



Agroecology for Europe (AE4EU)

Towards the development of agroecology in Europe

Deliverable report D5.5 –Road map and EU agroecology strategy

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Executive summary

This report describes the way in which AE4EU interacted with various groups of stakeholders and consulted relevant (recent) literature towards the development of a perspective on enhancing opportunities for agroecological transitions in Europe in ways that are complementary to what other relevant initiatives, notably the sister CSA project ALL-Ready and the EU partnership on agroecology, have proposed in relation to the same quest. To develop such complementary perspective, agroecology grassroots and farmer representative organisations were consulted. Also, representatives of partner organisations that are active in the different work packages of AE4EU have engaged in a number of ways to explore ways forward for the practice of agroecology in Europe.

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This report connects to developments in relation to the new initiative of the European Network for Agroecological Food systems (ENAF), and its intended role in enhancing opportunities for agroecological transformations of farming and food systems in Europe (<https://www.ae4eu.eu/european-network-for-agroecological-food-systems/>). ENAF is meant to enhance a collective efficacy of initiatives which have much in common in relation to subscribing to agroecological principles and practices. Though referring to an envisaged role of ENAF, this report describes a broader perspective on enhancing opportunities for agroecological transformations of farming and food systems in Europe

Since early 2022, over 30 organisations and initiatives have, some in more, some in less direct ways, taken part in a co-creation process towards the establishment of what is now known as ENAF. However, particularly in its early phase, the interactions also addressed broader needs for bringing agroecological thinking and practice more to the fore across Europe. This current report builds on such broader ideas shared during that time.

Chapter two explores insights from literature to create an overview of issues to address in building a roadmap for agroecological transformations of farming and food systems. It discusses challenges related to the definitions and interpretations of the term agroecology, the potential of agroecology as food systems approach, the attractiveness of its orientation on core principles, and how it compares to a mission-oriented agricultural innovation systems approach. The chapter also discusses how agroecology as practice and approach is challenged, and how core values and orientations shape motivations for agroecology. Closely related to the purpose of ENAF is a discussion on the importance of connecting to local realities and the power of social movements. Agroecology is not a fixed-in-time science, practice, or movement. Therefore, it needs space and conditions that allow it to further evolve and get fine-tuned to specific contexts. The chapter closes with a brief account of the EU Partnership

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on Agroecology as a key initiative to support agroecological transitions. It's focus on the production side of the food system, means that there is a need for complementary initiatives that take advantage of the full scope of what agroecology has to offer for fair and sustainable food systems.

Chapter three presents selected insights from different strains of work in AE4EU. It presents insights related to practical implementation of agroecology, to research on agroecology, education and training for agroecology, to policy for agroecological transitions, to funding for agroecology, and to movements for agroecology.

Chapter four critically analyses the insights and perspectives highlighted in chapters two and three to develop an approach allowing to unlock the potential of agroecology towards environmentally sound, socially just, and economically fair food systems in Europe. This is then translated into a selection of recommendations for those involved in decision-making at any level regarding the future of farming and food systems in Europe:

- 1) EU and country-level policies and initiatives on agroecology should consider the variety of specific and practical recommendations for the agroecological transformation of farming and food systems provided over the past few years by a range of agroecology researchers.
- 2) European and country governments must rethink currently dominant approaches to technology, innovation and scaling.
- 3) European and country governments must rethink currently dominant approaches to payments and subsidies for farmers and farming (e.g. in the CAP).
- 4) Agroecology should be embraced as an integrated farming and food systems approach.
- 5) Efforts related to agroecological transitions need to pay due attention to the personal motivation dynamics.
- 6) Agroecology as a term should be reconsidered in light of the need to better communicate agroecology and its related principles and aspired futures.
- 7) Not only consult, but also make active use of the potential of what grassroots, farmer organisation, and agroecological movements can offer to transitions to agroecology.
- 8) Make serious efforts to overcome the 'low ceiling', limit co-optation and restricted interpretations of agroecology that dilute and weaken the necessary transitions to agroecology.
- 9) Create space for transitions to agroecology by investing in its underlying science, explorative practice, and related movements.
- 10) Embrace agroecology as in fact the only coherent and integrated approach to enhancing resilience and reducing vulnerability of farming and food systems.

1. Introduction

1.1. Background

Although a certain development of agroecology and its different facets in Europe can be stated (Nicot et al. 2018, Wezel et al. 2018b), it remains so far too limited to allow a successful transition to sustainable agriculture and food systems with increased biodiversity, resource-conserving and climate resilient production and food systems. Therefore, the AE4EU project started under the premise that a strong development with ambitious and longer-term joint actions at European level is needed in research, innovation, networks, training and education as well as in the funding domain.

However, there is a whole range of agroecological initiatives across Europe with nevertheless a lack of progress in the further uptake, out- and upscaling of these initiatives (Wezel et al. 2023). This report presents insights from various stakeholder interactions that took place in relation to the formation of the European Network for Agroecological Food systems¹, key insights and recommendations from the various work packages and tasks of the AE4EU project, as well as its participation in the drafting of the EU partnership of agroecology. It aims to create complementary perspectives on what may enhance opportunities for agroecological transformations of farming and food systems in Europe. It is both a synthesis of insights emerging from the different strands of work of AE4EU, insights from recent literature, and a compilation of perspectives from farmer organisations and grassroots movements on opportunities for agroecological transitions.

AE4EU developed two lines of contribution to enhancing opportunities for agroecological transformations of farming and food systems in Europe: 1) describing a vision and related course of action that would take more advantage of the capacities, motivations, and energies of grassroots agroecological movements and associations (which is currently not really represented/accepted in other EU-level initiatives), and 2) a (co-created) network of agroecological networks and associations spanning across all parts of Europe, which has become the European Network for Agroecological Food systems (ENAF). Both lines of contribution, however, are closely connected. In this report, we focus on that first line of contribution, which is that broader perspective and related course of action which we frame as a complementary road map for agroecology in Europe.

¹ <https://www.ae4eu.eu/european-network-for-agroecological-food-systems/>

1. Introduction

As companion reports to this current report, we refer to AE4EU Deliverable 5.6 (a synthesis of policy recommendations and related strategies on agroecology) and Deliverable 6.2 (more on the history and orientation of ENAF)²

1.2. Methodology and outline of this document

This report may be considered a synthesis of a range of different perspectives on agroecological transitions of farming and food systems in Europe. There are a number of key sources (Figure 1) that we can distinguish in relation to this:

1. The interactive processes that accompanied the co-creation process for the establishing of the European Network for Agroecological Food systems (ENAF) provided opportunities for engaging with stakeholder representatives from important agroecological networks and initiatives from across Europe.
2. The key documentations on the EU partnership on agroecology which are the outcome of a series of interactions between representatives from different (mainly science) groups across Europe, as well as representatives from government bodies of EU member states.
3. The insights that emerged from the work of the different work packages from AE4EU as documented in reports or other publications.
4. The recommendations of a series of policy briefs by AE4EU.
5. Recent literature on agroecological transitions reviewed to position the messages from this deliverable in current debates.

More on the project background of this report can be found in Annex 1.

Chapter 2 is a synthesis of key messages selected from recent literature. The focus of the selections is on identified challenges and opportunities for agroecological transitions in Europe. In section 2.2 we zoom in on the case of the EU



Figure 1: Key sources for this report

² <https://www.ae4eu.eu/resources/>

1. Introduction

partnership on agroecology and share key features of it. Chapter 3 shares (i) key insights that emerged from the interactions with stakeholders in the co-creation process of ENAF, (ii) key insights from the work of the different work packages of AE4EU, and (iii) recommendations that were provided in a number of policy briefs published by AE4EU. Chapter 4 is meant to create a more tangible image of what it may look like when in a particular country opportunities for a wider embracing of agroecological thinking and practice are actively pursued with a range of stakeholders that have lots of differences, but share common goals and principles on agroecology. Chapter 5 then finally seeks to make sense of these various angles on the topic of agroecological transitions as shared in chapters 3 and 4, towards both a summary perspective on what would make for enhanced opportunities for agroecological transformations of farming and food systems in Europe, i.e. enhanced in relation to what is currently ongoing, and towards a selection of ten recommendations for policy makers, researchers, and practitioners. which we want to re-emphasize as they highlight additional angles on the topic that we have not dealt with in much detail.

We close with a brief discussion and conclusions with notable reference to a policy brief which is shared in Annex 3. This policy brief is a summary of key messages from this report.

2. A summary review of challenges and opportunities related to the future of agroecology in Europe

In this chapter, we share a selection of insights that we consider to be in line with insights coming from the work of various work packages in AE4EU and the insights shared by stakeholders involved in the co-creation process of ENAF. It is not a comprehensive literature review as we have sought to select insights that we consider to not yet be addressed appropriately/sufficiently by mainstream approaches to agroecology in policy and research. We would hope that these complementary perspectives will play a bigger role in the definition of policy and research agendas in Europe in the future because we are convinced that these will enhance opportunities for agroecological transformations of farming and food systems, which in turn can lead to sustainable and attractive food system outcomes that are environmentally sound, socially just, and economically fair.

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2.1. Selected insights from a literature review

2.1.1. Agroecology – what’s in a name?

Agroecology is a term that has been interpreted differently by different people, and relates to approaches that have also evolved over the years. There are different descriptions and definitions available, but these are not necessarily representing common views. In the way in which AE4EU approaches it, agroecology is a holistic concept that embraces a diversity of interpretations, intentions and realities, depending on the country and its context, history, stakeholders and socio-political environment. Its aim is to restructure the farming and food systems in a way that maximises ecological processes to attain sustainability – encompassing agricultural practices, science and social movements (Wezel et al. 2009).

Agroecology is not a defined system of production nor a production technique. It comprises a set of principles and related practices that activate these principles in a particular context to enhance the appropriateness and sustainability of farming and food systems – as a movement, it seeks to bring in line all parts of the food system, from production inputs, to food and nutrition outcomes, with the agreed agroecological principles³.

Agroecology is defined by the FAO 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

³ <https://read.organicseurope.bio/publication/feeding-the-people/introduction/>

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and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system (FAO, 2018).

When reviewing those different descriptions and definitions, it becomes clear that it is hard to pinpoint what agroecology does precisely, because it is so much that it involves (later we will discuss its 13 principles/10 elements), and there is quite a bit of room for doing it differently to connect appropriately to different specific contexts and preferences (Mayer et al. 2022). Wolff and Wittman (2023) talk about agroecology as a philosophy of life. It is about a vision of how farming and food systems can support economic, environmental, and social wealth. But then in an optimal way, which means economic wealth is not to undermine environmental wealth, etc. They describe agroecology as a philosophy of life that promotes well-being, and provides a counter-narrative and question the global discourses on “development” that promote economic growth and productivism as the leading path to a good life. They continue by saying that agroecology is like a pathway that can help overcome alienation, commodification, and exploitation, noting that this is within the limits of broader political-economic conditions that constrain such potential.

Therefore, it seems inappropriate to ask ‘how to do agroecology’, as it includes narratives about aspired futures for farming, visions of thriving communities, and hopes for living landscapes. Besides that, it may be communicated with different accents, such as

presented by Tittonell et al. (2022) in Figure 2. The examples in the figure may be considered as agroecological practices and farming approaches that help apply an encompassing agroecological food systems approach.

Over the years, agroecology has become loaded with a lot of meaning that is not a perspective that is shared widely across Europe. That is a challenge, because having a language with common understanding is key for sharing new ideas. This is one of the things that those committed to an integrated approach to agroecology will need to get more to grips with in order to be able to communicate agroecology in ways that are inspiring and empowering. Tittonell et al. (2022) discusses how the term ‘regenerative agriculture’ has been embraced by many, but interpreted quite differently by different people (Figure 3). Agroecology faces a

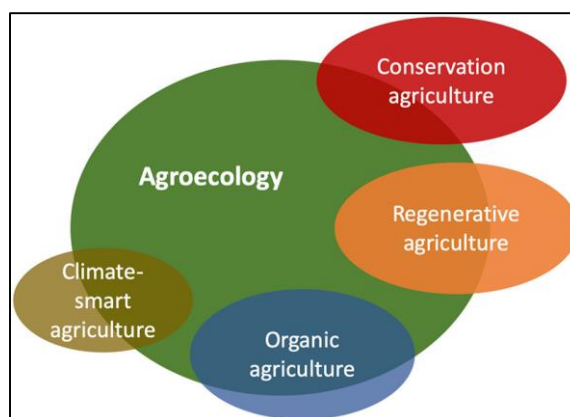


Figure 2: Agroecology in relation to some other ‘alternative’ approaches to agriculture. The different approaches also overlap with each other, which this picture does not show. Adapted from Tittonell et al. 2022.

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similar situation, and it may be necessary to expand on the term to be able to distinguish meanings⁴.

Agroecology	Philosophy RA	Development RA	Corporate RA
Science, practice, movement: social and ecological principles, landscape approaches, bottom-up, different sources of knowledge	RA as adopted by individuals or networks, based on philosophical principles, close to permaculture or biodynamic approaches	RA as promoted by development organizations, social and ecological principles, landscape approaches, often top-down, close to organic and low input farming	RA as proclaimed by enterprises, based on practical agronomic principles and corporate sustainability approaches, close to conservation agriculture
Diversity	●	●	●
Efficiency*	●	●	●
Recycling	●	●	●
Resilience	●	●	●
Synergy	●	●	●
Human and social values	●	●	●
Co-creation and sharing of knowledge	●	●	●
Food culture and traditions	●	●	●
Circular and solidarity economy	●	●	●
Responsible governance	●	●	●

*Efficient use of solar radiation, water, nutrients, energy and labor, based on primary productivity.
Green = close match; Yellow = partial match; Red = no match (for the color blind, respectively: 75% light dotted; 100% even; 25% light dotted).

Figure 3: Agroecology in relation to different interpretations of regenerative agriculture (RA), using the 10 elements that define agroecology (FAO, 2019). Source: Titonell et al. 2022.

