management and activities of the LLs.

4.2 Objectives

Each LL is responsible to organize the following activities:

Table 9. Activities per Living Lab

Name of activity	Definition	Timeline
Training Sessions	Training sessions are designed to support the learning process and increase knowledge among key actors (farmers, agricultural advisers, agrifood	2nd Reporting Period (M19 - M36)

	industry, general public). The training will help expand the provision of ecosystem services related to the utilization of legumes in rotation schemes. Assigned partners will organize the training sessions.	
Knowledge transfer workshops	Workshops are interactive sessions that connect producers with consumers and various ecosystem players without intermediaries, facilitating direct communication and knowledge exchange. Photos, presentations, and other educational materials can serve as means of verification.	2nd Reporting Period [M19 - M36] (AUA, IFVCNS, LUH, AFL, AGFT, HELVETAS) 3rd Reporting Period [M37 - M48] (UC, RFF, INTIA, AFL)
Demo activities (2 per LL)	Demonstrations will run for two growing seasons (years 3 and 4) in various legume-based cropping systems conducted in the on-participation trials in six countries (Greece, three sites in Italy, Portugal, Spain, Serbia, and two sites in the Netherlands). One technical meeting will be held annually per Living Lab, including stakeholders, to facilitate knowledge exchange and cross-fertilization of legume ecosystem services. The demonstration activities will serve dissemination purposes.	The first in the 2nd Reporting Period [M19 - M36] The second in the 2nd or 3rd Reporting Period
Living Lab Board meeting	Multi-stakeholder governance structure that meets virtually on an annual basis, assesses Living Lab activities and strategies, monitors governance and progress, and facilitates knowledge exchange across all partners	1st Reporting Period [M1 - M18] AND 2nd Reporting Period [M19 - M36]
Technical Meeting	A technical meeting is a focused meeting of professionals and experts where participants discuss specific technical aspects, methods, innovations, and challenges related to the project or specific to the field trials. The aim is to discuss detailed technical issues, develop solutions or review progress based on technical data to ensure that project activities are in line with best practices and achieve the main objectives of the project.	1st Reporting Period [M1 - M18] AND 2nd Reporting Period [M19 - M36]

4.3 Board Composition: Comparative Overview

The individual Living Lab board configurations are described within each LL profile in Section 3.8. This section provides a comparative analysis across all nine boards to assess overall balance, representativeness, and quality of governance. The governance of each Living Lab operates through its LL Board, which is distinct from the VALERECO project management structure. While project partner roles and responsibilities are defined in the Grant Agreement and the Project Management Handbook (D7.1), the LL Boards provide an independent multi-stakeholder governance layer. In accordance with GDPR and national data protection regulations, board member names are not disclosed in this public deliverable. The signed Annex forms with full member identification are retained on file by each LL

Board manager/facilitator. The overall target of 90 Board members across the nine Living Labs has been achieved. All Boards include representation from multiple stakeholder categories, with the composition reflecting local institutional contexts and value chain structures.

Based on the inputs received from all nine Living Labs, the following comparative overview is provided. All Boards include farmer and advisor representation, and the majority also engage researchers, consumers, and industry actors. Policymaker representation has been achieved in several LLs and is actively being pursued in the remaining ones. Three main recruitment approaches were used: (i) leveraging existing professional and research networks (all LLs), (ii) targeted outreach to specific stakeholder organisations and (iii) cooperative-facilitated engagement. Table 10 below presents the stakeholder categories represented in each Living Lab Board.

