ALL-Ready – The European Agroecology
Living Lab and Research Infrastructure Network: preparation phase

Skills and Competencies Framework

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List of abbreviations

AE	Agroecology
CBP	Capacity Building Program
CSA	Coordination and Support Action
ENoLL	European Network of Living Labs
LL	Living Lab
NCP	National Contact Point
OIA	Open innovation arrangement
RI	Research Infrastructure
SCAR	Standing Committee on Agroecology Research
SDG	Sustainable Development Goal
WP	Work Package

Introduction to the project

ALL-Ready is a Coordination and Support Action funded by the European Commission with the aim of preparing a framework for a future European network of Living Labs (LL) and Research Infrastructures (RI) that will enable the transition towards agroecology throughout Europe. Based on the premise that agroecology can strengthen the sustainability and resilience of farming systems, the project will contribute to addressing the multiple challenges that they are facing today including climate change, loss of biodiversity, dwindling resources, degradation of soil and water quality.

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1.   Executive Summary

Amplifying agroecology in Europe via a network of agroecology living labs (LLs) and research infrastructures (RIs) is a complex challenge with multiple facets to be considered such as the need for adapted value chains, agricultural practices, policies etc. A very important aspect to make the agroecology transition possible is to support the development of necessary competencies needed from all different stakeholders (e.g., researchers, farmers, policy makers, intermediaries, etc.).

Tackling this complex challenge requires a thorough identification of the different competencies needed and a capacity building programme (CBP) to support different stakeholders within the European agroecology community.

The first two deliverables of work package *WP5 Capacity Building* are strongly interlinked with each other.

Following the project proposal, *D5.2 Skills and competencies framework* will focus on categories and specifications of core skills and competencies for accelerating agroecology transition throughout the development of place-based open innovations and their European networking. This framework provides the base to map the needs of key-end users of the CBP for training competencies. By doing this, it will provide the necessary insights to scope a CBP that supports the different key end users.

When the needs of the key end users of the CBP are clear, a CBP can be developed. This will be the subject of D5.1 *Report on mapped needs and the key end users of the capacity building programme*. This Deliverable focuses on providing a framework for capacity building by describing the necessary building blocks of a capacity building programme and provides suggestions for possible formats (capacity building items) to support the key end users to gain the necessary competencies identified in D5.2.

2.   Introduction

The ALL-Ready project will prepare the ground for a European network of agroecology LLs and RIs (*AgroEcoLLNet)* through a structured approach that involves:

- developing a common agreement on the mission and vision for the network,
- mapping and analysis of the entities to be included in the network (agroecology LLs and RIs),
- plans for sustainability, capacity building and training, data management and dissemination to be included in an implementation plan.

This will be done through a participatory approach, involving end users and other stakeholders, and considering the factors that favor the development and upscaling of agroecological practices and those that will promote "buy in" for participating in the future network *AgroEcoLLNet*. The short-term impacts of ALL-Ready will be the future Network (AgroEcoLLNet). The project will pave the way with the necessary tools and activities as well as the pilot network.

The overall objective of work package 5 is to prepare and initiate a CBP for the future network of LL and RI supporting agroecology transition. This CBP will support the further development of, and exchange between existing and new LLs and RIs in agroecology across Europe. Rolling out the CBP will support the transition of European agri-food systems to agroecology by promoting agroecology and LL approaches.

The CBP will be tailored to the needs of the key end users. The key end users will be defined within WP2 where the existing LLs and RIs in the domain of agroecology will be mapped. In

addition, the CBP will support the development of agroecology in line with the vision document developed in WP1. The CBP will be prototyped and validated within the pilot network in WP3. Finally, the validated outcomes will define the final materials to be included in (online) learning materials and recorded webinars.

This deliverable is part of *Task 5.1.1 Specifications of skills, competencies, and knowledge for key end-users* and of *Task 5.1.2 Defining the key end users and their needs*. The overall objective of this deliverable is to provide an overview of core competencies for accelerating agroecology transition through the development of LLs and RIs and their European networking. It will provide insights on '**what** competencies are insufficiently present among key end users across Europe'. This deliverable is closely linked to *D5.2 Report on mapped needs and the key end users of the capacity building programme*, the focus of which is on '**how** competencies might be developed' by providing the building blocks of the CPB.

In the following chapter, we will discuss who the key end users of the CBP are. Many stakeholders are involved in agroecology transition as well as in co-creation of agroecology innovation. We elaborate on the potential functionalities of the CBP by identifying target groups at three different levels: agroecology in general, LLs and RIs, and a European network of LLs and RIs on agroecology.

In chapter 4 we elaborate on the concept of competency, as well as of competency frameworks and their relevance within this project.

In chapter 5 we explain the methodology used in the ALL-Ready project to 1) identify important competencies at the three different levels of capacity building and 2) identify needs for capacity building at these levels, by gaining insights into competencies that are insufficiently present for key target groups.

In chapter 6 we describe the framework of competencies for AE transition, for conducting research and innovation in agroecology, and for running a network of LL and RI on agroecology. This work is building on literature, as well as on work that has been carried out considering other objectives of the project (WP1, WP2).

In chapter 7, we describe the needs of the target groups at three different levels. We conclude in chapter 8 with the further steps towards a CBP.

3.   Who are the key end users of the CBP? An iterative process of identification

Before starting to define the framework of competencies necessary/important for AE transition, it should be clear for whom we are defining competencies and for whom we will map the needs for training and finally for whom we are developing the CBP.

At the start of the ALL-Ready project, it was not exactly clear who the key end users would be since there is no exact description of what the European Network of LLs and RIs will be and who exactly will be part of it. When thinking about potential end users of a CBP, some questions arose immediately. Are we focusing on end users at the level of the future network itself, i.e., the potential members of the future European network and the coordinator(s)? Will the coordinator and/or coordinating team need specific competencies to run such a network? Or should we focus more on the agroecological LLs and RIs as end users? Or are the end users the LLs and RIs who want to orient their activities more towards agroecology? To accelerate agroecology transition, we might also target potential end users who are not organised in a LL or RI but operating at local level.