2.1.2. Understanding what agroecology can offer as food system approach

The High Level Panel of Experts of the Committee of World Food Security (HLPE, 2019) identified the potential of agroecology to transform food systems, applying ecological principles to agriculture and use of ecosystem services whilst respecting needs for social equitability. Agroecology is characterised by its transdisciplinary, participatory and action-oriented nature, encompassing the whole food system from the soil to the organisation of human societies (Francis et al. 2003; Wezel et al. 2018; Zawalińska et al. 2022). As discussed under the previous section, this is not how everyone interprets agroecology, but this description shows the ambition and potential of agroecology (Figure 4). And it is a different food system approach than most other food system approaches that focus on food availability, food access, food affordability, and food use and related healthy diets. Those approaches fail to consider the wider societal embedding of food, and only focus on its material substance. Because of that material focus, food system perspectives tend to become more technocratic and less value-driven, e.g. epitomized in talking about ‘feeding the world’ and similar slogans, as if the world is a group of hungry people waiting to be fed (notice the passive tense).

⁴ Not a good example, but something like Triple Agroecology, or another way to create a distinction.

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Therefore, Wezel et al. (2020) report that there is a strong basis, and need, for embracing an integrated, food system approach to agroecology: There are (1) 13 defined and consolidated agroecological principles: recycling; input reduction; soil health; animal health; biodiversity; synergy; economic diversification; co-creation of knowledge; social values and diets; fairness; connectivity; land and natural resource governance; participation. There is (2) confirmation that these principles are well aligned and complementary to the 10 elements of agroecology developed by FAO but articulate requirements of soil and animal health more explicitly and distinguish between biodiversity and economic diversification. It is (3) clear that application of these generic principles can generate diverse pathways for incremental and transformational change towards more sustainable farming and food systems. And, finally, (4) there are four identified key entry points associated with the elements: diversity; circular and solidarity economy; co-creation and sharing of knowledge; and, responsible governance to enable plausible pathways of transformative change towards sustainable agriculture and food systems. This provides a perspective on ways in which, through the transition levels towards sustainable food systems, agroecology presents multiple pathways for the transformation of farming and food systems co-created to suit different local contexts, based on a social-ecological systems approach (Wezel et al. 2020).

Agroecology-oriented food systems are not merely food systems enriched with some agroecological practices. This is about food systems that are qualitatively different in many ways (Figure 5). This also means that different people will be thinking about very different things that would be changing through ‘agroecological transitions’. It is therefore key to identify the orientation of narratives on agroecological transitions, to see whether this is about merely enriching food systems with agroecological practices, or about a complete rethinking of the food system.

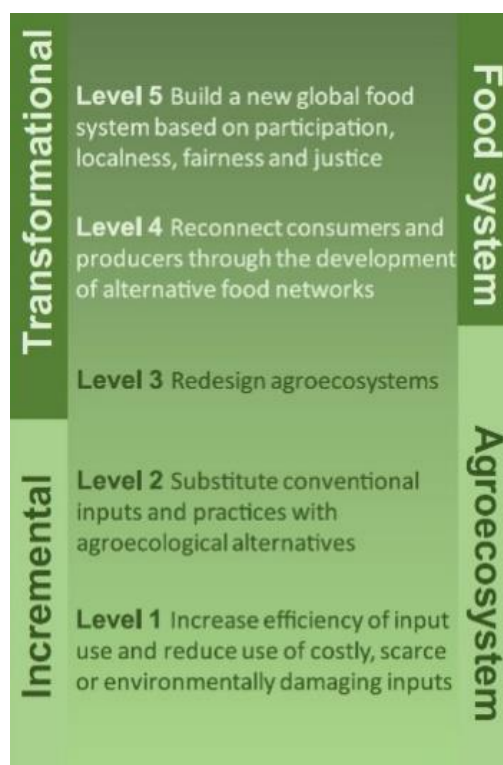


Figure 4: Source: Wezel et al. 2020, who based it on Gliessman, 2007, who enlarged from Hill and MacRae (1995) (first 3 levels).

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CONVENTIONAL AGRI-FOOD SYSTEMS	AGROECOLOGICALLY BASED AGRI-FOOD SYSTEMS
Domestic and export-oriented production of raw materials (feed, fibres, commodities)	Local, regional and national food production and consumption
Long supply chains	Short supply chains
Feeding the agri-food industries with cheap raw materials	Nourishing households with healthy food
Few crop and livestock species	Different varieties of crops and livestock species
Large-scale mono-cropping or short crop rotation	Small-scale diversified food systems with long crop rotations and temporary grasslands/fallow lands
High dependency on external inputs (hybrid seeds, fertilizer, energy)	Lower dependency on external inputs (farm-saved seeds and own breeding, manure and composts to feed the soil)
Top down extension schemes	Participation, farmer field schools, stable schools, innovations platforms
Industries are innovators	Farmers led innovations
Segregation of the producer from their social background	Integration of the social relationships (farmer to farmer, farmer to consumer)
Segregation of agriculture from landscape, biodiversity, single functional	Integration of landscape and biodiversity into agriculture, multifunctional
Narrow single field perspective, one size fits all blueprint approach	System view, holistic approach including methods and technologies based on farmers knowledge, traditions

Figure 5: Comparing characteristics of conventional food systems and agroecology-based food systems. Source: IFOAM, <https://read.organicseurope.bio/publication/feeding-the-people/>

In such agroecological perspective, Gliessman et al. (2023) suggest that a just and sustainable food system is one that:

- conserves, regenerates, and revitalizes soils, ecosystems, and biodiversity;
- works to mitigate climate change and help human societies adapt to it;
- uses freshwater resources in ways that simultaneously meet the needs of people, natural systems, and the future;
- guarantees equality of access to appropriate agricultural practices, knowledge, and technologies and enables local control of agricultural resources;
- eliminates hunger, ensures food security in culturally appropriate ways, and guarantees every human being a right to adequate food; and
- removes social, economic, political, and race- and gender-based injustices from food systems and the structures they help support.

The role of agroecology in helping to bring about this kind of food system is not to prescribe specific practices and arrangements. Rather, agroecology contributes principles, concepts, and strategies that must form the foundation of any system of food production, distribution, and consumption that can make a legitimate claim to being a more ecologically sound, sustainable, and just successor to the one based primarily on industrial agriculture. These principles, concepts, and strategies are more oriented toward offering a design framework for

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sustainable agroecosystems than they are prescriptions or blueprints for the construction or management of actual agroecosystems, and they don't dictate the specifics of an entire world food system.

That is a key attractive part of this approach, and we will explore this further in 2.1.6. So what is needed in Europe is taking agroecology serious and paying due attention to its full potential as alternative food system approach. This includes taking it more serious in the EU's Common Agricultural Policy (CAP), which tends to focus on the agroecosystem only, and within this on the production dimension (Lampkin et al., 2020).

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2.1.3. Agroecology as a principle-based approach

The fact that the orientation of agroecology is identified through a series of principles (Figure 6) is in itself a challenge to common approaches to agriculture and food, and even development approaches in general. Most international agendas focus on goals and indicators to measure to what extent goals have been achieved. This raises a number of questions: Who defined the goals and related indicators? Who will tell in what way goals are to be achieved? How to check what negative impact achieving goals (that in themselves are good) may have? Does this

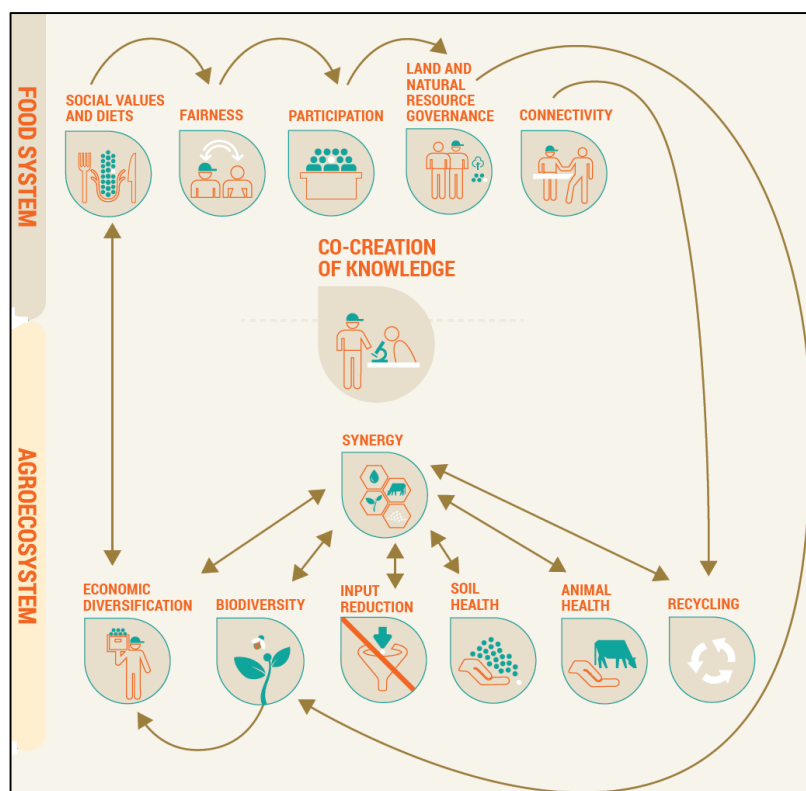


Figure 6: Agroecological principles as presented by Sinclair et al. 2019 based on HLPE, 2019

create a one-size-fits-all approach? How much gaming of the system does this invite in order to be able to report good progress? The good thing about guiding practice (including research practice and policy practice) by principles rather than objectives, it that it (1) leaves room for context-fit application rather than defining pre-selected 'solutions' to be applied at scale irrespective of conditions under which this will take place, and, (2) from day one it is possible to monitor and evaluate the extent to which the principles are being put in practice and it moves away from a compliance attitude (did you meet the objectives/targets) towards an

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empowerment attitude: here are the principles – go apply them as good as possible in your specific context.

This connects to a general tendency to pick out principles/practices from an integrated set of principles that all need to be taken into account. We see the same happen in relation to integrated pest management (IPM), which relates to a set of steps and related options, with prevention as a firm foundation, and with chemical control only as a last resort. Agroecological principles are mutually supportive, and if one principle is not applied, this will undermine the efficacy of the application of the other principles. Alonso-Fradejas et al. (2020) go a step further to state that “for the purposes of ‘changing everything so that nothing changes’, transnational agrifood corporations find, in agroecology, a menu of extremely useful solutions that they have decided to selectively integrate into their agro-industrial model. (...) It represents a selective, strategic corporate capture of some of the goals, discourses and practices of agroecology, of the spaces where public policies are discussed, and of the funds available for the transition to sustainable agriculture” (:32).

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Though agroecology does present an alternative paradigm to the industrial food and agricultural regime (Nyeleni, 2015; Rosset and Altieri, 2017; Anderson et al. 2019; González de Molina et al. 2019), the nice thing is that it is not prescriptive to the level of concrete practices because of a focus on guiding principles. This ambitious and integrative set of principles is meant to govern systems-level sustainability transitions (Anderson and Maughan, 2021), but leave room for contextualized diversity. This opens avenues towards place-specific applications of agroecological principles across Europe, which supports place-based identities and connections in local food systems. (López-García and Carrascosa-García, 2023; Owen et al. 2020; Sanz-Cañada et al. 2023).

2.1.4. Agroecology, mission-oriented agricultural innovation systems (MAIS), and related politics

From Kok and Klerkx, 2023: “Agri-food systems face severe challenges pertaining to environmental sustainability and climate change, human and planetary health, as well as socio-economic inequalities. As such, there is a need for large-scale transformations towards sustainable future agri-food systems (...). In this context, there are increasing calls to gear bundled and coupled technological, social and institutional innovations to support agri-food systems transformation (...)” The integrated approach of agroecology is a perfect match for guiding such bundled and coupled technological, social and institutional innovation from a coherent perspective and philosophy (also see Figure 7).

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Kok and Klerkx (2023) further observe that “making MAIS work in practice is not easy. There are strong debates between and within missions; on the different future agri-food systems they might support, the technological solutions they embed, the social and market constructs they propose, and on which missions are prioritized by policy and economic actors as different visions exist on (future) food system models (...). This is not surprising: food system transformation is deeply political and ideology and power dynamics strongly shape the direction of innovations (...).”

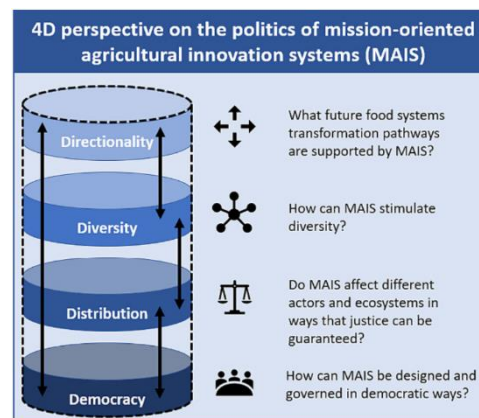


Figure 7: Agroecological principles address each of the 4 angles on the politics of MAIS. Picture source: Kok and Klerkx, 2023.

In relation to this it is very important to conclude that it is not just agroecology that involves political motivations, but other approaches to agriculture and food systems do so just as much.

2.1.5. Getting agroecology right

As discussed in 2.1.1, definitions of agroecology vary greatly, but it tends to emphasize experiential knowledge linked to local contexts, as well as bottom-up, participatory processes for harnessing grassroots knowledge. According to Gliessman’s definition, agroecology is also overtly political, in that it confronts established power structures of an industrialized food system that is perceived as both unsustainable and inequitable (IDS and IPES Food, 2022).