Table 10. Living Lab Board Composition: Comparative Overview across all 9 LLs

Living Lab	VALERECO Partner	Farmer	Advisor	Researcher	Consumer	Policymaker	Industry Actor
IT_LL01	✓	✓	✓	✓	✓	✓	✓
IT_LL02	✓	✓	✓	✓	✓	–	–
IT_LL03	✓	✓	✓	✓	–	✓	✓
GR_LL04	✓	✓	✓	✓	✓	✓	✓
NL_LL05	✓	✓	✓	✓	✓	✓	✓
NL_LL06	✓	✓	✓	–	✓	✓	✓
ES_LL07	✓	✓	✓	✓	–	–	✓
PT_LL08	✓	✓	✓	✓	✓	–	–
RS_LL09	✓	✓	✓	✓	✓	–	✓

** Note: "✓" indicates that the stakeholder category is represented on the Board. "–" indicates that the category is not yet represented; in all such cases, concrete recruitment efforts are underway.*

4.4 Board Meeting Dynamics: Cross-cutting Synthesis

The first round of Board meetings provided practical input on experimental planning, stakeholder priorities, and implementation issues across the Living Labs. In all LLs, the Board discussed and approved the three-year experimental plan. In NL_LL05, stakeholder input contributed to reshaping the trial, including the introduction of cereal undersowing, and the selection of winter-hardy lucerne varieties.

The meetings also brought forward broader value-chain and implementation perspectives. In IT_LL01, Board members agreed on the importance of analysing issues along the entire value chain, aligning agronomic choices with transformation and consumer requirements. In IT_LL03, discussions included the interest of a seed company in the commercial potential of legumes and in possible on-farm testing. In NL_LL06, the Board meeting linked the discussion to the value chain through a lupin product launch and addressed market developments.

A number of relevant agronomic and implementation challenges were also discussed. In GR_LL04 and ES_LL07, weed management emerged as an important topic. In NL_LL05, discussions addressed wireworm risk, as well as nematode and Verticillium concerns, while also reflecting the broader

economic context of high soil prices in Flevoland. In NL_LL06, stakeholders discussed the consequences of the particularly difficult 2024 season and considered these experiences as learning points for the continuation of the trial.

In all LLs, Board interaction was complemented by follow-up exchanges during the reporting period. IT_LL03 held a technical meeting in June 2025, ES_LL07 held a technical meeting in April 2025 including a field visit, NL_LL05 combined follow-up discussion with a field visit, PT_LL08 held a technical meeting in May 2025, and NL_LL06 reported two additional meetings beyond the annual Board meeting. These interactions helped maintain continuity between formal Board meetings and the ongoing implementation of Living Lab activities.

The reported facilitation approaches were adapted to the needs of each LL. In IT_LL03, discussion was organised through a roundtable format in which each participant was invited to comment after a brief presentation. In GR_LL04, the exchange combined structured presentations with open discussion moderated by the LL manager. In NL_LL05, Board meetings combined structured dialogue with field visits, supported by a facilitator. In ES_LL07, the cooperative framework supported direct farmer engagement, while in NL_LL06 the meeting format explicitly connected discussion of trial progress with product and market perspectives.

Overall, the first Board meetings show that the LL Boards are already contributing to the refinement of trial design, the discussion of agronomic and value-chain issues, and the continued alignment of LL activities with local stakeholder perspectives. The examples reported in Sections 3.8.1–3.8.9 indicate that these meetings are already supporting practical feedback and continued stakeholder involvement during the first reporting period.

4.5 Roles and responsibilities

The roles and responsibilities of the LL board members are presented in the Table below.

Table 11. Roles and responsibilities of the Living Lab board members

Role	Responsibilities
LL board members	• Be part of a team consisting of VALERECO partners, farmers, advisors, consumers, researchers, industry, and policymakers to monitor, update and assess the LL for at least 42 months, beginning from October 2024 • Participate in the co-creation activities • Monitor and assess the LLs' output and adjust next year's activities in six (6) Virtual and/or physical meetings of LL boards (M6, M12, M18, M24, M30, M36) • Co-assess the ES of legumes tested in the LLs, including feedback on the digital solutions, in Knowledge-transfer Workshops • LL board members are expected to contribute to the organization and participate in yearly virtual and/or physical meetings gathering the participants from all LL boards in the VALERECO ecosystem, the stakeholders, and the linked projects and networks
LL board facilitator	• Report to the LL manager the progress made in the co-creation activities of the LL board. If the LL board facilitator is the same person as the LL manager, then he/she can report directly to the main contact person for the organization. If he/she is still the same person, then the main contact person for the beneficiary should report directly to the Task Leader, the Work Package leader, and the Project Coordinator.