So, when exploring the potential key end users of the CBP in the ALL-Ready project, it seems we can distinguish these three levels because the actions and expectations/needs of the end users on those levels seem to be different:

Agroecology transition in general

Agroecological LLs, RIs and OIAs

A European network of agroecological LLs, RIs and OIAs
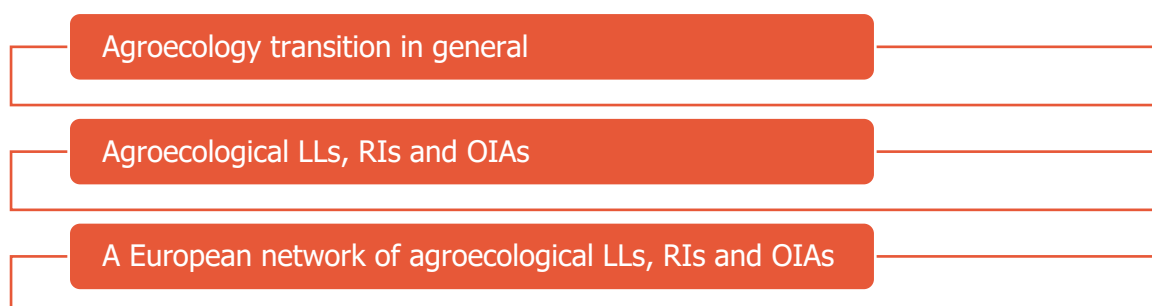
At the level of **a European network of agroecological LLs and RIs** it is not clear who will be part of the network and what type of organization (funding body, NGO, or research institute) would coordinate the network. At the moment of writing this Deliverable, there is a clear ambition of the partnership to build and organize a European network of new and existing LLs and RIs for knowledge sharing and co-creation on AE innovations at various scales[1]. However, it is not clear how this network will be coordinated and managed, how this is included in the governance of the future partnership and whether this will be the responsibility of one or more members of the future partnership. Therefore, it is not clear what kind of competencies should be developed at this level and who should be the key end users of capacity building. In WP4 the governance of the future network will be explored, and this might bring more insights into what kind of organisations will coordinate the network.

At the level of **LLs and RIs**, it seems clear that LLs, RIs and other open innovation arrangements that would like to orient more towards AE or that would like to incorporate more LL principles are the key end users of the CBP. These key end users are mapped in WP2 (as agroecological initiatives) based on interviews with NCPs of different member states and on a large-scale survey. The mapping will result in a Europe wide range of AE initiatives with varying maturity in implementing AE and/or LL principles.

The level of **agroecology transition in general** has a very broad range of potential key end users. It includes many different groups active in the agri-food complex on different geographical scales (local, national, European). Starting from the work that has been done in WP2, there is the reporting on the status of the drivers of AE transition (D2.3). It discusses briefly how "*competencies for an agroecological transition diverge quite a lot across the different European countries.*" More input on their needs for capacity building will be gained from upcoming interviews with mapped agroecological initiatives (from WP2) and regional workshops (WP4-5) to be organised with more locally acting potential end users. Since this level contains a diversity of stakeholders at different levels, it is difficult to tailor capacity building to specific needs of particular stakeholder groups. However, through the communication activities developed in WP7, we want to reach these stakeholders as much as possible by informing them about agroecology, the project, and the future partnership.

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[1] *Based on the draft proposal for a European Partnership under Horizon Europe: Accelerating farming systems transition: agroecology living labs and research infrastructures (version 15.12.2021)*

As developing the network and the partnership is an ongoing process, the process of defining the key end users and developing a CBP is **an iterative process.** Along the process, more needs for capacity building will emerge as more stakeholders will be consulted and involved. The method for data collection will be detailed in chapter 5. The following chapters present the preliminary results of the data collection so far. These will be supplemented in a later phase, based on ongoing stakeholder consultation, and on gaining more insights in governance and membership of the network. We can thus consider this deliverable as a living document.

4. Defining competencies within the ALL-Ready framework

4.1 What are competencies?

If we want to gain insight into the competencies needed in the context of the future network of agroecology LLs and RIs, we need a clear definition of competencies. However, if we search the literature, it is not easy to find a uniform definition of the concept of competencies. The common notion of most competency definitions is the inclusion of directly observable and testable characteristics, such as knowledge and skills, and the less assessable personal characteristics (Vazirani, 2010). According to Spencer and Spencer (1993), competencies are best described and visualized as an iceberg (Figure 1) with a person's knowledge and skills representing the visible tip of the iceberg, while the underlying and enduring personal characteristics or self-concepts, traits, and motives (for example, self-confidence, initiative, empathy, achievement orientation, etc.) which represent the larger portion of the iceberg, are hidden below the waterline. Whereas knowledge and skills can be easily developed through training and education, the characteristics below the surface are rather difficult to assess and develop.

Figure 1. Iceberg model of underlying characteristics of competencies. Adapted from Spencer and Spencer (1993).

4.2 A framework of competencies

A framework of competencies is a valid, observable, and measurable list of competencies demonstrated through behavior, that results in outstanding performance in a particular context or role. In such a framework or model, competencies are listed, just as descriptions of knowledge, skills and personal characteristics that might be associated with each competency. However, to draw up such a list of competencies, it is important to define a particular role or context. In the context of ALL-Ready, three levels were defined in which competencies will be important because of a difference in expected performance and difference in the nature of stakeholders involved. These three levels were explained earlier:

1. *Agroecology transition in general: it includes action by all actors in the food system to integrate agroecological principles into the further transition of our agricultural and food systems*
2. *LLs and RIs: it includes action to stimulate innovation on agroecology. In particular for LLs, in includes applying the basic principles of LLs (defined by ENOLL) to stimulate co-creation of agroecological innovation.*
3. *European network of LLs and RIs: in includes actions that stimulate networking, data management and sharing at the European level.*

Having a framework of competencies at these three levels, might support the objective of ALL-Ready to analyse which competencies are insufficiently developed at local, national, and European level. This framework will particularly be used as an analytical framework to get insights into the needs and the differences across European regions. This will reveal insights into competencies to be developed for which stakeholder groups and provide the basis for prototyping capacity building by targeting key end users.

5.   Overall approach/methodology

The approach for this task is based on two consecutive steps. In a first step, the focus was on getting an overview of the core competencies that are important at the first two levels (competency framework). This means, the competencies important for 'agroecology in general' and 'management of agroecology LL and RIs'. In a second step, data was collected to gain insight into which of these core competencies are insufficiently present among different stakeholder groups. Regional and national differences were revealed. Where possible, these needs were also specified for the various stakeholder groups. The emphasis in the data collection is on revealing needs in knowledge and skills. Although our definition of competencies shows that personal characteristics are also very important, the emphasis is on skills and knowledge because these are easier to develop through training and education. In what follows, we give an overview of our different sources of data and how they were used in this deliverable:

- WP1: vision and mission of the network. We particularly made use of D1.1: Reference document with key concepts: Vision for building the network of LLs and RIs for agroecology transition'. Based on a combination of literature, validated by a stakeholder workshop, sets of competencies are described according to the activities that need to be developed by the different actors to support agroecology transition. This input is mainly used to support a competency framework for agroecology in general.

- WP2: mapping, analysis, and overview of existing mechanisms for carrying out participatory agroecological research and innovation including KPI's for the network. More specifically, the data provided in D2.3:'Drivers of agroecology transition' was used in this deliverable. This report was written as a synthesis of 23 national reports that were prepared by partners based on a joint mapping exercise. The national reports are based on interviews with a total of 63 NCP's, representing different perspectives on the drivers of agroecology in the 23 countries (See table 1). To the extent possible, partners were advised to conduct interviews with at least 3 NCPs, representing policymaking, research, and NGO's, in each of the 23 countries to be mapped. For more details, we refer to D2.3. This data was used to validate the competency framework for agroecology transition in general, and to get insights into regional differences regarding the current status of development of (some) of the core competencies of the framework. Later in 2022, regional workshops will be conducted to further identify regional needs among different stakeholder groups to foster agroecology transition in the region. (further information will be provided after conducting the regional workshops)

- WP3: coordination of stakeholder engagement and the ALL-Ready pilot network. In December 2021, a joint workshop for WP4 & WP5 was organized during the kick-off meeting of the pilot network. During that workshop, data was collected on important competencies for managing LLs and RIs on agroecology, as well as on the needs for capacity building for each of the pilot members. More information on the programme and the result of this workshop is provided in D3.2.