As we can see with concepts like regenerative agriculture and nature-based solutions, the application of agroecology and these other terms tends to be confined in larger international agendas (including the Conference of Parties – COP meetings) to environmental and climate concerns and focused on the technical and economic exploitation of natural resources in ways that maximize benefits while preserving resources and minimizing environmental damage and a focus on biophysical features such as soil fertility, crop yields, greenhouse gas emissions, water use efficiency and carbon sequestration and storage (IDS and IPES Food, 2022).

This is also the way in which agroecology has become more adopted in the context of conventional agriculture. They therefore conclude that the question is whether agroecology, in the hands of the mainstream, will be stripped of all but its most simplistic technical content and left as an empty concept that can mean almost anything to anyone, much as happened

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decades ago with “sustainable development” (Alonso-Fradejas et al. 2020; Rosset and Altieri, 2017).

All-too-easily, a conventional controlling notion of “the transition” to agroecology can obscure alternative visions not only of the many different dimensions and perspectives that this term encompasses, but of the underlying imaginations of what politics and society are all about (Stirling, 2021). Stirling continues to say that when social movements first drew critical attention to so many of the grim realities lurking behind loudly proclaimed promises of industrializing agriculture, they were at first very strongly resisted by precisely the kinds of actors in government, business and academia, who now loudly enroll these same problems as imperatives in their own “grand challenges”.

Anderson et al. (2021) note that agroecology and food sovereignty are not immune from being co-opted or deployed with a view of superficial reforms. Still, they argue that they are currently the most significant, well-developed and coherent formulations for advancing a counter-regime. “Within the wider context of the world historical analysis provided by food regime theory, it is in this active formulation of political agroecology that social movements are pushing for emancipatory and transformative change - and that the social agency of affected peoples is realized from the bottom up” (Anderson et al. 2021). They focus on domains of transformation that in their view are critical to agroecological transitions of farming and food systems, and these are domains that are often not part of mainstream discussions on agroecology: 1) rights and access to nature, 2) knowledge and culture, 3) systems of economic exchange, 4) networks, 5) equity, and 6) discourse. They argue that the chance of agroecological transformation is greatest when all these six dimensions are paid due attention to simultaneously and interactively.

It is therefore about a shift, not a mere adaptation. Agroecological transformation involves making a radical shift from the existing top-down and increasingly corporate-controlled research and policy system, to an approach that gives more agency and decision-making powers to peasant farmers, indigenous peoples, food workers, pastoralists and citizen consumers in the production and validation of environmental, economic, social and technical knowledge (Pimbert, 2018).

2.1.6. The personal side of transitions

Coe and Coe (2023) comment that in terms of agroecological transitions, it is critical to consider the personal dimension of

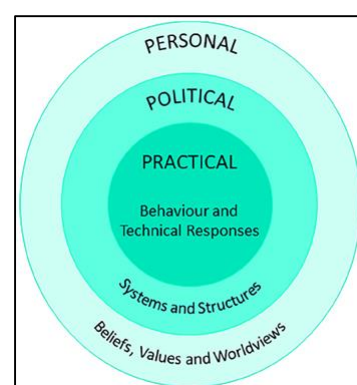


Figure 8: Three spheres of domains of transformation to agroecology. Source: Coe and Coe, 2023.

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transformation potential, which relates to beliefs, values, and worldviews (Figure 8). Agroecological transitions are not merely about a rational change of practices, application of technologies (the practical), nor just about a change of systems and processes (the political). They are underpinned by (personal) values, beliefs, motivations, and attitudes. A change in this dimension may often hold the key to agroecological transformations (Figure 9). Coe and Coe (2023) therefore argue for “ecological mindsets” (and related change) as an additional key principle for agroecology. This is similar to how van den Berg et al. (2022) draw attention to the need for building “movements of affect” to draw on the potential of people to bring about transformation, and Bakker et al. (2023) who discuss the ‘inner’ dimension of change towards agroecological practices. The cases of sustainable food system transitions as “beacons of hope” that are discussed by Baker et al. (2019) can be considered as illustrations of what this may look like.

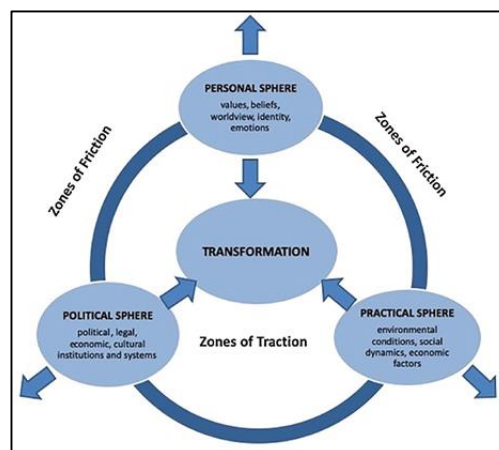


Figure 9: Three spheres of transformation and their interaction. Source: Gosnell et al. 2019.

2.1.7. Agroecology, local realities and social movements

Sustainability transformations research increasingly recognizes the importance of local actors and their networks to foster fundamental societal change. Local actors have different types of relations between each other (e.g., sharing material resources, giving advice) through which they jointly intervene in different system characteristics (Lam et al. 2020). Wezel et al. (2020) argue that the role of civil society, social movements and consumer organisations is critical to ensure transitions. They point to the examples of social movements such as La Vía Campesina at the global scale, and national members such as the Brazilian Landless Workers Movement (MST) as important actors contributing to debates around transition to sustainable food systems. In doing so, they challenge practices and visions of those that are supported by agri-food corporations and more mainstream institutions (Giraldo and Rosset 2018). These social movement actors have played a crucial role in raising the political dimensions of agroecology, providing alternative models for food systems and emphasizing the need for more systemic changes to occur, such as through grassroots farmer-to-farmer networks (Val et al. 2019). Many may not agree with all of their challenges of common practice in farming and food systems, but it is critical that this challenging happens, both to sustain democratic processes, and to harness critical voices in society that can help to turn off the automatic pilot of conventional farming and food systems. As Kuhn (1962) wrote about scientific revolutions,

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a transition to sustainable farming and food systems will involve a paradigm shift and for this to be able to happen, critical voices need to have a place at the table.

Sustainability transitions, in general and particularly for agroecological transitions, require developing inter- and transdisciplinary dialogue, both among scientists from different disciplines and between scientists and nonscientist, plural epistemologies (Ollivier et al. 2018). Fisher et al. (2022) concur by stating that transformations to sustainability are necessarily plural and will continue to unfold in different ways.

Sage et al. (2021) conclude from their study that food system transformation requires social movements, more localized economies, collaborative networks. “Yet the question remains how – and by whom – this transformation will be undertaken: whether Big Food remains hegemonic in guiding a transition through the technologies of the bio-economy; or whether we will witness the more rhizomic spread of grassroots initiatives effectively performing this transformation that will birth a food system that works within planetary boundaries to deliver healthy food for all”. And “If it does nothing else, the global food movement serves as a moral compass to Big Food. But, of course, it is a great deal more than that”.

Stirling (2021) argues that for decades, change in agriculture has stemmed primarily from the development of technical innovations such as new cultivars, machinery, and synthetic inputs. During this “modernization” phase, researchers and technical advisors assumed that farmers would adopt new techniques and knowledge that they had developed and disseminated. This top-down linear process was criticized extensively (Klerkx and Leeuwis, 2008; Duru et al. 2015) and was gradually enriched through the involvement of farmers in the innovation process (Salembier et al. 2018).

“The most promising agroecology initiatives are those where grassroots actors reach across divides and organize to get others on board to create new, multi-actor constituencies with common aims and interests” (IPES-Food 2016). Sandhu (2021) argues along similar lines for more local and regional solutions, which are community driven and constitute a ‘bottom-up’ approach.

2.1.8. Space for being able to take agroecology forward

Agroecological principles have been defined, and even though they might be further finetuned in the nearby future, they provide a clear integrated approach to farming and food systems. Much has already been achieved in providing evidence for the efficacy of agroecology in a variety of contexts (van der Ploeg et al. 2019). However, agroecology needs to further grow and develop new knowledge and innovations to put those principles into practice under many different conditions and in many different contexts. There are also still some remaining tasks

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in terms of fine-tuning and contextualizing practices through learning and the development of appropriate technology. Industrial agriculture has had many decades to optimize practices and technologies. Agroecology needs to be given space to further develop into viable options. Criticizing it for not providing the yields that industrial agriculture provide, is unfair – it takes time to optimize agricultural practices and food system arrangement in completely new ways, and also makes a biased comparison in not taking into consideration cost of inputs for yields as well as negative externalities. Therefore, a change needs to come in terms of assessment. Total true cost accounting (including side-effects) needs to be applied. Therefore, agroecology needs to be invested in and given space to prove its full potential under different circumstances.

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Such optimizing of agroecology involves addressing limitations such as noted by Anderson et al. (2021): (1) research on diversified agricultural production systems and agroecology tends to be severely underfunded in most parts of the world. (2) Agroecology transformations demand new methods and approaches to evaluating success, including new indicators, to monitor and recognize the complex and multifunctional benefits of agroecological approaches. (3) Also key for agroecology are new markets, networks and economic processes that are embedded, or ‘nested’, in local territories and social relations, for example around definitions of food quality that are mutually agreed by producers and consumers. “Globalized market arrangements do not work well for agroecology. The prices do not reflect the costs, and important non-market values central to agroecological principles are driven out—equity, shared social welfare, solidarity, kinship, reciprocity, culture and traditions among them.” (4). In agroecology, not only products but also cultural traditions, ideas, visions and knowledge are exchanged.

Figure 10 illustrates the beneficial outcomes that can be if agroecology is given more space to prove its potential.

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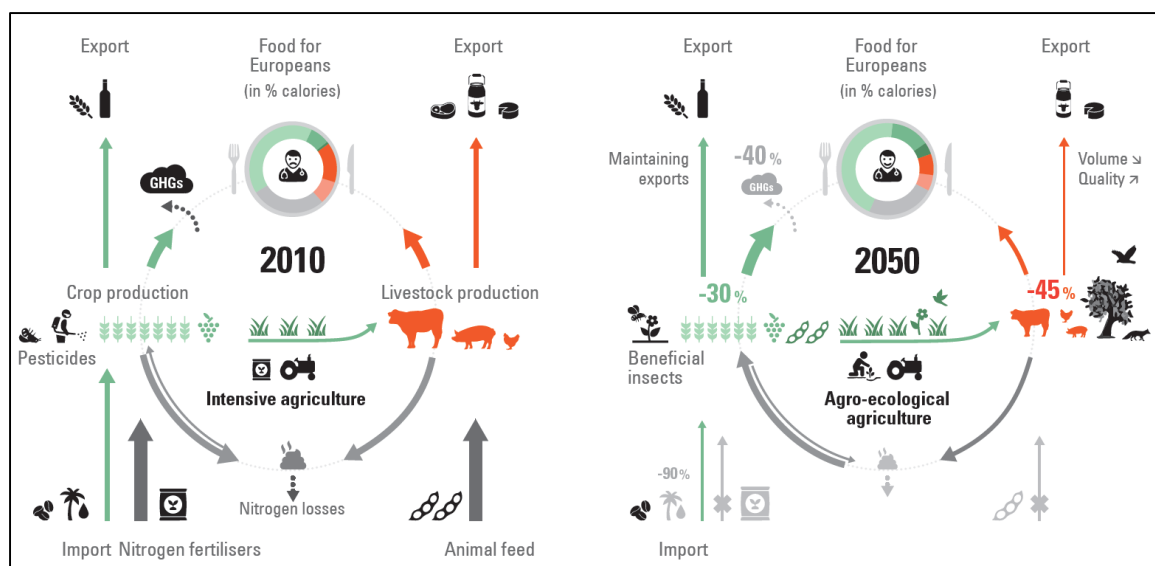


Figure 10: An illustration of agroecological transitions that focuses on agricultural production (including import and export). Source: Poux and Aubert, 2018.

To create such space for agroecology to prove its potential, there are a number of orientations of the current dominant food systems that need to change. Anderson et al. (2021) list a number of these in Figure 11.

Works against transformative agroecology		Works for transformative agroecology
Approach and governance of financing		
No co-governance mechanisms	-----	Mechanisms for co-governance
One-way accountability	-----	Co-accountability
Cookie-cutter approach	-----	Bespoke approach built from the ground up with local stakeholders
Farm-level approach only	-----	Territorial approach and multi-scale
Short term, one-off funding	-----	Long term, phased approaches
Focuses on technical practices to increase production or efficiency	-----	Focuses on improving farm design to deliver social, ecological, political and cultural benefits
Disregards political dimensions of transition	-----	Incorporates action to address political dimensions of change
Intervention: top-down involvement of institutional actors, policy-makers and scientists	-----	Dialogues and collaboration: enrolling institutional actors, policy-makers and scientists in agroecological projects
Rigid monitoring and evaluation looking for narrow short-term indicators of benefit	-----	Flexible multi-dimensions, long term, participatory monitoring and evaluation
Humanitarian as a crisis response	-----	Humanitarian as a transformation
Big Picture		
Equity-blind	-----	Confronts intersecting dimensions of equity
Agroecology as niche	-----	Agroecology as central
Ignores wider systemic problems	-----	Addresses the disabling dynamics of wider systems
Dismissive of local knowledge; top down approach to knowledge, learning, research and innovation	-----	Embraces a dialogue of a diversity of knowledges; peer-to-peer learning, participatory research and development

Figure 11: What works for and what against agroecology. Source: Anderson et al. 2021.

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2.1.9. Acknowledge that there are competing narratives on sustainability transitions

Agroecology and related approaches have been and are criticized as allegedly being an approach that will lead to food insecurity and poverty. E.g. the genetic literacy project that promotes industrial agriculture and demotes alternative approaches, stated that “despite its ‘social justice pretense’ agroecology promotes poverty in developing countries”⁵. Mugwanya wrote an article on ‘why agroecology is a dead end for Africa’. The author states that “the agroecological model advocated is too restrictive to transform the sector. At best, it seeks not to transform, but to trap farmers in the poverty of their current unproductive farming practices.” Yet still to others, agroecology has been described as an outdated, impractical and even dangerous approach because it undermines the centrality of yield and profit as the object of agricultural development (Anderson and Maughan, 2021).