	• Responsible to write the draft and final versions of the outcomes of the co-creation activities in the LL • Responsible for keeping any recordings of the virtual meetings in the co-creation activities of the LL board • Responsible to keep all documents, authorizations, files, consent forms, meeting minutes, audio-visual material up to five (5) years after the end of the project

4.6 Living Lab Board Internal Report

The Living Lab Board reporting templates are key instruments for ensuring harmonized monitoring, reflection, and coordination across the nine VALERECO Living Labs. The first version of the reporting template, used for the initial annual board meetings, mainly focused on establishing the Living Lab framework. It guided partners in documenting the formation of their national boards and summarizing meetings. Core sections included participant profiles, meeting agendas, initial discussions, decisions on experimental design, and practical arrangements for the first growing season. This first round of reporting was primarily descriptive, aimed at setting up the structure, roles, and procedures necessary for the participatory implementation of the Living Labs.

The second version of the reporting template builds upon this foundation by introducing a more evaluative and interactive dimension. It invites Living Lab managers and stakeholders to jointly review the results and experiences from the first experimental year, providing structured feedback on research and innovation activities, stakeholder engagement, and the observed performance of legume-based systems. The updated version expands the scope of reflection to include the perceived impact of legume management on ecosystem services, the applicability of experimental results to real farming contexts, and the identification of barriers or enablers for adoption. It also opens space for stakeholder input on the design and expectations for the second experimental year, ensuring that the co-creation process remains dynamic and responsive to local needs. Moreover, the second template strengthens the sections on communication and dissemination, encouraging partners to assess and plan outreach activities based on the outcomes and lessons of the first year. It also includes sections on compliance, ethical considerations, and social media reporting, to align data collection and engagement practices with Horizon Europe standards.

Complementing these documents, a PowerPoint presentation template for the second annual Living Lab board meeting provides a visual and participatory tool to support discussions during the meetings. It mirrors the structure of the reporting form and offers guiding questions for each section, enabling facilitators to collect feedback directly from stakeholders using interactive tools such as Mentimeter or Slido. The presentation also helps to showcase progress in research, communication, and dissemination activities while aligning the Living Labs around shared objectives for the next project phase. Together, the revised reporting structure and the presentation materials ensure coherence, comparability, and effective stakeholder participation across all nine Living Labs in the VALERECO network.

Annex 1: Template for roles and responsibilities of Living Lab board members

The following Annex 1 will be uploaded as a separate file in VALERECO MS SharePoint, where partners will be able to translate it into the local language and spread it to the Living Lab board members. ***The document must be signed by all LL board members for each LL and kept on file (in English language) by the LL board facilitator up to 5 years after the end of the project****.*

Any updates on the document, the roles and responsibilities during the lifespan of the project must be clearly depicted in a history version table which is included in the template.

Start of Annex 1

ROLES AND RESPONSIBILITIES OF LIVING LAB BOARD MEMBERS

Version history table

Version	Date	Author(s)	Notes
v0	XX/XX/2025		

Living Lab

Country	Indicative Crops	Code number	
SSSA (Italy)	Chickpea	IT_LL01	☐
UNIFI (Italy)	Chickpea, Sulla, Pea Clover	IT_LL02	☐
UNIPI (Italy)	Chickpea, Vetch	IT_LL03	☐
AUA (Greece)	Sulla, Lentil	GR_LL04	☐
WR (Netherlands)	Red and white clover, Lucerne	NL_LL05	☐
DELPHY (Netherlands)	Faba bean, Lupin	NL_LL06	☐
INTIA (Spain)	Faba bean, Pea, Chickpea	ES_LL07	☐
UC (Portugal)	Chickpea	PT_LL08	☐
IFVCNS (Serbia)	Chickpea, Soybean	RS_LL09	☐