- WP4 – Implementation and sustainability of the network. For task 4.1, with the objective to identify the added value of the European Network of AE LLs and RIs, 15 interviews will be conducted among existing LLs and RIs. In the interview guide, a number of questions are included to validate the core competencies for running a LL/RI on agroecology.

- WP5 – In February 2022, a survey was sent to policy and/or decision makers to question their needs for capacity building. More information on the construction of the online survey can be found in D5.2. In total **43** respondents from **23** countries completed the survey. This survey was used to assess perceptions of policy makers regarding knowledge and skills needed to support agroecology transition in general, to support foundation of LL and RIs on agroecology and to set up a network of LL and RI (three levels).

The data sources are summarized, as is the chronology of the different steps in figures 2, 3 and 4 for level 1: agroecology in general, for level 2: LLs and RIs and for level 3: network of LL and RIs respectively.
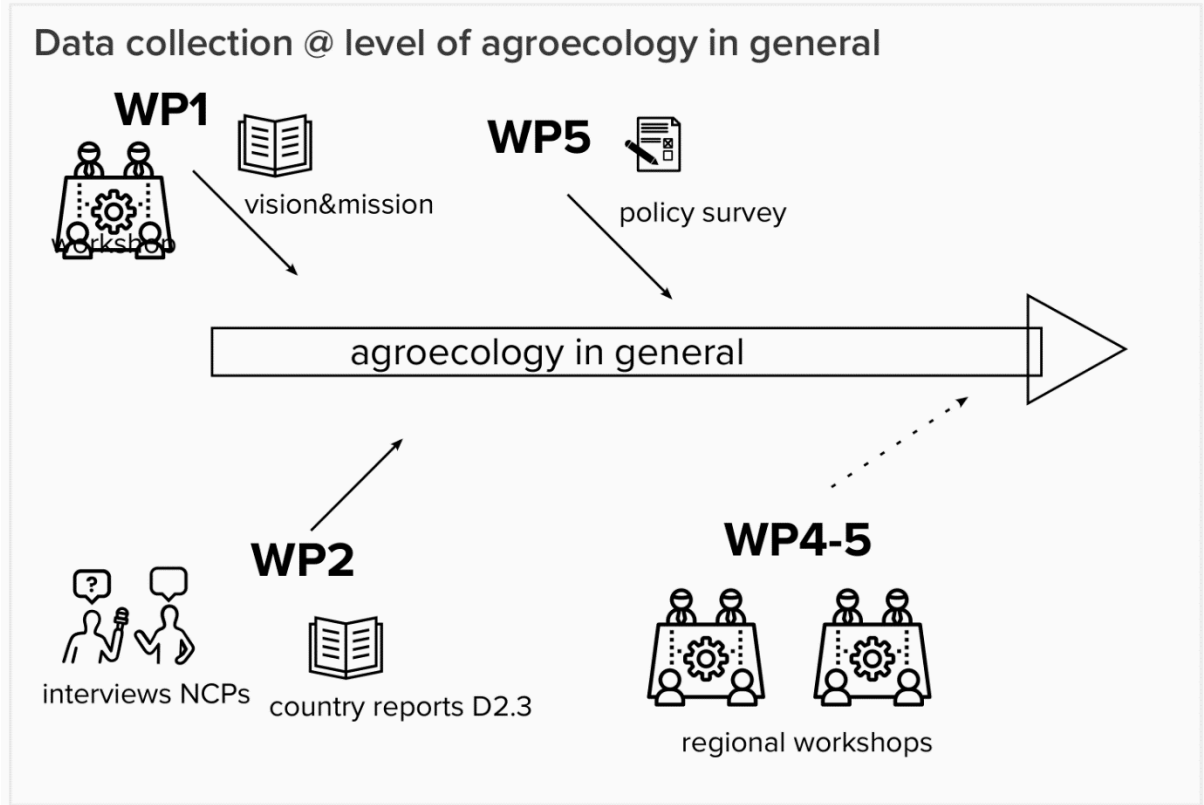
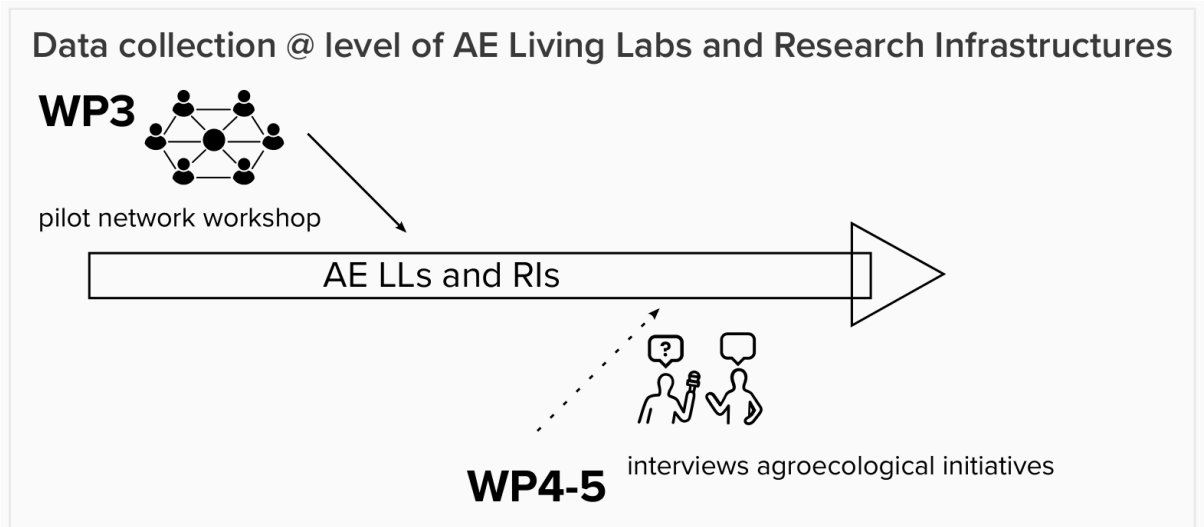*Figure 2. Data collection @level of agroecology in general*