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Critiques like this are to be taken seriously. Agroecology is not a dogma that has to be defended no matter what the evidence. On the contrary, agroecology is meant to be built on evidence-based practice. However, there are at least four things at play here: (1) Not all that is presented as agroecology is an example of good practice. In other words, there will always be examples of bad practice under the flag of agroecology. The same applies to any other approach. Furthermore, among proponents of agroecology there are different groups, some which take a more confrontational and conflict stance, and some a more collaborative stance. This mode of engaging opposing views should not be confused with the basic principles that are advocated. (2) As the European Environmental Agency (2018) stated (see Box 1), sustainability transitions involve contestation and negative framing of opposing viewpoints.

Box 1: Transitions are by nature political

“Transitions (...) being evolutionary (...) means that they are open ended, non-linear, fundamentally uncertain, and based on searching, learning, trial and error, and experimentation. Surprises and unintended outcomes are likely. Such transitions depend critically on interpretations and social acceptance. They are also conflictual and deeply political, producing trade-offs, ‘winners and losers’, and related struggles, as politically influential and well-resourced incumbents often resist change.” (European Environmental Agency, 2018:11)

It is not only about what is best for the environment and society at large, but also about vested (financial) interests. There is sufficient evidence of the ways in which Big Tobacco in the past

⁵ <https://geneticliteracyproject.org/2020/11/30/viewpoint-despite-its-social-justice-pretense-agroecology-promotes-poverty-in-developing-countries/>

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and Big Pharma until this day have manipulated information to their advantage (e.g. Oreskes and Conway, 2010). There is no reason to think that similar dynamics would not be at play around Big Food. (3) It was Jacques Ellul who already alerted to what he coined as “technology bluff”⁶. As discussed in 2.1.7, agroecology needs space to further optimize agroecological practices based on an integrated application of agroecological principles. It takes time and serious financial investments to give it the opportunities it needs to prove its potential under different circumstances. To expect that without such investments it should be able to prove its potential is unfair, and also counter-examples are increasingly provided, e.g. for agroecology increasing food security (Bezner Kerr et al. 2021) or economic performance (van de Ploeg et al. 2019). (4) There is no one right approach to agricultural practice and to how we organize our food systems. We are all learning our way forward and we need space for open, fair, and transparent debate without cancelling critical views upfront. There are different ideas on what innovation should entail (See Figure 12, and also Godin and Vinck, 2017), there are different interests at play, there are trade-offs to be considered and there is no value-free way to do so.

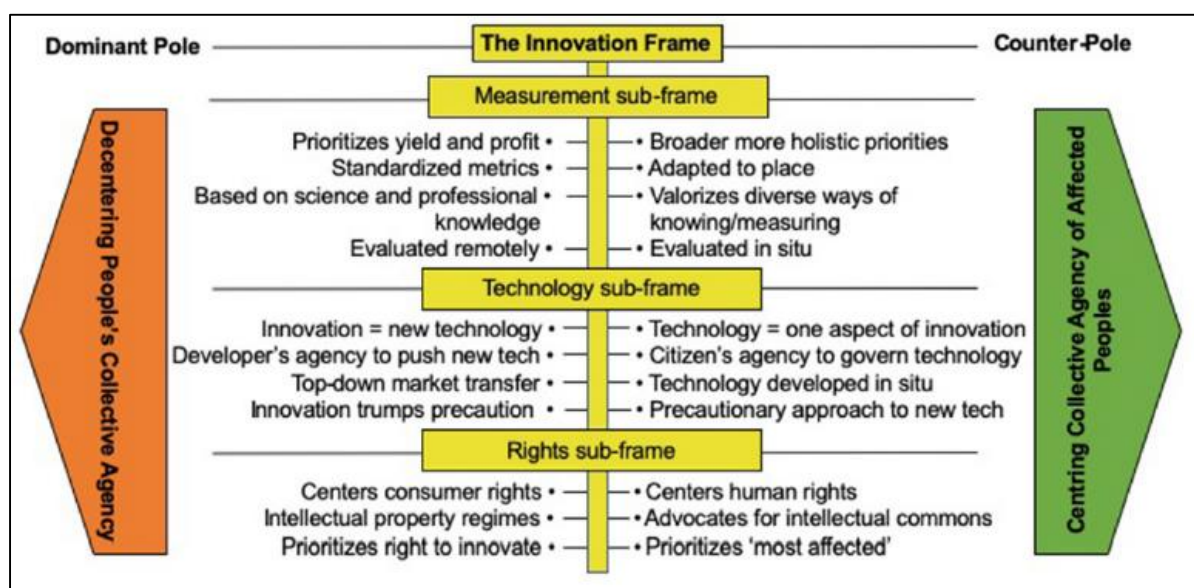


Figure 12: The agroecological approach challenges common interpretations of innovation. Framing agroecology from within an industrial agriculture perspective on innovation, will fail to articulate what it can offer to sustainable farming and food systems. There is a need for a different language to escape common framing of innovation. Source: Anderson and Maughan, 2021.

Stirling (2021), puts the fourth point in a more polemic way when he argues that “if it is the broad aim of agroecology movements, that food can be produced in ways that care for people

⁶ https://monoskop.org/images/5/50/Ellul_Jacques_The_Technological_Bluff.pdf; applied to the context of innovation and scaling by Wigboldus and Jochemsen in chapter 2 of <https://edepot.wur.nl/449586>. Also see the works of Benoît Godin who alerted to the politics behind innovation.

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and nature (rather than attempt to control them), then is it not a betrayal of possible forms of transformation, to seek to unfold them in the same old controlling ways? Is it not here again, that more plural, mutualistic, bottom up, hope-inspired, complexity-affirming and caring dynamics of transformation can show sharp contrasts with more competitive, hierarchical, fear-driven, simplistic and controlling disciplines of transition?”.

In other words, critiques on agroecology are not just about evidence-based practice, but are also very much about differences in values that are driving motivations and decisions in relation to (approaches to transform) farming and food systems. Therefore, rather than letting proponents of industrial agriculture claim the moral high ground since they are most powerful at this point in time, differences in fundamental values and orientations must be put on the table and brought to the attention of politicians and wider society in order for them to be able to weigh together both the importance of particular values, and the evidence for efficacy towards making decisions on what direction to go in transitions of farming and food systems.

2.1.10. Scenarios and strategies for agroecological transitions

The leverage points for system interventions which Meadows (1999) suggested, has become an important guidance framework for thinking about and strategizing for sustainability transformations (Figure 13). They support the idea that food system transformations cannot be achieved merely by adjusting production techniques and require addressing fundamental drivers that determine the deplorable state of certain food system outcomes. This, however, still leaves many questions open regarding how exactly to strategize.

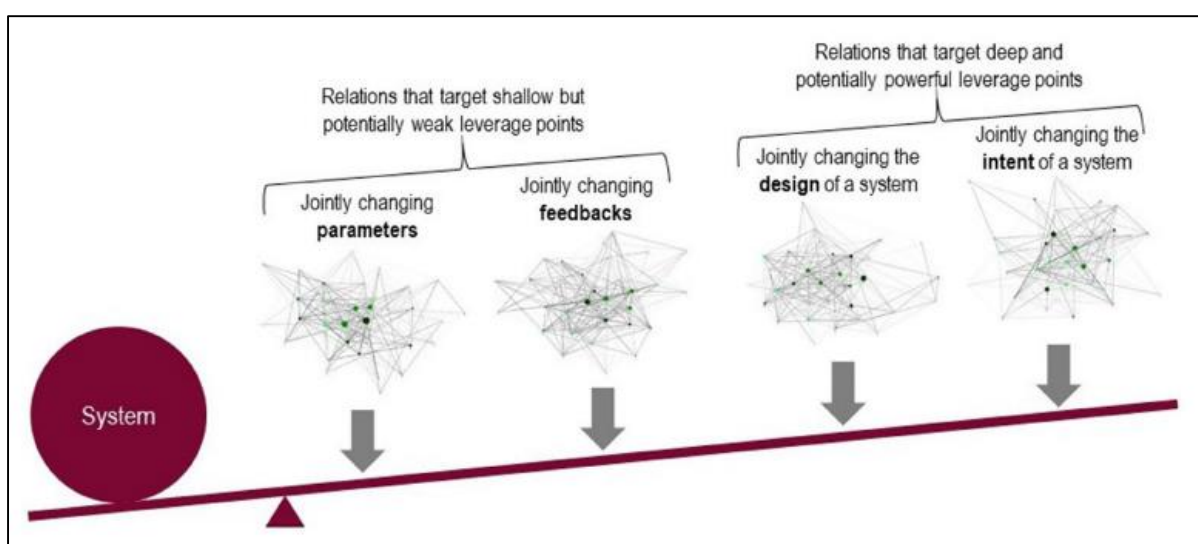


Figure 13: Leverage points for system change organized along the lines of four categories. Source, Lam, 2020.

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There have been a number of contributions along these lines. One is to identify scenarios to get to grips with different strategy options (Figure 14).

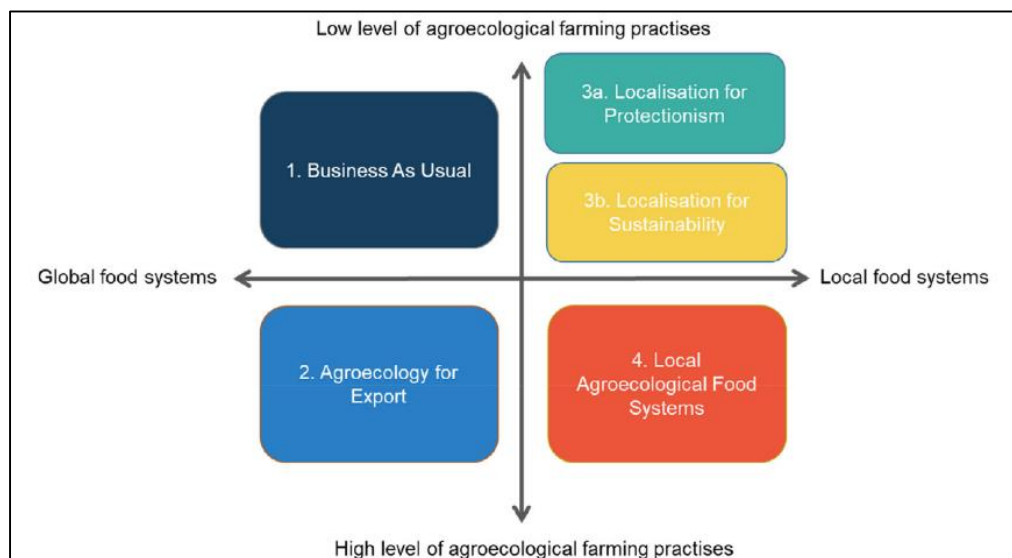


Figure 14: Scenarios for agroecological transitions. Source: Rööös et al. 2022

Another is to identify entry points for accelerating agroecological food system transformations as suggested by Wezel et al. (2020). There are four key entry points that they consider to hold a significant potential for accelerating agroecological food system transformations: responsible governance, circular and solidarity economy, diversity, and co-creation and sharing of knowledge (Figure 15).

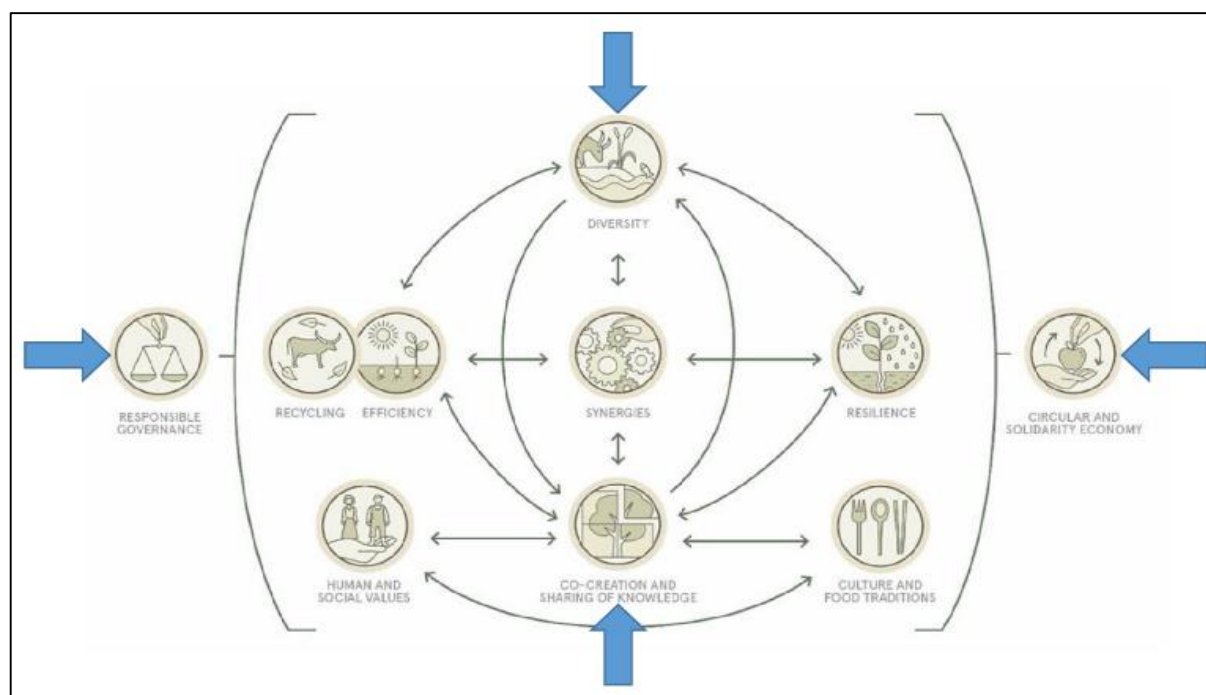


Figure 15: Key entry points in relation to FAO's ten agroecology elements, as suggested by Wezel et al. (2020).