Participants in the Living Lab board

Participant	Name	E-mail	Signature
VALERECO partner			

Farmer			
Farmer			
Advisor			
Advisor			
Researcher			
Researcher			
Consumer			
Policymaker			
Industry actor			

Roles and responsibilities of Living Lab board members

Roles and responsibilities	Name
Facilitator	

End of Annex 1

Annex 2: Consent form for Living Lab board members

The following Annex 2 will be uploaded as a separate file in VALERECO MS SharePoint, where partners will be able to translate it into the local language and spread it to the Living Lab board members. ***The***

document must be signed by all LL board members for each LL and kept on file (in English language) by the LL board facilitator up to 5 years after the end of the project.
Any updates on the document and data protection regulations during the lifespan of the project must be clearly depicted in a history version table which is included in the template.

Start of Annex 2

CONSENT FORM FOR LIVING LAB BOARD MEMBERS

Version history table

Version	Date	Author(s)	Notes
v0	XX/XX/2025		

Living Lab

Country	Indicative Crops	Code number	
SSSA (Italy)	Chickpea	IT_LL01	☐
UNIFI (Italy)	Chickpea, Sulla, Pea, Clover	IT_LL02	☐
UNIPI (Italy)	Chickpea, Vetch	IT_LL03	☐
AUA (Greece)	Sulla, Lentil	GR_LL04	☐
WR (Netherlands)	Red and white clover, Lucerne	NL_LL05	☐
DELPHY (Netherlands)	Faba bean, Lupin	NL_LL06	☐
INTIA (Spain)	Faba bean, Pea, Chickpea	ES_LL07	☐
UC (Portugal)	Chickpea	PT_LL08	☐
IFVCNS (Serbia)	Chickpea, Soybean	RS_LL09	☐

Introduction

What is VALERECO?

VALERECO is a 4-year Horizon Europe-funded project that will develop an EU-wide legume ecosystem that promotes the valorization of the ecosystem services provided by legumes, increases knowledge about the benefits of legumes and explores synergies with other crops.

What are VALERECO Living Labs?
The VALERECO LLs are open innovation ecosystems designed to achieve the valorization of legumes and their EC in collaboration with stakeholders by: (1) developing behavioural design strategies to promote the adoption of legumes in production and consumption, (2) conducting participatory field trials to evaluate the performance of major and minor-underutilised legume crops in diversified farming systems, (3) demonstrating and co-developing technical, economic and environmental solutions for the inclusion of legumes in cropping systems. VALERECO LLs will run over three growing seasons to achieve a sustainable impact and link the different stakeholders (farmers, advisors, industry, consumers, researchers, policy makers).

What are VALERECO Living Lab boards?
The LL Boards are short teams of 10 people (VALERECO partners, farmers, advisors, researchers, policy makers, industry and consumers) who orchestrate the dialogue between all relevant stakeholders in multi-stakeholder activities and monitor the governance and activities of the LLs by meeting virtually on an annual basis and co- assessing legumes and their ecosystem services tested in the LLs.

Rules and important information

What are your responsibilities as Living Lab board member?

- Be part of a team consisting of VALERECO partners, farmers, advisors, consumers, researchers, industry actors and policymakers to monitor, update and assess the LL for at least 42 months beginning from October 2024 or November 2024
- Participate in the co-creation activities and the annual gathering of all VALERECO LL boards

How long will the activities last and where will they take place?
Specific details about activity length, focus and location would be provided from the LL manager and/or the LL board facilitator at the time of invitation to take part in a meeting or a research activity.

How will the information be used?
Information will be used for project and research purposes only. It will be analyzed together with other information collected through other activities which focus on the VALERECO project objectives. Project findings will be published in the form of reports to the European Commission, on topics discussed, articles in scientific journals, papers and presentations at technical or scientific events, and to project partner teams participating in VALERECO. Additionally, VALERECO will disseminate research results (which do not contain any personal data of Living Lab board members) to actors that the LL manager and/or LL board facilitator finds relevant in their country or region.