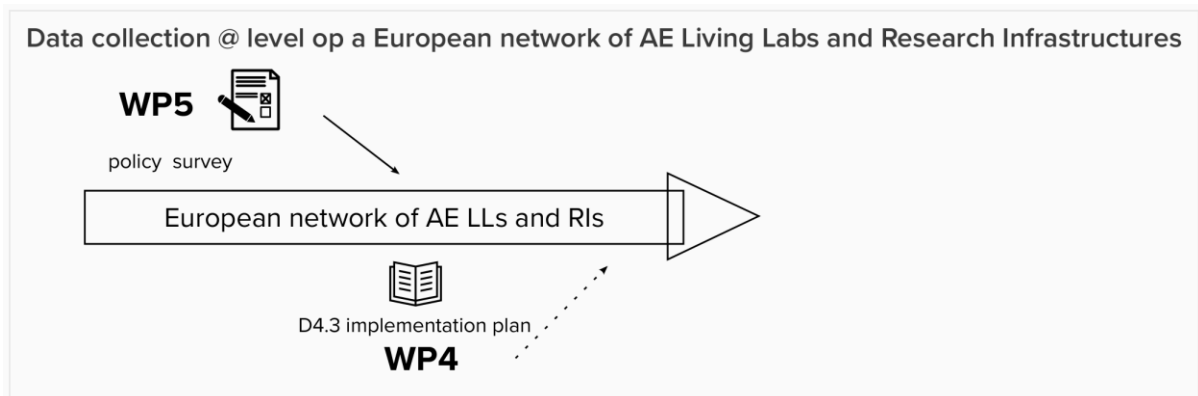*Figure 3. Data collection @level of AE LLs and RIs*

Figure 4. Data collection @level of an EU network of LLs and RIs

6.   Framework of competencies

6.1   Agroecology in general

In this part of the deliverable, we provide a framework of competencies for agroecology transition. This framework can be used in the next step to gain insight into the needs for capacity building at the first level (agroecology transition in general): "Which competencies are insufficiently developed in which regions and for which stakeholders (chapter 7)?" To develop this framework, we started from a competency framework published by the Joint Research Centre (JRC), the EC's science and knowledge service (Bianchi et al., 2022). This framework, called Greencomp, is developed to support the design of learning initiatives aimed at developing sustainability competencies and a tool for monitoring progress in education and training for sustainability. This framework describes 12 sustainability competencies which are summarised in Table 1. They define a sustainability competency as 'a competency that empowers learners to embody sustainability values, and embrace complex systems, to take action that restores and maintains ecosystem health and enhances justice, generating visions for sustainable futures'.

Since agroecology transition is perceived as a means for sustainable and resilient farm and food systems, we can assume that this competency framework also applies as a guiding framework for agroecology transition. However, we can further specify and refine the knowledge, skills and personal characteristics that support these competencies in particular for agroecology transition. WP1 already gave a first impulse to the knowledge, skills, and personal characteristics (attitudes, values, personal skills) necessary for the agroecology transition (D1.1; D1.2). Also, WP2 (D2.3 drivers for agroecology transition) and the draft proposal of the partnership provides further insights on the knowledge and skills needed to accelerate the agroecology transition. After giving an overview of the general competencies for sustainability based on Greencomp (Table 1), we bring all these insights together in the following paragraphs 6.1.1, 6.1.2 and 6.1.3 where we describe why exactly these competencies are important to understand what agroecology transition entails, why it is important and how we can accelerate it.

Table 1. GreenComp: sustainability competencies (Bianchi et al., 2022)

Competency	Description
Valuing sustainability	To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values.
Supporting fairness	To support equity and justice for current and future generations and learn from previous generations for sustainability.
Promoting Nature	To acknowledge that humans are part of nature; and to respect the needs and rights of other species and of nature itself in order to restore and regenerate healthy and resilient ecosystems.
Systems thinking	To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.
Critical thinking	To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions.
Problem framing	To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.
Futures literacy	To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future.
Adaptability	To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk.
Exploratory thinking	To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.
Political agency	To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.
Collective action	To act for change in collaboration with others.
Individual initiative	To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

6.1.1 Grasping the potential of agroecology in the transition to more sustainable farming and food systems (agroecology: WHY?)

In the EU, our agri-food systems are facing challenges and structural changes that are accelerating under the influence of societal demands, economic changes and fluctuations, increasing environmental degradation (e.g., biodiversity loss, reduced soil and water quality) and the adverse effects of climate change. First, we need to pursue a collective understanding and awareness of these challenges that agricultural and food systems are facing today, as well as the impact of these challenges on different levels (**problem framing**). These challenges and changes are both complex and interconnected, with effects that are interrelated. **Systems thinking** is needed to fully grasp path dependencies and lock-ins, and to assess both short- and long-term consequences. If we want to anticipate responses to these challenges, they need to be formulated in terms of difficulty, actors involved, time and geographical scope. Only by fully grasping this, and **being able to frame the problem**, collectively creating and crafting alternative agroecological pathways are possible (**futures literacy**). In doing so, concepts such as justice, equity and socio-ecological integrity should be considered (**supporting fairness**). Multiple actors, all with specific experiences, resources, perspectives, and challenges are affected. The capacity to understand and embrace this diversity among cultures, social groups and individuals requires critical thinking. **Critical thinking** is needed for understanding, comparing, and carefully evaluating different positions. It also includes reflecting on one's own actions and those of one's environment, by reflecting on how personal, social, and cultural backgrounds influence thinking. It enables moving away from a priori judgements. This contributes to developing a clear vision and acting consistently on this, which contributes to one's sense of self-development and autonomy (**individual initiative**).

6.1.2 Towards a shared understanding of agroecology and its potential in transition of farming and food systems (Agroecology WHAT?)

The concept and practice of agroecology has evolved over a long period of time and continues to develop. Initially, it was related to production-related approaches in farming systems by combining the perspectives of agronomy and agriculture with ecology. Later, it was broadened to food systems by including environmental, economic, social, political, and ethical dimensions. Nowadays, it is conceptualised as a practice, a science, and a social movement with the objective to enable transition of farm and food systems. Based on this conceptualization, researchers need to develop competencies to apply action research, holistic and participatory approaches and trans disciplinarity. Farmers and by extension, all actors in the value chain, need to invest in co-creating innovations inspired by the principles of agroecology, contributing to human and animal health, nutrition, and well-being, while supporting environmental health, biodiversity, ecosystem services, circularity and strengthened measures to address climate change mitigation and adaptation (**promoting nature**). The FAO defines agroecology as "an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. It seeks to optimize the interactions between plants, animals, humans, and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system' (FAO, 2018). This systems approach requires internalisation of agroecology principles just as multidisciplinarity. More than that, the transition to agroecology is based on place-specific solutions, as socio-ecological and environmental conditions vary in time and space according to local circumstances. Translating agroecological principles into place-specific solutions requires a clear understanding of the agricultural, socio-economic, and cultural context of the regions/areas. Because of this context specificity, agroecological innovation cannot rely on standard designs or best practices and requires a significant amount of knowledge and creativity to address the

complex and interrelated challenges (**Exploratory thinking**). The transition process involves significant paradigm shifts in agricultural production, for which policy, scientific and market actors must be prepared and engaged, and from which new interactions will emerge. This requires stakeholders to be open to new ideas and perspectives. Agroecology transition also requires the ability to take risks, as it inherently involves making decisions about the future in the face of uncertainty, ambiguity, and risk. Complex sustainability challenges may develop that indicate a certain degree of uncertainty about the future. It also requires a flexibility to adapt and adjust to new situations (**Adaptability**).