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Anderson et al. (2021) go a step further by identifying a number of domains of agroecological transformation (Figure 16). They may also be interpreted as leverage points for agroecological transformation.

The roadmap for agroecological transformations of farming and food systems therefore needs to address the constant interaction between a variety of leverage points such as social (relationship building and inclusivity, ownership building, bottom-up demand-driven, etc.), socio-cultural/contextual (catering to diversity, addressing connectivity between different scales, etc.),

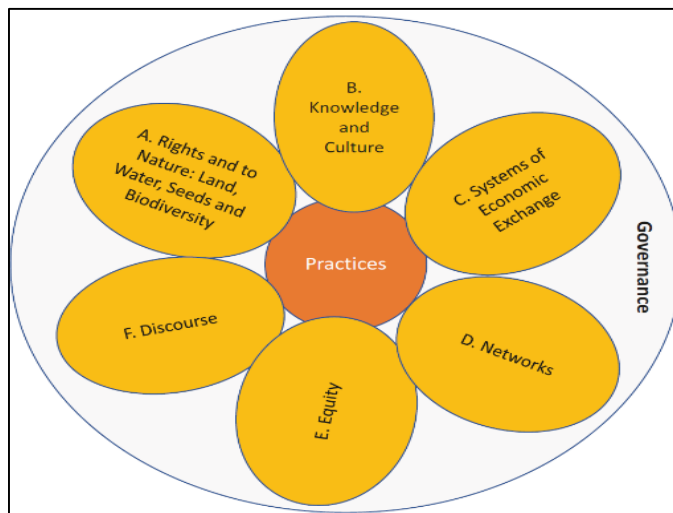


Figure 16: Domains of agroecological transformation. Source: Anderson et al. (2021).

agroecological (ensuring agroecology integrity, i.e. corresponding to principles), technical/logistical (practical organisation of functions and services and how this can be done), as well as financial-economic (e.g. ensuring financial support).

Runhaar (2021) suggests yet other categories of what is needed for agroecological transitions: (1) concrete goals or actions, (2) political and societal pressure, (3) a broad coalition, (4) building institutions to support and sustain regime change.

In chapter four we will return to the question of the types of actions that are needed to enable agroecological transformations of farming and food systems in Europe, while identifying what is still missing in terms of what is being addressed by current policies, actors, and initiatives.

2.2. On the EU agroecology partnership

There is increasing recognition that a major change is needed that would make the agricultural sector more sustainable, resilient, and responsive to societal and policy demands. This is highlighted in many policy documents and initiatives, ranging from the EU Environment Action Programme to 2030, the UN Sustainable Development Goals (SDGs) to the ambitious European Green Deal and the underlying strategies - Farm to Fork and the EU Biodiversity Strategy 2030, and the Common Agricultural Policy (CAP), among others. The potential of agroecology is especially highlighted as a promising approach to support the transition towards more sustainable agriculture within the biodiversity strategy where it is highlighted that ‘Agroecology can provide healthy food while maintaining productivity, increase soil

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fertility and biodiversity, and reduce the footprint of food production. The potential of agroecology is being highlighted as a key in relation to third countries⁷ and it has become a priority for research under the EU's Research and Innovation Programmes Horizon 2020 (2014-2020) and Horizon Europe (2021-2027).

This has led to the so called Partnership of Agroecology Living Labs and Research Infrastructures” (“the Agroecology Partnership” hereafter). This partnership relies on a common vision to: “Team-up and unlock the transition to agroecology so that farming systems are resilient, productive and prosperous, place-sensitive, as well as climate, environment, ecosystem, biodiversity and people-friendly by 2050” In order to achieve impact on people, policies, planet, productivity and prosperity, we need a change in paradigm in science, policy and practice to support:

- i.) A thriving agricultural sector, which is economically viable, attractive to young generations and well connected to society.
- ii.) New as well as improved farming practices, products and services that contribute to positive ecological, climate and environmental impacts of agri-food systems.
- iii.) The strengthening of social capital, values, networks, skills and awareness on agroecology.
- iv.) Evidence-based, systems-oriented governance and policymaking with governments and institutions and thereby policies that are more open, flexible, participatory, risk sharing and therefore capable of enabling transformative changes.

It has been developed upon the mandate of the Standing Committee on Agricultural Research (SCAR). It is the outcome of two years of work involving many professionals from different domains, and building on the efforts of the 160 participants in several task forces defined by SCAR-AE subgroup in 2021. A draft was submitted for public consultation in 2022 and finalised in 2023 (SCAR, 2023).

The assumption of the European Partnership is that we can address challenges faced by the European agricultural sector through agroecology, which is an approach that builds on natural, biological interactions while using state-of-the-art science and technology, and innovation based on farmers' knowledge and tested best practices.

⁷ https://knowledge4policy.ec.europa.eu/publication/supporting-transformation-agricultural-food-systems-through-agroecological-approaches_en

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The rationale for this partnership is that strongly linking agriculture to ecological processes and biodiversity will render it more sustainable and resilient.

Living Labs (LLs) emerge in this context as an instrument providing the adequate long-term and user-centred framework for facilitating the co-design, co-development and rapid uptake of innovations tailored to specific locations (from practice to policies). The partnership will promote the establishment of a network of agroecology LLs across Europe to benefit from their particular experiences. Research Infrastructures (RIs) provide an appropriate environment for multidisciplinary research while helping to develop and implement relevant services and tools. They encompass the monitoring of pertinent biotic and abiotic variables, and the evaluation of different scenarios of agroecology transition. Interdisciplinary and transdisciplinary training and innovation are also prominent activities of RIs. Matching RIs and agroecology LLs therefore has in the view of the Partnership a great potential to enhance the creation and adoption of innovations, enabling their fast evaluation and their re-consideration whenever needed (SCAR, 2023).

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A full transition to AE entails a transformative change of the entire food system. The proposed partnership has its main focus on fostering AE transition at the primary production level. Nevertheless, to achieve the ambition of an in-depth transformation of the system, the links between primary production and the entire food system context should be acknowledged. With this perspective, synergies with the candidate European partnerships promoted in frame of the Cluster 6 of the Horizon Europe are supposed to ensure coherence across agrifood sectors and value chains. Indeed, it is desirable that the partnerships' domains, which includes sustainable management of the biodiversity and the water resource, the animal health and welfare, the development and use of the agri-digital solutions, will be considered in the light of the agroecological principles, and vice-versa. The partnership on sustainable food systems, in turn, could guarantee an increased engagement at consumer level to support the AE transition.

3. Synthesis of insights from AE4EU on enhancing opportunities for agroecology in Europe

In this chapter we present selected insights from different strains of work in AE4EU. We organised these along the following lines:

Insights related to practical implementation of agroecology (3.1), related to research on agroecology (3.2), education and training for agroecology (3.3), policy for agroecological transitions (3.4), funding for agroecology (3.5), and movements for agroecology (3.5). For full reports along the lines of the various strains of work, please visit the AE4EU website (<https://www.ae4eu.eu/>).

3.1. Practical implementation of agroecology

3.1.1. On communicating agroecology

Though many of the initiatives that were mapped across Europe as part of the work of work package 1 (e.g. see Brumer et al. 2023; Wezel et al. 2023) include several aspects of agroecology, in many cases the concept and its activity categories, and the term itself is rather unknown or abstract among stakeholders or only very recently used by certain stakeholders (mainly researchers and civil associations). E.g., in Austria and Germany, the concept is mainly associated to a scientific discipline, whereas in France there is also a specific policy on agroecology.

There are a number of other concepts and terms that are more well known, such as organic agriculture, regenerative agriculture, permaculture. If agroecology is to become a widely understood term, better dissemination and awareness among the consumers and farmers, as well as at the level of authorities is needed in the future through mass-media, direct communication and info materials in a localised and simple language.

3.1.2. General insights

Agroecology is to a large part driven by the application of ecological concepts and principals in farming. One important finding of our analyses in work package 2 is that environmental and ecological issues appear to be underrepresented as objectives of LL and RI. The comparatively small number of LL active in monitoring raises concern about the idea that LL should be purpose-driven in the sense of accelerating a transformation of European agriculture towards the application of sustainable practices. Without an active monitoring of

3. Synthesis of insights from AE4EU

success, it may remain unclear whether such transformations were achieved in the respective LL.

We strongly suggest to the European Partnership on Agroecology that ecological targets and principles would need higher attention and had to be integrated in LL and other agroecological initiatives in order to move towards sustainable agricultural system. Also elaborating on new technology or concepts in addition to applying existing solutions may have to be stimulated by the partnership.

Working and developing at territorial scales is found to be highly important for agroecology transitions. Besides the concept of Agroecology Territories (AET), comparable frameworks exist across Europe. To enhance to the development of AET, it may be relevant to establish local institutions that could hold and monitor long-term strategies based on principles and practices in AET, and hold a multi-stakeholder adaptive governance. The literature review highlights that a place-based or territorial approach for agriculture and food transition is relevant and that such territorial approach must take into account:

Long-term strategies for multi-stakeholders' cooperation and learning processes. The development of territorial synergies for agroecology is not a short-term issue. It relies on long-term coordination among stakeholders and on learning processes that provide capacities for adaptation to external factors.

Bottom-up and community supported strategies. Place-based approach for transition can integrate community issues and livelihoods and the importance of bottom-up approaches emerge as a result of different analyses. It contributes to empower communities in grounding and re-position their strategies within the frame of dominant regimes.

It is a crucial to establish a complete European inventory of place-based schemes that contribute to transitions to sustainable agriculture and food systems as well as assess them according to agroecology principles seems to be a key step to foster agroecology transition at the territorial level in Europe. This will allow to identify key issues and progress toward more integrated approaches of existing place-based schemes.

The concept of agroecology LLs and RIs will be growing in importance, and the development of new funding schemes is already underway. A common definition of what constitutes an agroecology LL and what does not would greatly benefit the design and implementation of such funding schemes. In order to design effective initiatives, standards for defining objectives, engaging users, evaluating and monitoring of results must be clearly defined, and with that a clearer distinction between LLs and other research initiatives or infrastructures can be achieved.

3. Synthesis of insights from AE4EU

Our results highlight that AET and LL are different concepts that might have different temporalities (innovation-based project versus long-term territorial strategy – but both can apply to either AET or LL as not yet clearly defined), objectives (problem-based innovation versus long term place-based transformation), stakeholders (territorial multi-stakeholder versus more problem-solving oriented selection of stakeholders). AET could rather be considered in their capacity to encapsulate and foster conditions for the development of LLs. Actually, it could be demonstrated that AET can enhance conditions to support the development of LLs, and even improve the transformative capacity of them.

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3.1.3. Insights from three specific living labs

The three Living labs created for the project are defined as the practice-driven organisations or as real-life arenas for fostering open, collaborative innovations. This type of LLs falls into user-driven category of LLs, according to the four-fold typology provided by Schuurman et al. (2013), that implies a high level of participation of all stakeholders, a strong connection with the real-life contexts, and focus more on common benefits rather than on creating new products and services.

As far as networking activities and stakeholders' participation is a base for the living laboratories, a human factor and all related issues (cross-cultural differences, regional and local cultures) are considered as main components for future development of LLs (Table 1). Respectful personal relationships within the network is an important component for building a trust between different groups of the stakeholders, and thereby for maintaining activity of the agroecological LL. Furthermore, understandable wording and an appropriate language are crucial for networking, communication and for engagement of different stakeholders, as well as for defining themes and objectives of the LL. The agroecological living lab experience revealed two main challenges in linking the stakeholders: creating a dialogue between academia and farmers; and creating a dialogue between farmers and policymakers. Improvement of these both types of dialogue is important for fostering agroecology.

Use of maieutic approach provides a positive contribution to construction of dialogue between academia and farmers. It helps to make farmers more open and more willing to share. In order to improve a dialogue with policy makers, it is important to organize regular communication between farmers and representatives of local authorities (for example, sending communication letters every month and engaging policy makers in LL activities).

Table 1. Supporting and hindering forces in the LL development	
Supporting forces (enabling factors)	Hindering forces (constraints)
<ul style="list-style-type: none"> - Willingness to change/improve the territorial development - Willingness to collaborate of majority participants - People's need in support to each other - Peer support for farmers using agroecology - Lots of professional knowledge available due to LL experience - Future opportunities for creation of new jobs and for training of new skills (particularly for the local scale) 	<ul style="list-style-type: none"> - Lack of time from stakeholders - Lack of funding - Lack of an appropriate infrastructure for good function of the LL - Lack of people with open mind in the territory - Lack of common language for all stakeholders - Weak participation of the authorities in the LL activities

Selected recommendations from AE4EU experiences with living labs:

Following five recommendations are based on the experience of AE4EU living labs' experience. These practical tips used at the local level might provide a crucial contribution to agroecological transition.

- A combination of the local and regional events with LL workshop activities allows to engage more stakeholders.
- Communication channels and communication activity are important for engagement of new stakeholders (for example, creation and distribution of flyers with non-scientific and informal description of the WS allows to engage more different stakeholders)
- Using an education activity as a part the LL workshops (for example demonstration and explanation of agroecological practices) allows to provide benefits to the participants
- Organising networking activities for the stakeholders (aperitivo or light lunch) with food of the producers participating in the Workshop allows to promote local food products and to connect potential consumers with the producers
- Entrepreneurs and in particular farmers participation in project activities and meetings should be rewarded for their time investment. This will allow to engage more farmers into research and LL activities and to make their participation more efficient.
- Identification of a range of rewarding strategies to be implemented in the LL in accordance with specific/local conditions is a major research area.

3.2. Research for agroecology

There are two contrasting research approaches in agroecology, one more compliant with the dominant so called productivist model and the other more inclined to its transformation.