Pseudonymity and confidentiality
We will ask for your name and contact details, which we will only use for our own project records, and so that we can contact you to share project outputs if you so wish. At any time, you have the right to ask for your contact details to be deleted from our records.
The information you give us will be treated as confidential and will be pseudonymized so that it cannot be linked to you personally. We will not disclose any details that could be used to identify you. If quotes are used in any output these will be anonymized, unless else is agreed with LL manager of my LL.

Liability
The VALERECO project and project partners accept no liability for stakeholders participating in the research activity.

No obligation to take part
Taking part in this study is entirely voluntary and you can withdraw at any time. During any activity you are free not to answer questions without any explanation. You will be asked to provide consent prior to joining the LL to show that you understand your rights as a participant and that you are committed to take part in the LL. This consent form will be sent to you by your LL manager and/or LL board facilitator if you accept to participate.

General Data Protection Regulation
All information is treated in accordance with applicable regulations, and particularly the General Data Protection Regulation n°2016/679.

Contact
For more information, please contact the LL board facilitator, [INSERT NAME, EMAIL]

Consent form and expression of commitment

For individual participants in the Living Lab boards in the VALERECO project (GA: 101135472), funded by the European Union's Horizon Europe research and innovation programme.

	Please tick box
I confirm that I have read, or had read to me, and understand the information sheet for the above study (see below). I have had the opportunity to ask questions, and these have been answered fully and explicitly.	☐
I understand that my participation is voluntary, and I am free to withdraw at any time, without providing any reason and without my legal rights being affected. I understand the existence of the right to request from the controller access to and rectification or erasure of personal data or restriction of processing concerning the data subject or to object to processing as well as the right to data portability.	☐
I understand that the project is carried out by a consortium of 15 partner organizations coordinated by AUA, and contracted by the European Commission, under Grant Agreement 101135472.	☐
Unless other is agreed with the Facilitator of my Living Lab board, data will be anonymized at the earliest possible time, and it will not be possible to identify who said what in any publications/outputs.	☐
I understand that this form relates to all the activities to which I am contributing within the VALERECO project.	☐
I agree to take part in the VALERECO project.	☐
I agree to being committed to the Living Lab and as a Living Lab board member for a minimum period of 42 months	☐
I agree to being contacted by project partners in relation to this study after my participation in a Living Lab board has ended.	☐
I agree for the information I provide to be recorded (e.g., audio, visual, notes) and transcribed. The recordings will be kept on file until a few months after the end of the project and then deleted. Transcripts or interview summaries/extracts will be kept for up to five years after the end of the project for accounting reasons and then deleted.	☐

I agree that photos and videos taken during VALERECO related activities (e.g., co-creation activities, demo farm events, meetings) can be shared on social media.	☐
[Add name of organization of Living Lab] will use your personal data for the purposes of the research undertaken in the VALERECO project. Our legal basis for processing your data is informed consent, as provided in art 6/1/a of the GDPR.	
We are the Data Controller over your personal data. We will not share your personal data beyond the project team, unless required by law and shall only retain it according to good scientific practice for as long as is necessary to fulfil the research undertaken on the project, to deliver project outcomes, and to fulfil the requirements of the funder. Please see our Privacy Notice at [web address of organization] for further information or contact the Ethic Mentor on [vagelismallios@yahoo.gr][3]*.	

Name of participant in the LL board	*Signature*	*Date*

Name of LL facilitator	*Signature*	*Date*

[Insert Living Lab manager Name] / [Email address]

Contact details:
[Name of organization]
[Address]

End of Annex 2

Annex 3: Consent form and expression of commitment to participate in the VALERECO Living Labs and the Digital Legume Information Hub (DLIH).

[3] If there is no privacy notice on the partner's website, and if a partner does not have an Ethic Mentor, substitute the sentence with the following: "For further information please contact the consortium's Ethic Mentor Mr. Evagelos Mallios vagelismallios@yahoo.gr"

The following Annex 4 will be uploaded as a separate file in VALERECO SharePoint and MS Teams, where partners will be able to translate it into the local language and send it to potential members of the Living Labs and VALERECO DLIH. ***The document must be signed by the respondent for each LL and kept on file (in English language) by the LL manager up to 5 years after the end of the project****.*
Any updates on the document and data protection regulations during the lifespan of the project must be clearly depicted in a history version table which is included in the template.