6.1.3 How to accelerate agroecology innovation in the transition of farm and food systems (Agroecology HOW?)

Agroecology requires a multidisciplinary and transdisciplinary approach that brings together scientific knowledge and experiential knowledge (tacit knowledge). Digital literacy will be important to be able to use and handle digital devices to manage huge amounts of data and make it available through accessible platforms. Agroecology transition requires competencies and changes along the whole value chain and throughout the agri-food system, e.g., also consumers, processors, retailers, etc. It is therefore important to involve all relevant social, political, and economic stakeholders in a region when addressing complex issues (**Political agency**). This is not only about who is involved, but also about the role actors can play in the transition towards agroecology, as well as the power relations that can impact this. Finally, knowledge is also needed about innovation processes. It goes without saying that agroecology transitions require a collective approach, and thus new ways of designing and implementing collective interventions, transitions, and transformative governance strategies towards sustainability (**Collective action**). In general, end-user involvement is highlighted as a key element for agroecological innovation, as context-specific solutions require the integration of tacit knowledge. End users should be open to innovation, to testing new procedures, ideas, or activities to discover their properties, behaviour and/or effects (**future literacy**). Farmers will need to be supported and guided to set up experiments and investigate the impact in a systemic way. Co-creation of innovation requires specific skills to interact with different participants involved in the transition process. This contributes to anticipation skills as the ability to jointly analyse, evaluate and design rich future visions related to sustainability issues and problem-solving frameworks, creating transition strategies. It involves skills of communication, negotiation, leadership, and collaboration, which are important for successful cooperation among stakeholders*.*

6.2 LLs and RIs in agroecology

When exploring the level of LLs and RIs we build further on the work developed in WP1 in D1.1 which described how LLs and RIs can contribute to accelerate agroecology transition:

In Europe, LLs are increasingly central for implementing sustainable transition, … LLs appear to be both practice-driven organisations that facilitate and foster open, collaborative innovation, as well as real-life environments or arenas where both open innovation and user innovation processes can be studied and subject to experiments and where new solutions are developed. The three operational principles characterizing LLs (i) co-creation, ii) user-centered, iii) in real life conditions) are diversely implemented to be adapted to the socio-economical sector in which they are implemented.

According to ENoLL, the European Network of LLs, one of the participating partners in WP5, five key elements must be present in a LL, regardless of their application domain:

- *active user involvement (i.e., empowering end users to have an impact on the innovation process)*

- *real-life setting (i.e., testing and experimenting on farm or in the field)*
- *multi-stakeholder participation (i.e., the involvement of producers, technology providers, service providers, relevant institutional actors, policy makers, researchers)*
- *a multi-method approach (i.e., the combination of user-centered co-creative methods and tools adapted to best fit their purpose)*
- *co-creation (i.e., mutually valued outcomes that are results of all stakeholders being actively engaged in the process, iterations of design cycles with different sets of stakeholders).*

Research Infrastructures are described in D1.1 as *open research facilities for experimentation at different scales (plot, farm, landscape level and networks)* essential *to understand socio-economic and ecological processes from an academic point of view. They are unique assets to follow the complex design and to redesign the production and ecological systems that AE transition moves forward, provided that they are and will open to more diverse users*.

6.2.1 Co-creation of the framework of competencies

To understand which competencies are important for accelerating agroecology at the level of an agroecological LL or RI, we have not built a framework fully based on what is written in the literature. Instead, it was decided to co-create a competencies framework together with the members of the ALL-Ready pilot network (WP3). This framework is applied/tested/enriched when interviewing the mapped agroecological initiatives (WP2 D2.3).

The first step in co-creating a framework of competencies needed in LLs and RIs was to organise a workshop for the members of the ALL-Ready pilot network. The set up and results of the workshop are detailed in D3.2.

In the workshop the participating members of LLs and RIs of the pilot network had to define together which are important competencies needed in a LL or RI to foster AE transition. They were asked to distinguish the competencies for a coordinator and the competencies for any other LL member.

Because the participants were mainly coordinators of LLs and RIs (see D3.2), they think mainly of their role as a coordinator of a LL or RI, therefore other competencies specifically related to certain roles were added but to a small degree. This aspect must be considered when interpreting the results of the workshop.

The workshop was organized online, due to COVID 19 restrictions and made use of the participatory software MURAL (www.mural.com). Figure 5 shows the exercise in the mural software.

Figure 5. The Mural exercise about competencies

When discussing the results with the participants of the pilot network, first it was questioned **which competencies are specific for a LL or RI that fosters AE transition** and which competencies aren't but are important for any other LLs and RIs.

The participants declared that specific agroecological research knowledge and agroecological practical farming skills are specific competencies necessary in an AE LL or RI. Moreover, they argued that the coordinator of an AE LL or RI should have a good **overview of agroecology in all farming sectors** and **know what agroecology is about.**

Two competencies that were mentioned several times as extremely important for agroecology but maybe not specific, are **systems thinking** and **interdisciplinary thinking** (for example, the importance of a political ecology or political economy perspective on rural development). It should be remarked that *systems thinking* is appearing in many disciplines

nowadays but following the participants it is not always really understood and applied in a good way.

Many other competencies, again mostly from the perspective of a coordinator were summed up by the participants where several of them can be directly or indirectly related to **the five principles of LLs** (see above). We structured and linked the mentioned competencies to the 5 principles of LLs in Table 2.

Because of time restrictions in the workshop, the first question was not answered entirely. The list of competencies cannot be considered exhaustive.

It was also indicated that the type of competencies also depends on what the topic is of the LL. In the pilot network some of the members work on a specific topic while others are more promoting agroecology in general. Some of the members indicated that skills to monitor greenhouse gasses (GHG) are important, but not all LLs or RIs are involved in this type of activity. Business and marketing skills were also mentioned but not all participating members of the pilot network are involved in "selling products". These kinds of skills are more topic related.

Some of the members also mentioned attitudes as 'positive mindset' and 'act as a team player'. The attitudes are not considered in this framework of competencies because we consider that they cannot be taught in the future CBP.

Table 2. Competencies mentioned by pilot network members linked to LL principles

	Co-creation	Multi-method approach	Active user involvement	Real life setting	Multi-stakeholder involvement	
Specific AE research knowledge			x	x	x	
AE practical farming skills and knowledge			x	x		
What Agroecology is about (in a broad sense)						
Systems thinking		x		x		
Interdisciplinary thinking		x			x	
Understanding co-design methods	x	x				
Being able to define goals together	x				x	
Encouraging others to participate and get things done	x		x		x	
Ability to build relationships	x		x		x	
Managing methodological skills	x	x			x	
Facilitating user-driven process		x	x	x		
Encouraging very specifically people like specific policy makers and social scientists to join the LL			x		x	
Knowing your stakeholders (understanding other pulls on participant involvement)			x	x	x	

Understanding & applying academic knowledge about socio-economic aspects like food sovereignty, farmers income, socio-economic assessments		x	x		x	
Being able to bridge & communicate between different actors from various backgrounds and thus different ways of thinking	x	x	x	x	x	
Skills and knowledge on how to set up experiments together in an atmosphere of confidence; how to start and set up a LL	x	x	x	x	x	
Managing conflicting demands from the outside (bridge small daily actions to the overall goal of agroecology transition, not be overwhelmed by contradictory demands				x	x	
In-depth knowledge about human/social dimensions of innovation and adoption	x	x	x	x	x	
Skills/methods for monitoring/measurement of carbon sequestration and GHG emissions*						
Business and marketing skills*						
Delineation of responsibilities	x		x		x	
Decision making	x	x			x	
Planning & time management & ability to change plans		x		x		
Active listening skill	x	x	x	x	x	
Forward thinking and ability to make synthesis	x	x		x		
Being able to identify key challenges and opportunities	x	x				
Data management		x				
Being able to diversify funding options				x	x	

*Topic related skills

6.3   A network of LLs & RIs in agroecology

As mentioned in chapter 3 about the key end users, it is not clear who will be part of the future European network and what type of organisation will coordinate the network. The WP4 team of the ALL-Ready project will elaborate on the governance and recommendations for the long-term success of the future Network, and this might provide additional information on   possible   competencies.
What seems more important at this level is the awareness of what can be done for accelerating AE transition from the position of running/coordinating/funding a European network of LLs and RIs.