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Today more than ever, given that the boundaries between these two approaches are becoming confused, it is necessary to make the original transformative role of agroecology more visible and strongly highlighted.

A survey done within AE4EU reiterated how the idea is widespread that agroecology cannot feed the world, and “green” concepts of the productivist model such as sustainable intensification, eco-efficiency, GMOs for integrated pest management are currently in use also within AE researchers. This is a controversial area involving a lot of debate.

Even if in the past agroecology was not explicitly mentioned in any funding programmes at all levels, now it finally appears in a clear and evident way within both the last calls of the European programmes in the new Horizon Europe framework (2021-2027) and at the Transnational level with the new partnership “Accelerating farming systems transition: agroecology living labs and research infrastructures”. It became clear that current research in agroecology tends to focus on level 1 and 2 of Gliessman’s framework (see Figure 5), and that research in relation to at least level 3, if not 4 and 5 as well, should be given more attention. Furthermore, the research results obtained from AE4EU and ALL READY need to be used as inputs to the defining the post-2027 CAP.

To address the social challenges posed by agroecology (especially those related to level 4 and 5), research should involve a greater number of actors from the entire agri-food system, in particular those who are less represented such as upstream and downstream value chain actors as highlighted by our surveys. Indeed, various actors may have differing and even conflicting views on what problems are most relevant and what transformations are required. Therefore, in order to include and reflect on complex interrelationships between sociocultural, economic, and biophysical dimensions, research in agroecology must consider the entire agri-food system together with its actors and not only the field and/or farming scales.

Funding research programmes in agroecology must support and require transdisciplinary research more effectively. Moreover, programmes should foster research aiming to re-integrate co-produced knowledge both into scientific (systems knowledge) and societal practice (transformation knowledge) with outcomes that are likely to have a transformative impact on society. At the same time, programmes must be aware that transdisciplinary efforts imply to allow flexibility if ongoing interactions with actors require some adaptations of the original research proposal and design. Researchers and programme leaders agree on the need to increase the duration of projects dealing with agroecology thus that contributions to societal transformation often require more time to unfold. Moreover, our results demonstrated that, in addition to project duration, also the budget dimension is related to project complexity in

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terms of number and type of actors involved, appropriate problem framing and in knowledge production and fruition.

LLs can play a role in strengthening transdisciplinary collaboration and innovation, and the new EU partnership on agroecology is paying due attention to the opportunities they provide. However, as highlighted by the results of our surveys, further efforts must be made to identify those elements that a LL must have in order to truly support the implementation of transdisciplinary approaches towards agroecological innovation.

The overall picture of the agroecology research connections in Europe, showed the way in which the scientific communities dealing with agroecology interact and collaborate in EU. Besides evidencing strengths and qualities that can further exploited, it also revealed unnecessary fragmentation and, in some cases, isolation of research communities.

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Selected recommendations: research for agroecology

- Establish research programmes that consider the entire agri-food system and its actors, not only on the agronomic field and farming scales.
- Promote research programmes addressing, at least, level 3 (redesign) of Gliessman's framework, and especially those that go beyond this and include the social and governance aspects of level 4 and 5 on the other hand, diminish research programmes addressing only level 1 (efficiency) and 2 (substitution).
- Enhance the involvement of a greater number of actors from the entire agri-food system, in particular those who have been less represented thus far, such as upstream and downstream value chain actors, and the non-economic actors of the food system (i.e., citizens).
- Increase the duration of projects that are dealing with agroecology.
- Use the finding of AE4EU and ALL-Ready as inspiration putting agroecology at the forefront of the post 2027 CAP.

3.3. Education and training for agroecology

Education and training is about many different things. Here we focus on what an agroecology knowledge hub can contribute. An agroecology exchange hub can and should be an important tool in support of agroecological transitions in Europe for a number of reasons:

- The role of technologies for sustainable agricultural development is strongly increasing in the current changing world. Social networks, as an example of technologies widely used by society, have become an embedded part of everyday life.

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- The European Agroecology Exchange Hub aims to be a tool that provides a strong contribution to social development and enables agroecological transition through its attempt to link people with different backgrounds, knowledge and skills with the same interest for agroecology, thereby also contributing to filling the famous gap between farmers and academia. Thus, this tool is used by farmers and agricultural stakeholders and provides social and information support to people that are already applying or going to start agroecology.
- Furthermore, the Hub is planned as an open space for sharing agroecology knowledge, practice and experiences by its future users. This Hub is not the first one created for strengthening agroecology. However, the European Agroecology Exchange Hub will be a complementary tool, and its main features include strong agroecology focus, multi stakeholders target audience, networking activities, a participatory and bottom up approach in order to give an opportunity for different stakeholder's contribution.

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Challenges for making the exchange hub play an effective role, include the following:

- The use of the English language of the Hub might be a hindering force for engaging non-English speaking stakeholders, thereby undermining sharing and fostering agroecological initiatives.
- Digital technology is a diffuse skill among young people, but the use of digital platform could be prohibitive/an obstacle for elder farmers.
- Uncertainty exists about facilitator/activator of the hub in the long term, this professional figure is needed to stimulate AE initiatives and stakeholders in using the hub.
- Finances are necessary to continue the update and improvements of the hub.
- External web developers to implement the hub causes uncertainty about the future management of the hub.

Selected recommendations: education and training for agroecology

- Creation of a trusted space is essential for horizontal communication and knowledge sharing among peasants. Training and educational methodology should include a set of activities such as case studies, discussion/conversational circles, visual materials and storytelling. The activities could be organized in plenary, in small groups or as an individual work, both in and out of the classroom (in farmers' fields).
- All activities organized for education and training for agroecology should be evaluated by the participants, both by the trainers and by trainees. Constructive feedback and evaluation are needed for improvement of further courses. Evaluation could be carried out through the questionnaire with liker scale questions and open-ended questions. (based on ECVC, 2023).

3.4. Policy for agroecology

A large set of policy recommendations for different policies were elaborated within the different work of the AE4EU project, one regarding eco-schemes and a second regarding achieving the European Green Deal.

1. Improving eco-schemes in the light of agroecology. Key recommendations for the 2023-2027 Common Agricultural Policy, but also in anticipation of the CAP beyond 2027

The first time that the word agroecology was explicit mentioned within the Common Agricultural Policy, was within the eco-scheme. That is the reason why AE4EU's first set of CAP policy recommendations focused on eco-schemes as an isolated topic of the CAP.

In order for eco-schemes to truly lead to a long-term redesign of agricultural systems, it is important for them to be multi-dimensional. Policymakers should encourage the implementation of several practices at once, as a practice on its own has little strength in creating true sustainability. Rather than a menu of options farmers can choose from, packages should be constructed in a way where complexity and synergy is created on farms with many proven environmental benefits. Higher subsidies can also be given to farmers who are implementing these packages or several practices at once. Agroecology Europe has provided calculations of what this would look like (Agroecology Europe, 2021).

It also important for conditionality to remain rigorous, and not be weakened or included within eco-schemes. Practices that are already common or very basic should not be rewarded. For example, a few countries are planning to pay farmers to grow cover crops during winter. Although this practice is vital for the protection of soils, there are already obligations to have soil cover during sensitive periods within conditionality. Funding should focus on demanding interventions that maintain fair rewards for farmers who want to make greater efforts to be more sustainable and provide ecosystem services.

It is clear that many eco-schemes have not been created with enough coherence, some barely going beyond basic practices and conditionality, and unlikely to sufficiently deliver on needed ecosystem services. What are needed are multi-dimensional CAP interventions with robust funding, clear targets and proven benefits in order to improve the sustainability of farming in Europe, and with agroecology becoming one of the overall objectives in the post 2027 CAP.

The European Commission approved all 28 CAP strategic plans in December 2022. The European Commission should use the annual review of the targets to encourage and support Member States in reaching the objectives already fixed but also increasing encourage Member States to revise targets towards increasing uptake of agroecology.

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Selected recommendations: policy for agroecology in the CAP:

- Separate practices from production systems.
- Create basic premiums for all eco-friendly agricultural production systems.
- Create multi-dimensional eco-schemes that encourage the implementation of multiple practices at once.
 1. Ensure proportionality between the level of payment and the expected environmental benefits.
 2. Maintain rigorous conditionality by not paying for what should be mandatory.
 3. Apply public money for public goods.

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2. Achieving the European Green Deal – 10 steps to take

This relates to achieving the European Green Deal through agroecology, especially the Biodiversity and Farm to Fork Strategies. In this, we focus on many of the technical aspects, as well as on research, social responsibilities and responsible governance. Each step is to be considered as a whole, rather than individually, as many steps require the other in order to create true transformation. Agroecology is a holistic concept that embraces a diversity of interpretations, intentions and realities, depending on the country and its context, history, stakeholders and sociopolitical environment. Its aim is to restructure the food system in a way that maximises ecological processes to attain sustainability – encompassing agricultural practices, science and social movements (Wezel et al. 2009).

Ten steps to take:

1. Strongly decrease synthetic pesticides and fertilisers
2. Increase mixed crop-livestock systems
3. Enhance animal health and extensively manage livestock
4. Restore and enlarge permanent grasslands
5. Return trees to agricultural landscapes
6. Diversify the types and number of crops grown on a single farm.
7. Increase diversity of habitats
8. Increase the adoption of organic farming
9. Increase research on best practices at the local and regional scale for all aspects of the food system including for climate, soil, land management, and crop and animal diversity
10. Promote participatory and multi-stakeholder approaches in knowledge generation

The new Common Agricultural Policy (CAP) entered into force at the beginning of 2023, which includes the new form of direct payment schemes for environmental, climate and animal welfare. While it is mandatory for all Member States to create these eco-schemes in their CAP strategic plans, it remains a voluntary measure for farmers. The EU has

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recommended that 25% of each member state's direct payment budget be spent on such schemes, which will be completely financed by EU funding under the 1st pillar and will not require co-financing from member states (Lampkin et al. 2020).

There are nine specific practices proposed by European Commission (EC) which are considered to be following agroecological principles (HLPE 2019):

1. Crop rotation with leguminous crops
2. Mixed cropping - multi cropping
3. Cover crop between tree rows on permanent crops - orchards, vineyards, olive trees – above conditionality
4. Winter soil cover and catch crops above conditionality
5. Low intensity grass-based livestock system
6. Use of crops/plant varieties more resilient to climate change
7. Mixed species/diverse sward of permanent grassland for biodiversity purpose (pollination, birds, game feedstocks)
8. Improved rice cultivation to decrease methane emissions (e.g. alternate wet and dry techniques)
9. Practices and standards as set under organic farming rules

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Overall, due to their design flexibility, the approved eco-schemes are very diverse in terms of farming practices adopted and type of payment mechanisms, such as introducing points-based system to meet climate goals. Nevertheless, it remains clear that many eco-schemes have not been created with robust funding, clear targets or proven benefits, and risk to fall short of further Green Deal goals and not deliver environmental benefits.

Selected recommendations: policy for enhancing agroecology in eco-schemes:

- Multi-dimensionality should be added to the design of all eco-schemes in order to encourage the implementation of multiple practices at once. This will create a holistic approach to farm systems rather than focusing on individual components of a system.
- Since one of the stated goals for the creation of eco-schemes is to implement climate-friendly practices and approaches, a strong emphasis could be given on the use of climate-resilient crop varieties, and more clarity could be created in what practices are specifically defined as climate-friendly.
- Some eco-schemes should be given a baseline incentive and on top of this, a premium for a more holistic implementation of all measures and practices.
- Proportionality should be ensured between the level of payment and the expected environmental benefits.

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- More result-oriented measures should be included within eco-schemes to strengthen positive results, while still allowing flexibility to farmers in order for them to manage their own strategies.
- The amount of subsidy received should be based on the complexity needed to implement certain management practices. Less demanding counterparts should not be more financially attractive than well-designed eco-schemes.
- Maintain rigorous conditionality by not paying for what should be mandatory.
- There has been a huge range of interpretations from each member state when deciding how eco-schemes should be created therefore, some basic guidelines for designing eco-schemes would be beneficial in the future.

3.5. Funding for agroecology

Many of the key informants who provided input into the mapping agroecology process carried out in European countries, pointed out that financial support is an essential element for the up-scaling and development of existing and future agroecology, including a change in the CAP, as mentioned in 3.4., as well as through creating public financed programmes in food, agriculture, education and research. The need for a shift in the current vision oriented towards industrial agriculture and the formal recognition of the peasant profession would strengthen the livelihoods of practitioners of agroecology. It would give a boost to the continuation of the good existing practices and transfer finances to newer generations, without needing to revive lost ones (Wezel et al. 2023).

The most fundamental barrier remains the unequal playing field which is geared towards large-scale industrially producing farms. The problem is not just lack of support for small scale or agroecological farmers, but the existing support for large-scale, industrial production. This holds true both for public funding, as well as private investments and loans from financial institutions. Further, receiving subsidies through the CAP comes with administrative difficulties such as transaction costs, time, effort and the complexity of bureaucratic processes, which is often more challenging for small-scale farmers due to the higher diversity that is found in the field and within smaller plots.

For a paradigmatic transformation of food and farming systems, increased investments are needed in every aspect of the food system. Our research has shown that across Europe good examples do exist to support agroecology. These can be used as models to be scaled out in other contexts. Crucially, it is necessary to create more accessible and effective funding for agroecology to reach ‘grassroots’ actors on the ground, that is, the growing agroecology movement, which includes many young people and new entrants into farming, as well as

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small-scale farmers more broadly. Further work to level the 'unequal playing field' is needed, which the forthcoming Horizon Europe Agroecology Partnership is set to help with. In addition, better support for agroecological innovations, both social and technical, and a food system approach fostering short food supply chains and a change to healthy diets and zero food waste is vital.