Dear LL manager, please translate to local language (if you find it necessary) and insert the following consent form into the e-mail with the invitation to the stakeholders to join your Living Lab and the VALERECO DLIH.

Start of Annex 3

Consent form and expression of commitment to participate in the VALERECO Living Labs and the Digital Legume Information Hub (DLIH).

For individual participants in the Living Lab boards in the Valorization Legumes Related Ecosystem Services – VALERECO project (GA: 101135472), funded by the European Union's Horizon Europe research and innovation programme.

	Please tick box
I confirm that I have read, or had read to me, and understand the information sheet for the above study (see below). I have had the opportunity to ask questions, and these have been answered fully and explicitly.	☐
I understand that my participation is voluntary, and I am free to withdraw at any time, without providing any reason and without my legal rights being affected. I understand the existence of the right to request from the controller access to and rectification or erasure of personal data or restriction of processing concerning the data subject or to object to processing as well as the right to data portability.	☐
I understand that the project is carried out by a consortium of 15 partner organizations coordinated by AUA, and contracted by the European Commission, under Grant Agreement 101135472.	☐
Unless other is agreed with the Living Lab manager, data will be pseudonymized at the earliest possible time and it will not be possible to identify who said what in any publications/outputs.	☐
I understand that this form relates to all the activities to which I am contributing within the VALERECO project.	☐
I agree to take part in the VALERECO project.	☐
I agree to being committed to the Living Lab and the VALERECO Digital Legume Information Hub (DLIH) as external stakeholder for a period that lasts until May 2028.	☐
I agree to being contacted by project partners in relation to this study after my participation in the Living Lab has ended.	☐
I agree for the information I provide to be recorded (e.g., audio, visual, notes) and transcribed. The recordings will be kept on file until a few months after the end of the project and then deleted. Transcripts or interview summaries/extracts will be kept for up to five years after the end of the project for accounting reasons and then deleted.	☐
I agree that photos and videos taken during VALERECO related activities (e.g., co-creation activities, demo farm events, meetings) can be shared on social media.	☐

[Add name of organization of Living Lab] will use your personal data for the purposes of the research undertaken in the VALERECO project. Our legal basis for processing your data is informed consent, as provided in art 6/1/a of the GDPR.
We are the Data Controller over your personal data. We will not share your personal data beyond the project team, unless required by law and shall only retain it according to good scientific practice for as long as is necessary to fulfil the research undertaken on the project, to deliver project outcomes, and to fulfil the requirements of the funder. Please see our Privacy Notice at [web address of organization] for further information or contact the Ethic Mentor on [vagelismallios@yahoo.gr][4]*.

Name of participant in the LL and the DLIH	*Signature*	*Date*

Name of LL manager	*Signature*	*Date*

[Insert Living Lab manager Name] / [Email address]

Contact details:
[Name of organization]
[Address]

End of Annex 3

[4] If there is no privacy notice on the partner's website, and if a partner does not have an Ethic Mentor, substitute the sentence with the following: "For further information please contact the consortium's Ethic Mentor Mr. Evagelos Mallios vagelismallios@yahoo.gr"

Annex 4: Template for periodic Living Lab Reporting (LLR)

The following Annex 4 will be uploaded as a separate file in VALERECO MS SharePoint, where partners and specifically the LL managers will be able to download it, fill it and sent it to the Task leader. Any updates on the document and data protection regulations during the lifespan of the project must be clearly depicted in a history version table which is included in the template.
With red, you will find the instructions.