There is no input for a framework of competencies at this level.

7.   Mapped needs for competecies

7.1   Agroecology in general

In this part of the deliverable, we give an overview of the needs for competencies to be developed in order to support agroecology transition across Europe. In some cases, these needs are related to a particular stakeholder group or country. In other cases, there is a general lack of a particular competency irrespective of stakeholder group or country. In the overview, we will address these specifications as much as possible. As has been described in the data collection chapter, this overview results from the mapping survey in WP2, and the survey with policy makers (WP5). These data will be supplemented with insights from the regional workshops that will be organised later within this project.

- Grasping the potential of agroecology in the transition to more sustainable farming and food systems (agroecology: WHY?)

Our first results show that there is a particular need for a **holistic approach** to the challenges facing our farm and food systems. The interviewees in the mapping exercise especially pointed out the lack of a **social dimension** in research projects and experienced this as an important hindrance to conceptualize a full understanding of the challenges in many agro-food systems. Moreover, it is also important that all actors understand the problems facing our agriculture and food systems. The NCPs in the Netherlands indicated that there is a large gap between farmers and consumers, and that consumers no longer know where food comes from and how it is produced ('**food literacy**'). Since consumers ultimately represent the demand side, there is an urgent need for closing this gap. Some NCPs also indicated that the importance of traditional **ecological knowledge** is underestimated, and consequently the potential of agroecology in the transition to sustainable farming and food systems. Policies should be re-evaluated on their heavy reliance on technocratic solutions.

- Towards full understanding of agroecology and its potential in the transition of farming and food systems (Agroecology: WHAT?)

The survey in 23 countries (WP2) showed that the concept is still not well known in general. There is a **lack of understanding about agroecology** in the wider population. Looking at the market, an average consumer is unfamiliar with the term agroecology – even short supply chains do not really use the word agroecology, just organic or sustainable product. According to the interviewees, this can to some extent be explained by the fact that agroecology is not formally recognised and codified in domestic regulation. It is often associated with organic farming and/or sustainability. A consequence of this uncertainty about the terminology and different understandings of agroecology is a lack of specific advisory services for, and knowledge sharing on, agroecology. Agroecology is defined as a science, a practice, and a social movement. However, agroecology is often associated with one or two of these dimensions, or the importance of one of these dimensions is less recognised. Nevertheless, it is indicated that these three dimensions of agroecology should all be seen as important dimensions of agroecology and mutually constitutive driving forces. Agroecology is also often conceptualized as a set of principles that are both ecological and socio-economic in nature. In particular, **a clear understanding of the social aspects of agroecology** is not sufficiently developed. For example, it was indicated that knowledge about new business models is needed to guarantee a better income for farmers.

Agroecological principles can be applied to farming systems but by extension also to food systems. In some countries, it was indicated that the emphasis is mainly on the application of these principles in primary production and not, or much less, on the broader **food system** (for example looking for sales markets, the link with consumers' side). In addition, there is still insufficient insight into the impact of agroecological practices. What do we consider as agroecological practices and **what is the ecological but also the socio-economic impact of these practices and systems**? An inventory of agroecological practices and the evidence base around these practices was requested in several countries. There was also a request to consider digital precision solutions for monitoring of biodiversity, nutrient management, and pest control.

- How to accelerate agroecology innovation in the transition of farm and food systems (Agroecology: HOW?)

The interviews with the NCPs (WP2) indicated that an agroecology transition requires competencies and changes along the whole value chain and in the whole agricultural food system, e.g., consumers, processors, retailers, etc. The role of the agroecological movements was highlighted as they were expected to better inform the general public about agroecology and its principles, and how to engage in its practices.

In addition, it was indicated that systems thinking is an important competency that needs to be further developed among various stakeholder groups to further the transition. Due to the lack of **systems thinking**, it is difficult to properly represent the holistic perspective in agroecology transition and the connection between different research areas. This competency also needs to be further developed among farm advisors. In Germany, one interviewee indicated that farmers' needs for advisors are changing from specific management issues to advice on systemic issues (e.g., nutrient cycling or managing the farm within planetary boundaries and being profitable at the same time).

In addition to interdisciplinarity, some interviewees mentioned that researchers do not pay enough attention to stakeholder engagement in research projects because it is time- and resource-consuming. They emphasised that improving stakeholder involvement in research and innovation would strengthen research projects. In general, end-user involvement is seen as an important element for research on agroecology transition and innovation. However, for some countries, especially in eastern and southern Europe, poor **relationships between farmers and the research community** are reported as an obstacle to further increasing and improving stakeholder involvement in research projects. A lack of social capital and

cooperative cultures is seen as a critical shortcoming in some of these post-communist countries. Further improvement of the coordination between science, practice and policy makers is something that needs to be developed. Institutional support will be important to further agroecology transition. In a short survey, established in WP5, policy- and decision-makers were asked about their needs regarding knowledge on agroecology and agroecology transition. The results are shown in Figure 6. All items provided with multiple choices were to some extent perceived as important items for further capacity building. Beyond these, other items were mentioned:

- The relationships between organic farming and agroecology
- knowledge on measuring trade-offs and comparisons with conventional agriculture
- Linkages on how agroecology can link with all relevant Horizon Europe partnerships but particularly 'European Partnership for agriculture of data; European partnership for rescuing biodiversity to safeguard life on Earth, European partnership for sustainable food systems for people, planet and climate
- Knowledge on weak spots of agroecology
- Knowledge about how to put agroecology into practice and a comparison of what agroecology means for the various countries. What are the similarities, and more interestingly what are the differences?
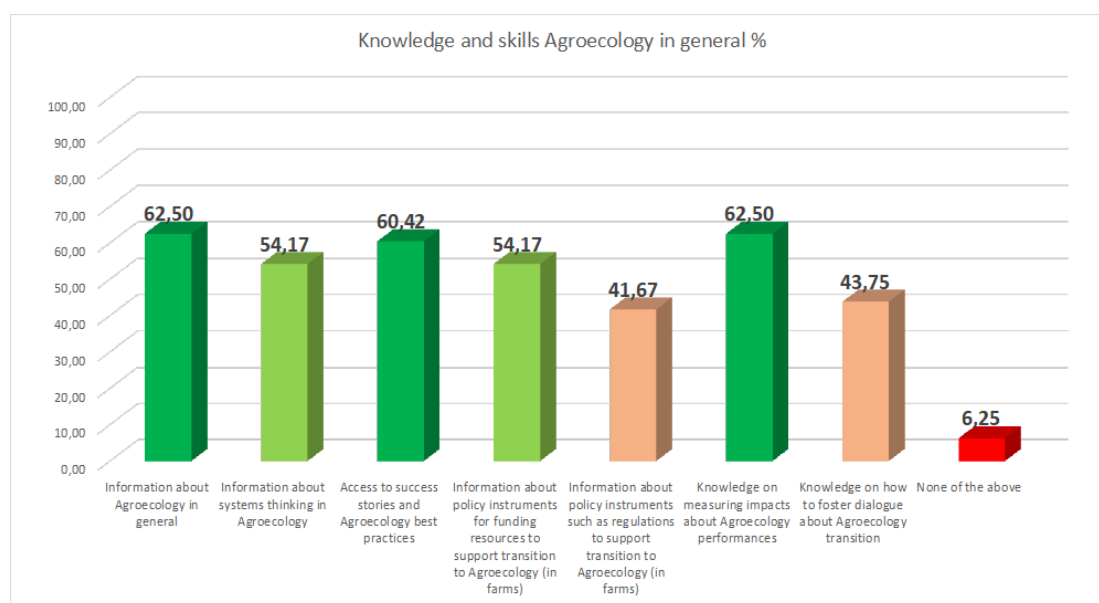

Figure 6. Results of survey policy makers

7.2 LLs and RIs in agroecology

As described in 6.2 a framework for competencies is being co-created with the members of the pilot network. The framework will be refined and/or enriched while using it in the interviews with agroecological initiatives.

Although it is not entirely complete and finished, this framework can be used to identify needs when communicating with the mapped agroecological initiatives. These interviews will be conducted April and processed in May and so the outcomes will be added in a next version of the D5.2.

However, to start with mapping the needs for capacity building on competencies that AE LL and RI want to develop or further upgrade, we asked the participants of the Pilot Network

to identify their actual needs for competencies to be developed for their particular initiative. Again, the MURAL software was used. Participants were asked to mention the competencies they want to develop further in their LL or RI from a perspective of a coordinator and from the perspective of another LL or RI actor. The output is visualised in Figure 7.
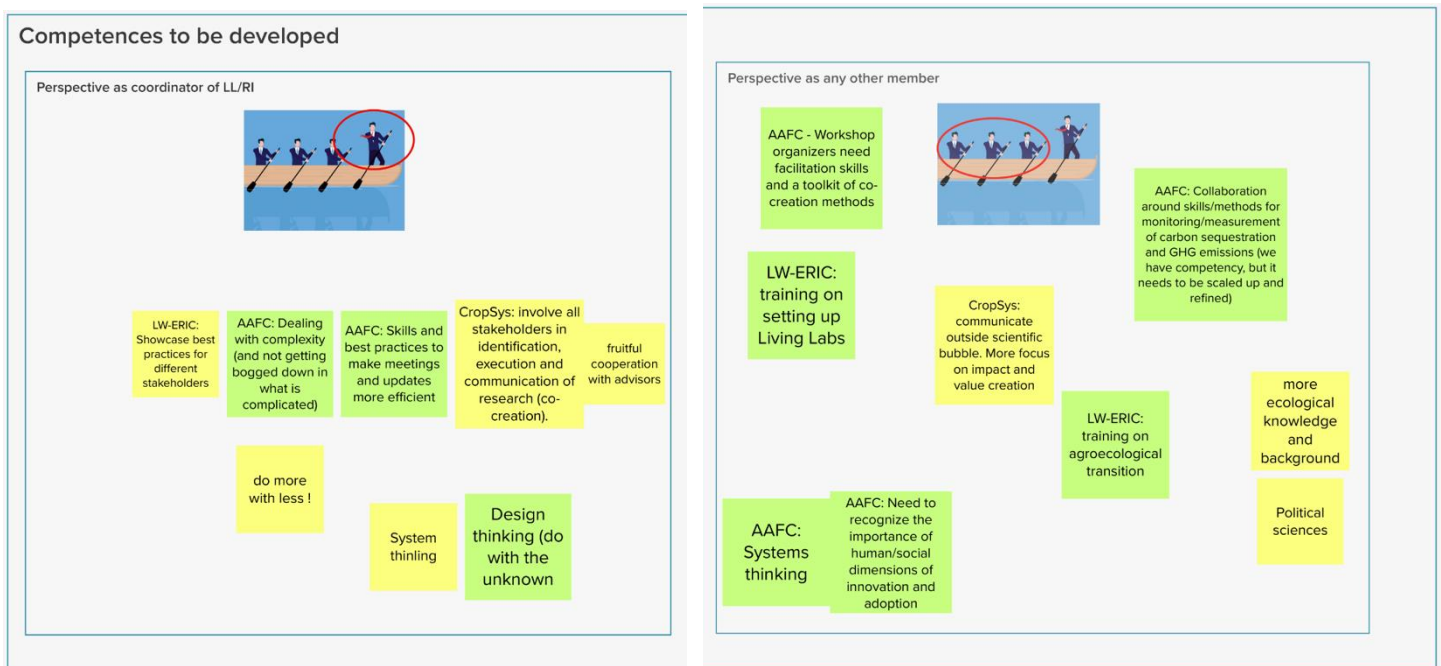

Figure 7. Competencies that members of the pilot network want to develop further

To make this clear, we will re-use the table from 6.2 and highlight the competencies the members want to develop further in red.

Table 3. Indicated needs for competencies in table of competencies for AE LLs and RIs

Specific AE research knowledge
AE practical farming skills and knowledge
What Agroecology is about (in a broad sense)
Systems thinking
Interdisciplinary thinking
Understanding co-design methods
Being able to define goals together
Encouraging others to participate and get things done
Ability to build relationships
Managing methodological skills
Facilitating user-driven process
Encouraging very specifically people like specific policy makers and social scientists to join the LL
Knowing your stakeholders (understanding other pulls on participant involvement)
Understanding & applying academic knowledge about socio-economic aspects like food sovereignty, farmers income, socio-economic assessments
Being able to bridge & communicate between different actors from various backgrounds and thus different ways of thinking
Skills and knowledge on how to set up experiments together in an atmosphere of confidence ; how to start and set up a LL
Managing conflicting demands from the outside (bridge small daily actions to the overall goal of agroecology transition, not be overflown by contradictory demands
In-depth knowledge about human/social dimensions of innovation and adoption
Skills/methods for monitoring/measurement of carbon sequestration and GHG emissions*
Business and marketing skills*
Delineation of responsibilities
Decision making
Planning & time management
Ability to change plans
Active listening skills
Forward thinking and ability to make synthesis
Ability to identify key challenges and opportunities
Data management
Being able to diversify funding options

In the discussions with the pilot network members, it became clear that the needs **depend on what the aim or the focus is of the LL or RI** and what they actually want. Some members wanted to elaborate a very in-depth socio-economic assessment and therefore they rather hire someone then try to train some of their members. It was indicated that sometimes only the coordinator or some of the members should be trained in a skill, to understand better or to make linking to other ongoing projects or actors easier.