In order to provide a robust foundation for the development of funding mechanisms enabling a European agroecological transition of food and farming systems, it is critical to think and act systemically. This can be done through a number of ways, including,

- Overcoming siloed conversations, connect institutions, build integrated thinking and underline the multiple benefits, ecological services and public goods provided by agroecological farming.
- Integrating long-term thinking into funding strategies and allow for the building of transformative results over time.
- Funding systemic, connected and holistic change rather than incremental, atomised initiatives.

It is also critical to build understanding of and capacity for agroecology. Ways to do so include,

- Pro-actively supporting participatory agroecological research, and researcher-practitioner partnerships.
- Educating and building agroecological capacity of public advisors and advisory services.
- Introducing agroecological expertise into agricultural colleges and training programmes.
- Supporting farmer-to-farmer knowledge exchanges and farmer field schools for agroecological transition.

Furthermore, it is important to create intelligent and responsive funding mechanisms, e.g. by

- Simplifying application procedures and offer free or low-cost advisory services for small farms to be able to access subsidies and funding, and support recipients in project evaluation and reporting.
- Creating more small-scale funding opportunities with simplified application procedures to catalyse the potential of small farms and enterprises.
- Funding farmers at all scales to transition towards agroecological practice.
- Developing results-based payments, not just size or practice-based payments – i.e. reward evidenced results (e.g. increasing soil carbon content) rather than practices (e.g. no-till).
- Analysing effects of eco-schemes by investigating the way on-the-ground practices change and adjust measures as needed.

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- Empowering local government and municipalities to dispense more funds to local initiatives, and continue to build and provide funding via the LEADER approach.
- Enabling agroecological innovations by creating flexible funding schemes which empower applicants to experiment with agroecological principles (e.g. recognise food forests as a production method).
- Mainstreaming agroecology reporting to collect data for monitoring and evaluation of funds dispensed.

Finally, an enabling environment for agroecology needs to be created by

- Valuing and supporting small agroecological farms and enterprises, including those under 1 ha in size.
- Actively strengthening the development of local markets and short food supply chains, including public procurement of agroecological produce for vibrant local food economies.
- Supporting new entrants to start from the outset with agroecological practices through incentives and enabling policies.
- Helping to overhaul banks' agricultural lending strategies and educate bank personnel on agroecological potential.

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Selected recommendations: funding for agroecology

General:

- Fund projects that are dedicated to all levels and dimensions of food system change.
- Avoid projects that are too large (beyond 10-15 million), as it could concentrate power.
- Integrate long-term thinking into funding strategies and allow transformative results over time, including the continuation of successful projects after reassessment and amendments.
- Develop results-based payments that reward evidenced results (e.g. increasing soil carbon content and beneficial insects, less pollution, higher welfare).
- Increase the understanding and capacity of agroecology by supporting participatory agroecological research; introducing agroecological expertise into agricultural colleges and training programmes; and create farmer-to-farmer knowledge exchanges and field schools.
- Create intelligent and responsive funding mechanisms with simplified application processes; free or low cost advisory services for small farmers to access funding; more small-scale funding opportunities; and more flexible funding schemes which empower applicants to experiment with agroecological principles.

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- Empower local governments and municipalities to dispense funds to local initiatives, and continue to build and provide funding via the LEADER approach.
- Create an enabling environment for agroecology by strengthening the development of short food supply chains (including public procurement); value and support agroecological farms and enterprises of all sizes but with a particular focus on small farms, including those under 1 ha in size; support new entrants to use agroecological practices; and educate advisory services and bank personnel on the potential of agroecology.
- Think and act systemically by overcoming siloed conversations, connecting institutions and ministries, and building integrated thinking and funding.

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Private funding schemes:

- Put more emphasis on advantageous points of private funders (flexibility, broker position also between progressive and conservative forces in the agri-food sector).
- Change funding structures – not just focus on outcomes, provide funds for more grassroots communities, more diverse organisation, focus on groups focused on social justice issues and key systemic changes.
- Create spaces for civil society organisations and foundations to exchange.
- Provide flexible and long-term funding: There is a recognition among foundations of the need for flexible and long-term funding. They aim to provide longer funding periods (5-7 years) to support the vision and stability of organisations. – depending on their strategy.
- Develop a funding guide for agroecological funding for philanthropic foundations.

3.6. Movements for agroecology

The following is mainly based on statements of participants shared in the process of co-creating the European Network for Agroecological Food systems (ENAF).

Challenges presented by the current state of farming and food systems in Europe and the way in which agroecology has and does not have a place in related sustainability transitions, include:

- There is a disconnect between bottom up initiatives and top down policies/funding;
- Influencing mainstream agriculture through agroecology, remains challenging;
- There is a disconnect between a focus on agriculture production and wider food system perspective;
- There are different views on agroecology and there is the risk of “green washing” because it is used for many different approaches;

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- There is limited visibility and capacity and coordination regarding efforts to see the application of agroecological principles and practices go to scale;
- There are different organisational cultures – e.g. younger generations do this differently, and they communicate through media that older generations not always do;
- Programmes on agroecology are primarily in the hands of researchers and policy makers and more programmes should be in the hands of farmer organisations;
- There is a need for training and education on agroecology.

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In terms of what is needed to address these and related challenges, the following suggestions were made:

- Strengthen agroecological transformative capacity in Europe;
- Take a holistic approach: agroecology as food system approach;
- Work on the basis of the Nyeleni declaration and elements/principles of agroecology by FAO/HLPE;
- Be based on and linking existing “bottom up” networks as core;
- Link farmers-research-NGO’s-citizens-policies;
- Increase visibility of agroecology application and transformation efforts; Increase capacity and coordination of efforts related to agroecological transformations.
- Connect to the ideas, needs, interests, etc. of farmer groups and grassroots movements, and co-create transformative approaches and actions with them
- Rather than criticizing existing projects and networks, do things that are complementary to that and connect to what is going on in e.g. the EU partnership on agroecology partnership process;
- Don’t just work with the ‘converted’, but also seek to influence, inspire, and inform mainstream agriculture and food systems.
- Facilitate knowledge exchange
- Enhance visibility of good examples of the application of agroecology
- Engage in lobbying
- Let farmers’ needs inform research agendas
- Recognise the European diversity in agroecology – from peasant farming to regenerative practices and community partnerships – as strong bedrocks for a holistic transformation of the European food systems.

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- Create opportunities to strengthen relationships so that collaboration and exchange is not just about ideas and practices, but also about learning to appreciate each other and to create opportunities to connect from heart to heart.

See Annex 2 for examples of promising initiatives/movements for agroecology in Europe.

4. Unlocking the potential of agroecology towards environmentally sound, socially just, and economically fair food systems in Europe

Food systems transformation for social justice and sustainability requires collective and concerted efforts from food producers, organisations, movements, governments, researchers, international institutions and other actors (Anderson et al. 2021).

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In this chapter, we digest insights and perspectives highlighted in chapters 2-4 (in 4.1 and 4.2) and translate these into recommendations for those involved in decision-making at any level regarding the future of farming and food systems in Europe (in 4.3).

This chapter is not a simple ‘how to’, but identifies what needs to be addressed. Unless we clearly identify what needs to change, a roadmap will be no more than blind activism.

4.1. The potential of agroecology in summary

Before we discuss the unlocking of the potential of agroecology, we summarise what this potential is essentially about so that it is clear why a motivation to unlock it is in place.

Agroecology is an answer to a need

The widely agreed need for a food system transformation to sustainability, is in need of a coherent, integral food system perspective that is based on a (holistic) systems perspective. Agroecology, in the way we present it in this report, provides just that. When looking around, there is no real alternative to it other than generally stated sustainability orientations which lack such coherent approach. Because of the lack of such coherent approach, the focus of current food system transitions is on applying predefined “solutions” that remain in the sphere of optimizing current (dominant) system configurations rather than fundamentally challenging its underlying, misguided principles. This means that agroecology is an answer to a clear need, and not merely some alternative approach to farming and food systems.

When reviewing the potential of agroecology in light of a holistic systems perspective on food systems (Wigboldus and Jochemsen, 2021), it becomes clear that it connects well to all core aspects that can be distinguished (Figure 17). There are few, if any, other approaches that address values related to the range of aspects as well as agroecology does. There is a need to tune metrics and measuring protocols better to factors involved in the potential of agroecology which may not come out well if standard metrics and protocols are used (e.g. see Anthonioz, 2021, Namirembe et al. 2022).

4. Unlocking the potential of agroecology

Unlocking the potential of agroecology therefore, is first and foremost about unlocking the application of all relevant values in farming and food systems in Europe and no longer staying locked into selected values (efficiency, productivity, profitability) that were made absolutes (Wigboldus et al. 2016).

Aspects	Related basic questions	Food (system) connections	Leveraging food systems transformation – types of focus
Quantitative	How many?	Food amounts	Changing numbers
Spatial	Where? How big?	Food geographies, food sovereignty area	Changing location, size
Kinematic/kinetic	How fast? What direction?	Food chains	Changing speed, connection
Physical	What substance, what energy levels?	Food calories, nutrition	Changing energy/nutrition
Biotic	Is it thriving, flourishing?	Food growth, safety, security, health	Changing consumption patterns
Sensitive/psychic	How perceived?	Food preferences	Changing perceptions, attitudes
Analytical	How to make distinctions?	Food systems thinking	Changing concepts, theories
Formative	What are the ways of developing, creating?	Food production and provision	Changing ways of production, intervention
Lingual	What are the ways of symbolising, signifying?	Food cultures, food framing	Changing symbols and framing, cultures
Social	What social interaction/communion?	Food democracy	Changing social interactions
Economic	What are the ways of providing & managing?	Food economy	Changing management, changing efficiencies
Aesthetic	What is enjoyed, cherished?	Food art, food appeal	Changing recipes, food presentation
Jural	What laws, regulations and how are they applied?	Food regulations	Changing laws and regulations
Ethical	What is considered good?	Food justice, food equity, food ethics	Influencing ethical dispositions
Pistic/ fiduciary	What are the beliefs, the values?	Food as source of trust and hope	Influencing mind-sets, paradigms

Figure 17: A holistic perspective on core aspects of food systems. Source: Wigboldus, 2020

Agroecology is inherently resilience-oriented

Agroecology offers value-based principles that are practical in application. Food systems do not become more resilient by aiming for certain goals or visions, but through the application of resilience principles/characteristics in the process of working towards such goals/vision. It is easy to talk about goals. It is about things in the distant future. Scrutinizing transition pathways of choice should therefore not be on the basis of what they aim for, but on the basis of how they activate resilience principles/characteristics in HOW they are meant to contribute to achieving such goals. Monitoring and evaluation of transition pathways should then also focus on indicators related to such principles: to what extent are principles being applied and to what extent are (intermediate) outcomes in line with these principles? This closely relates to our earlier discussion on how means become the focus. It also means that goal definitions need to be elaborated and unpacked. For example, Zero Hunger, SDG2, is not enough. It will



4. Unlocking the potential of agroecology

need to look more like this: Zero Hunger achieved through processes which activate diversity (also of pathways, and also of “solutions”), flexibility, redundancy, robustness, connectedness, and participation; as well as Zero Hunger without having lost such diversity, flexibility, redundancy, robustness, connectedness, and participation. This creates a much stronger basis for working towards sustainable food systems.

Agroecology supports the maintenance of uniqueness in a variety of ways

Agroecology, because of its principle-based approach, creates room for applications that are fine-tuned to local circumstances. Rather than delivering standardised practices, it focuses on appropriateness. No one-size fits all farming and food systems approach. Thus, it counteracts processes such as the McDonaldisation of society, supporting the persistence of variety and uniqueness, which has always been one of the beauties of cultural diversity and the heritage of unique agricultural systems and practices across the globe.

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Agroecology is inherently transdisciplinary in orientation

Agroecology is a platform where science and society (through movements) not just meet and talk, but truly work together, combining different rationalities, experiences, and methods towards transdisciplinary collaboration. In other words, it is inherently transdisciplinary in nature, something which cannot be said of mainstream approaches to farming and food systems.

Hajer et al. (2015) use the term Cockpit-ism for “the illusion that top-down steering by governments and intergovernmental organizations alone can address global problems. (...) multiple perspectives on sustainable development are needed that respond to the various motives and logics of change of these different actors”. With all possibly good intentions, transition policies tend to seek to control and steer transition processes and push towards particular transition pathways. Agroecology activates the voice of farmers and grassroots movements, thus offering ways of seeing bottom-up and top-down processes becoming mutually supportive.

Agroecology gives technology and innovation its appropriate place to serve and not to rule

Agroecology is conscious about the fact that technology is there to support people, but that there is a strong tendency for technologies to create dependence. A precautionary approach and critical attitude towards anything that does not work with nature-based strategies, can help prevent harm through an approach of responsible innovation and responsible scaling of innovations.

Agroecology is not mere idealism but is evidence-oriented

4. *Unlocking the potential of agroecology*

There is a growing evidence-base for the efficacy of agroecology for food security. It has been stated that a fully agroecological Europe [...] could sustainably feed 530 million Europeans by 2050 (Aubert, 2018).

4.2. Unlocking the potential is about more than just doing more under the banner of agroecology

The potential is there, and therefore we gradually see more attention being paid by prominent organisations to agroecology as food system approach⁸ and not merely as a loose approach of applying (selected) ecological principles in agriculture. Gemmill-Herren et al. (2023) observe that there has been steady growth in research and work relating to agroecology, and that it is now well-established that “agroecology's holistic approach matches the transformation to food systems called for by the 2030 Agenda”. They also observed that “agroecology is gaining interest worldwide among a wide range of actors as an effective answer to climate change and the interrelated challenges facing food systems, finding expression in the practices of food producers, in grassroots social processes for sustainability and in the public policies of many countries around the world.”

However, as the title of this chapter suggests, there is still a need to unlock more of the potential that agroecology offers. In other words, current conditions in farming and food systems restrain the extent to which such potential can materialise in farming and food systems in Europe. This has to do with environmental conditions, with economic conditions, but most of all with dominant institutions at all levels of food systems in Europe. Prominent international organisations agree that there is such need for unlocking the potential of agroecology so that food systems can be improved through agroecology.