Start of Annex 4

LIVING LAB REPORTING (LLR) SHEET

Version history table

Version	Date	Author(s)	Notes
v0	XX/XX/2025		

Living Lab
Tick the box of your Living Lab

Country	Indicative Crops	Code number	
SSSA (Italy)	Chickpea	IT_LL01	☐
UNIFI (Italy)	Chickpea, Sulla, Pea Clover	IT_LL02	☐
UNIPI (Italy)	Chickpea, Vetch	IT_LL03	☐
AUA (Greece)	Sulla, Lentil	GR_LL04	☐
WR (Netherlands)	Red and white clover, Lucerne	NL_LL05	☐
DELPHY (Netherlands)	Faba bean, Lupin	NL_LL06	☐
INTIA (Spain)	Faba bean, Pea, Chickpea	ES_LL07	☐
UC (Portugal)	Chickpea	PT_LL08	☐
IFVCNS (Serbia)	Chickpea, Soybean	RS_LL09	☐

Living Lab Reporting Period	☐ LLR1: M12 (May 2025) ☐ LLR2: M24 (May 2026) ☐ LLR3: M36 (May 2027) *Tick the box of the LLR*
Annual virtual and-or physical meetings of the LL boards	*Please make a summary of the annual virtual meeting with the LL board. Add (1) the participants, (2) date and time of the meeting, (3) agenda, (4) key messages, (5) decisions taken, (6) adjusted plan for the LLs for the following year, (7) assessment of progress so far etc.* *If you didn't organize a meeting during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Knowledge transfer workshop	*Please make a summary of the knowledge transfer workshops with the LL board. Add (1) the participants, (2) date and time of the workshop, (3) agenda, (4) key messages, (5) decisions taken, (6) report on the performance of legume crops and their EC, (7) assessment of progress so far etc.* *If you didn't organize a workshop during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Technical meeting	*Please make a summary of the annual technical meeting. Add (1) the participants, (2) date and time of the meeting, (3) agenda, (4) key messages.* XXX
Communication activities of the LL	*Please add (1) the communication activity name, (2) a short description, (3) who was the target audience (e.g., farmers, research communities, civil society etc.), (4) how many people you reached, (5) what was the communication channel (e.g., agricultural exhibition, social media, print materials, radio etc.), (6) what was the outcome.* *If you didn't conduct any communication activity during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Dissemination activities of the LL	*Please add (1) the dissemination activity name, (2) a short description, (3) the type of the dissemination activity (e.g., conferences, meetings, clustering activities etc.), (4) who was the target audience (e.g., farmers, research communities, civil society etc.), (5) how many people you reached, (6) why you did that with a reference to a specific project output.* *If you didn't conduct any dissemination activity during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Demonstration activities of the LL	*Please add (1) the demonstration activity name, (2) a short description, (3) the type of the dissemination activity (e.g., open field day, drone mapping etc.), (4) who was the target audience (e.g., farmers, research communities, civil society etc.), (5) how many people you reached*

	If you didn't conduct any demonstration activity during the reported LLR, please copy and paste "Not applicable for this LLR." XXX
Publications	*Please add (1) the publication title, (2) a short description, (3) the type of publication (e.g., scientific publication, technical article, article in farmers' journal etc.), (4) the publisher, (5) the date (6) how many people you approximately reached.* *If you didn't publish anything during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Participations in regional/national events	*Please add (1) the title of the event, (2) a short description, (3) the type of the event (e.g., conference, local civil society meeting, agricultural fair etc..), (4) who was the target audience, (5) the date (6) how many people you approximately reached* *If you didn't participate in any event during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Cross-visits	*Please add (1) person who did the cross-visit, (2) the connected Living Labs, (3) a short description.* *If you didn't conduct any cross-visit during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Ethical and Data Protection	
Risks and proposed responses	*Please add (1) the identified risk, (2) proposed mitigation measures, (3) who is involved and who is the risk owner.* *If you didn't identify any risks during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Social media	*Please add (1) how many posts you did on VALERECO's social media regarding your LL, (2) how many posts you did on your social media regarding your LL, (3) how many approximately reacted to the posts.* *If you didn't post anything on social media during the reported LLR, please copy and paste "Not applicable for this LLR."* XXX
Other	XXX

End of Annex 4

END OF DOCUMENT