The need for competencies depends also on **the maturity** of the LL or RI. A pilot network member explained that when a LL is growing, there are many questions about social knowledge, and they are looking to include more 'socio-economically formed' stakeholders and actors.

There should also be a **correct understanding of the competencies**. Systems thinking is considered necessary for dealing with complexity and not getting bogged down in what is complicated. According to the pilot network members, systems thinking is needed to approach agroecology not as a set of single practices but as a systems approach. They indicate that researchers are sometimes very much focused on a particular topic/practice or scientific discipline but do not see how this might benefit or fit agroecology transition as a systems approach.

Most of the members indicated it is very challenging in LLs how to set up experiments together in an atmosphere of confidence and in a co-creation setting. When all the different stakeholders are engaged in different disciplines and contexts, they mention that things get very complicated. Competencies to facilitate these processes are always needed.

Some needs for competencies were specified for certain actors, e.g., more ecological knowledge and background for different kind of stakeholders, especially the farmers and policy makers.

7.3   A network of LLs & RIs in agroecology

As mentioned earlier, there is not much information about the competencies for a network of LLs and RIs in Agroecology.

However, in the policy survey that was set up in WP5 to ask for CBP items, some questions were directed towards the competency needs for policy makers.

One question in the survey focused on the skills and knowledge needed to set up a network of AE LLs & RIs.

Overall, 15,22% of respondents indicated none of the proposed formats could improve their skills and knowledge on this topic.

Missing items indicated by the participants were:

- *How to link through to support for CAP strategic plans?*
- *Linkages with other programs*

The policy and/or decision makers are clearly looking for insights into funding opportunities at all levels (65,22%), together with access to best practices of networks of AE LLs & RIs (56,52%). Furthermore, they are searching less for knowledge on measuring impacts about network monitoring (36,96%).
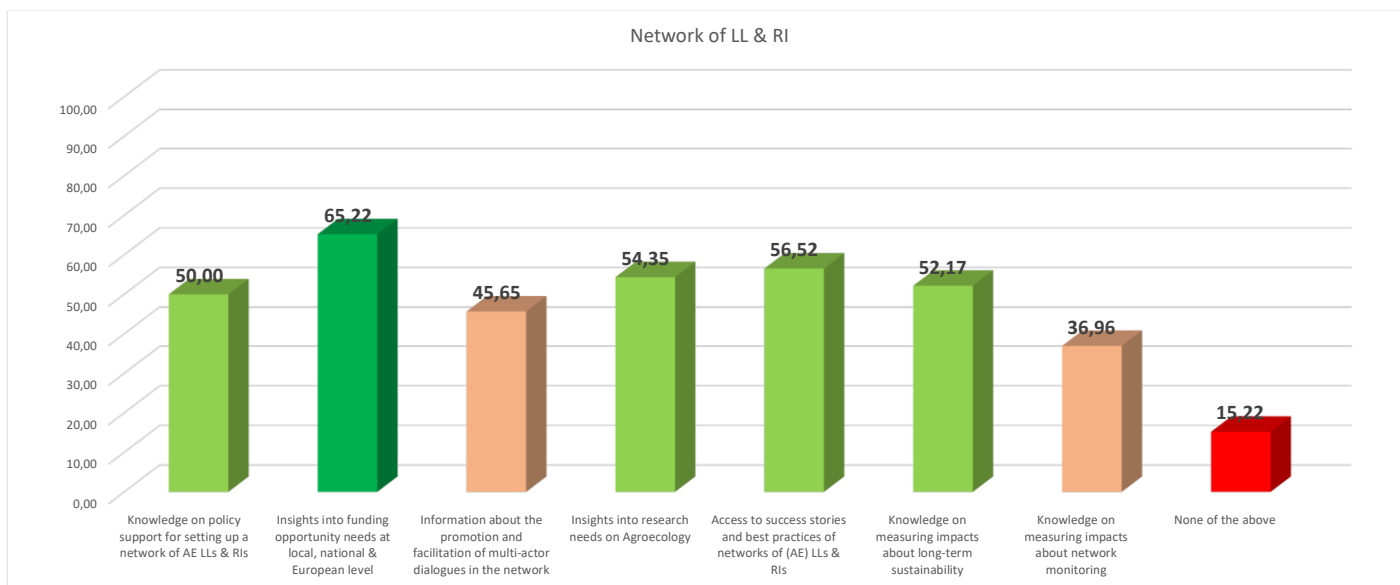
Figure 8. Outcome of question about needs to train skills of policy makers related to building an EU network of AE LLs and RIs

European policy and/or decision makers are significantly **less interested in information about facilitating multi-stakeholder dialogue** (<20,65%). Furthermore, it stands out that they score higher than average on most of the other topics. Together with the *regional level* which indicates a higher need for all the proposed topics.

8. Towards a CBP

The scoping of a capacity building program within ALL Ready, which was the overall objective of Task 5.1 in the project, will be described into more detail in D5.1 and is **structured in the following steps**:

1. At first, the meaning of capacity building and competencies in the context of ALL-Ready was refined to specify the focus of the CPB. Details on the meaning of capacity building are included in D5.1.

2. After this, a preliminary scoping of the CPB was obtained by distinguishing 3 levels for CPB:
   • Transition to agroecology in general
   • Setting up and managing Agroecology LLs and RIs
   • Setting up a network of Agroecology LLs & RIs

3. For each of these levels, an assessment of the core competencies needed was based on data collection tailored to the different levels and stakeholder groups involved. Data collection methods varied from literature review to workshops and interviews.

4. In a following step, these competencies were validated with the key end users at the different levels, also generating insights into which of these competencies need to be improved for whom and where. We additionally gained insights in how the future network might contribute in training and education to further develop these competencies. This resulted in a preliminary overview of capacity building instruments which is described in more detail in D5.1.

All these actions led to **the first scoping of the CBP.**

This CBP will be:

- *Further refined by additional mapping of the needs (WP4 interviews, regional workshops)*
- *Further prototyped and co-designed within Task 5.2 (Prototyping and experimenting the capacity building training program (M12-M24)).*
- *Be implemented in Task 5.3 (Implementing the capacity building training Programme (M24-M36))*
- *Scaled-up in Task 5.4 (Scale-up of the capacity building training programme: communication and dissemination activities (M12-M36))*

This first scoping of CBP includes a very wide scope by touching upon these 3 levels, going from the competencies needed at the local level to adopt agroecological practices to the European level for managing a network of LL and RI. Different capacity building activities will be needed to address the needs at these different levels. Therefore, the following steps, including the prototyping and testing, will be restricted to the management of LLs and RIs fostering agroecology transition. Prototyping and testing will be achieved together with the members of the pilot network. We will discuss which of these competencies they can bring in by hiring external expertise and which ones require training and/or education within the future network.

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