“Through policy interventions, socio-technical innovations, development of alternative business models compatible, participatory research, and grassroots networks, **the Alliance seeks to unlock the full potential of agroecology**, and through that transform local and global food systems to meet multiple sustainability objectives.”⁹

Hackfort (2023) discusses how digital agriculture is shaped by corporate power and multiple lock-in effects that reinforce dependence of farmers from agro-industrial farming models. She therefore concludes that sustainability transformations require a disruption of the lock-ins.

⁸ Also see <https://agroecology-coalition.org/>. We can find a similar line of thinking in Heuser et al. (2017) who argue for a need to transform food systems through agroecology.

⁹ Source: <https://alliancebioversityciat.org/research-themes/multifunctional-landscapes/improving-food-systems-through-agroecology>



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Mayer et al. (2022) argue that this means that fundamental orientations of current food systems will need to be challenged, such as how much livestock production plays a role in this, waste, and issues related to export and local food systems. They argue that unless such fundamental orientations of the food system are challenged, “agroecology runs the risk of becoming yet another excuse for the continuation of current practices and policies with a risk of producing and hiding negative emission leakage, e.g. outside the European Union”.

As discussed in chapter 2, the term agroecology is being used quite differently by different stakeholder and groups, which means that transitions to agroecology may mean something very different to different people (Table 2 provides an overview of related differences in narratives and orientations). The vision of what food systems should look like and what is considered as sustainable, is captured through different narratives that influence current (policy) interventions in food systems (Béné et al. 2019; Gaitán-Cremaschi et al. 2020). These narratives attribute different objectives to the role of food systems and the primary outcomes they are meant to achieve, especially regarding sustainability. Béné et al. (2019) confirm that there are different communities of practitioners, policy makers and researchers that define sustainability in different ways and emphasize certain sustainability dimensions over others. It is essential to keep making such differences explicit to prevent that agroecology is reduced to just another sub-element in dominant narratives on agriculture and food systems. At the same time, as also discussed in chapter two, a lacking precise and clear definition, and lacking agreed measurable and unambiguous sustainability criteria does not help in this (Mayer et al. 2022).

Table 2: Dimensions involved in unlocking the potential of agroecology for European farming and food systems (with tentative characterisations) – source: the authors

	Industrial agriculture	Responsible agriculture	Agroecological agriculture	Agroecological food systems
Agroecology related narrative	Agroecology to optimize agriculture for sustainable markets	Agroecology to address problems in modern agriculture	Agroecology to seriously change agriculture and its direct context	Agroecology to fundamentally change the fabric of the entire food system and its societal context
Change paradigm	<i>Develop</i> the current mainstream approach	<i>Debug</i> the current mainstream approach	<i>Dismiss</i> the current mainstream approach	<i>Disrupt</i> the current mainstream approach
Leading discourse	Optimizing	Addressing problems	Doing things differently	Doing different things
Governance tendency	Market rule	Top-down	Participatory	Bottom-up supported by top-down

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4.3.Challenges existing visions on food system transformation for unlocking the potential of agroecology

Are we measuring what really matters?

In assessing which approach, and which related practices have the best papers, it is critical who measures, what is measured, and how is it measured. What kind of metrics are to be used (e.g. see Prosperi et al. 2016)? It matters, because this will shape the narratives¹⁰. Much starts with what you decide to measure and what not, how this is measured, and then how this is communicated in a coherent way (Figure 18). Agronomy and food (system) science is not free

¹⁰ E.g. see <https://impact.economist.com/projects/foodsustainability/events/news/the-measure-of-agroecology/> and <https://www.cgiar.org/news-events/news/the-measure-of-agroecology/>

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from politics and preferences which are based on assumptions and (social) values, if only in relation to prioritizing what is considered important and because much of what is relevant in terms of factors to take into account, is not (yet) known by science (e.g. see Béné, 2022).

Furthermore, we also have to deal with the (as yet) unmeasurable. For example, what will we do when the impact of certain pesticides is not fully known? A strictly evidence-based approach does not provide sufficient support as it can only provide an incomplete account of risks involved. The question then becomes how we deal with the unmeasurable. Does it not matter if we cannot measure it? This is where a value-based and principle-based approach

needs to guide decision-making, e.g. by activating the precautionary principle. As stated elsewhere in this report, this is where agroecology has stronger papers than any other food system approach since it is based on a coherent set of actionable principles.

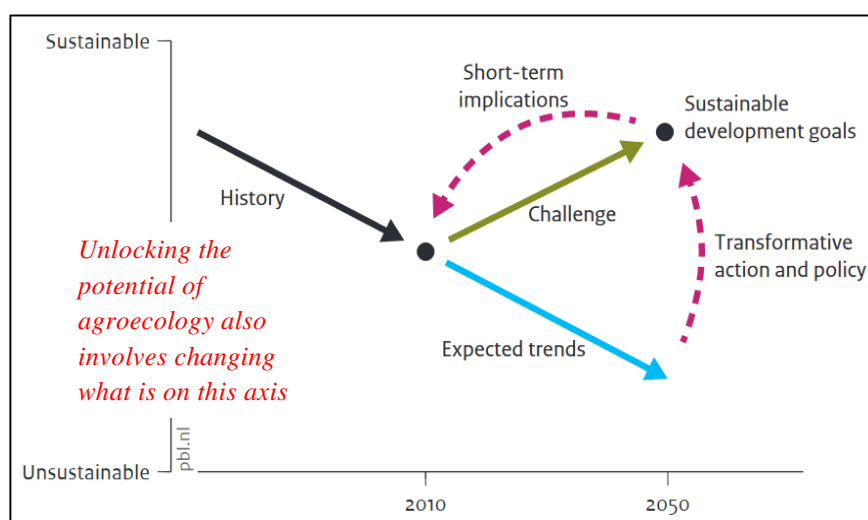


Figure 18: Transition pathway not just as a moving away from a particular trend. Source: Adapted from van Vuuren and Kok, 2001.

Tittonell's recent book (2023) provides an agroecological rendering of Figure 18 (see Figure 19).

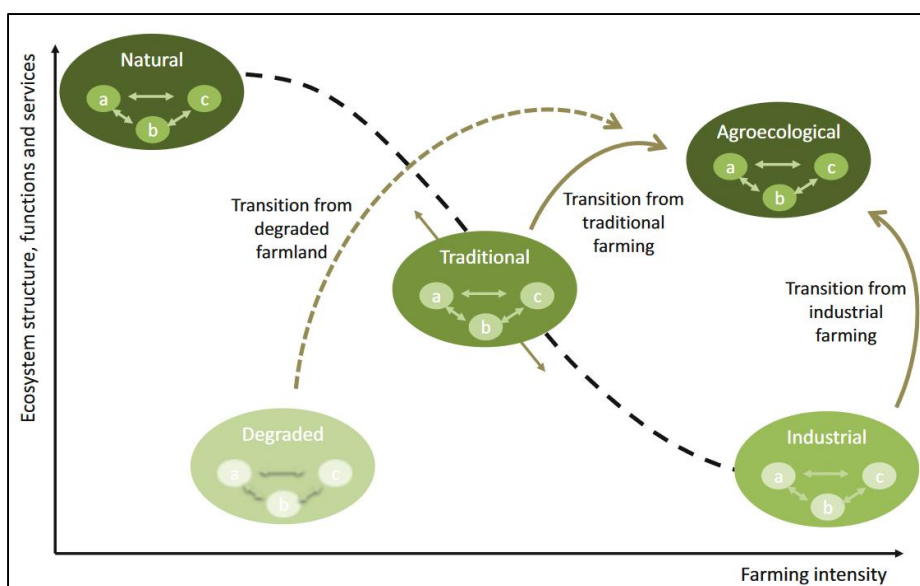


Figure 19: Transitions to agroecological food systems. Source: Tittonell, 2023

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Which values and whose values count?

Therefore, to conclude this section, unlocking the potential of agroecology for European farming and food systems is necessary and it will not happen automatically. It involves exposing the fact that mainstream agriculture and food system orientations not so much lack underpinning values and principles, but that they have made economic, productivity and efficiency related values absolute, not doing justice to other equally important values (see Figure 23?). The dominant narrative in agronomy and food (system) science, however, is often based on the assertion that the guiding values and principles are the one and only values and principles that need to be taken into account. Besides values such as efficiency and productivity, other values such as proportionality, equity, beauty, appropriateness, loving care, and justice need to be paid due attention to as well (Wigboldus et al. 2021).

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Also challenging other visions on food system transformations, such as a change from ‘economic growth is necessary’ (Eliasson et al. 2022) to a post-growth orientation (McGreevy et al. 2022). “Considered all together, the hypothesis that decoupling will allow economic growth to continue without a rise in environmental pressures appears highly compromised, if not clearly unrealistic (...). In other words, we advocate complementing efficiency oriented policies with sufficiency policies, with a shift in priority and emphasis from the former to the latter even though both have a role to play. From this perspective, it appears urgent for policy-makers to pay more attention to and support the developing diversity of alternatives to green growth” (Parrique et al. 2019).

4.4. Addressing missing links to unlock the potential of agroecology

Some have suggested that there are three major themes of barriers to agroecological transitions, namely *actor capacity*, *value chain* and *policy* (Gava et al. 2022). In the previous sections we have illustrated how unlocking the potential of agroecology goes deeper than addressing challenges because those challenges (e.g. the lack of appropriate policies) connect to root causes. At the same time, we do see more happening than before in terms of putting agroecology on (policy) agendas in Europe (Miller et al. 2022). As discussed in section 2.2, the EU agroecology partnership offers new opportunities for advancing agroecology through its orientation on strengthening LLs and RIs. However, as significant as this is for agroecology in Europe, it also has its limitations (see Box 2). This calls for complementary initiatives and approaches to enhance opportunities for agroecological transformation of farming and food systems in Europe. The European Network for Agroecological Food systems (ENAF) is but one of such initiatives.

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Box 2: Limitations of what the EU partnership on agroecology can do

The partnership provides a range of opportunities for creating more space for agroecology practice. It is a step forward in relation to the situation in the past and will be able to make a good contribution to transitions to sustainable agriculture in Europe. Its vision on agroecology is broad and includes a view on the 13 HLPE agroecological principles and the 5 levels of agroecological transformation (Gliessmann). In its operationalisation, however, it has created some limitations as well. The main ones are the following:

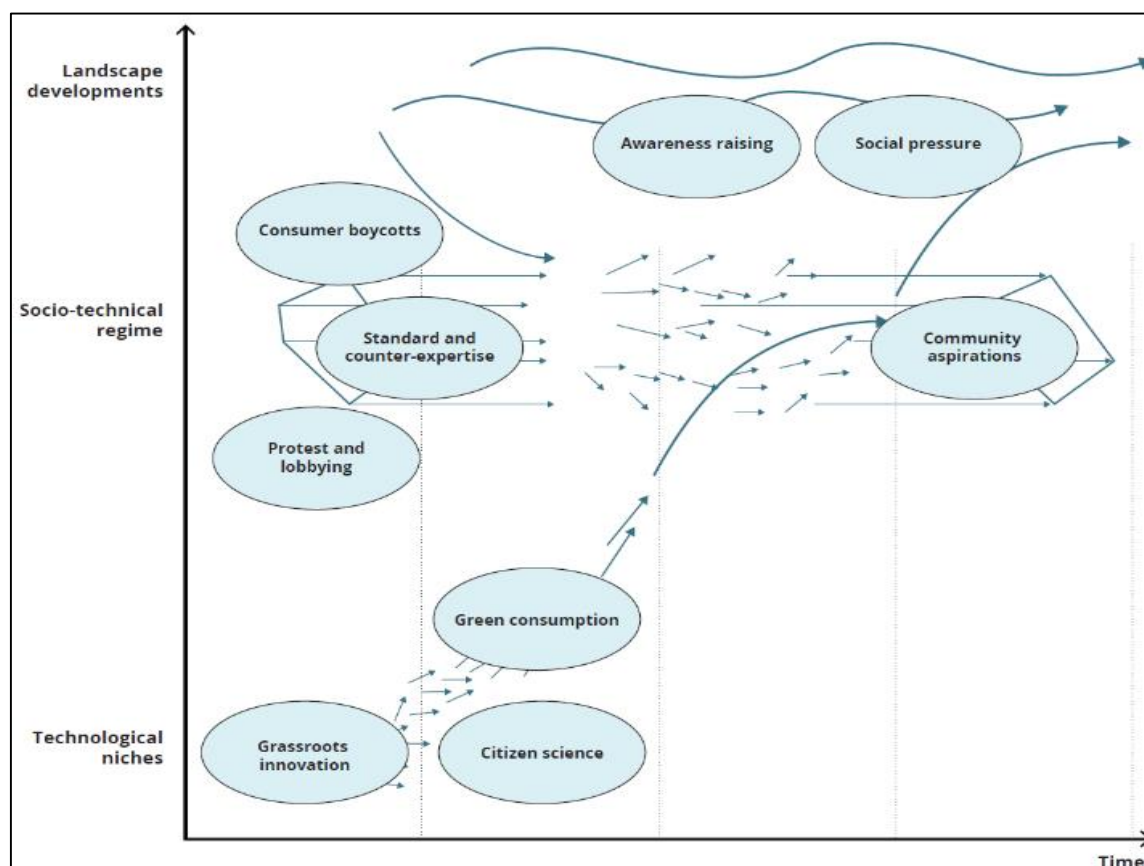
- Limited building on the work of pioneers in agroecology, and limited involvement of agroecological networks and movements of those who are active in on-the-ground agroecological practice.
- Limited in its focus on the primary production level, and not the entire food system. Thus there is no guarantee of linkages between sustainable production and a fair and sustainable food system.
- Limited in its focus on scientific knowledge. Perceptions, knowledge, and ideas of farmers are important to take into consideration. Farmers' knowledge is a valuable source of knowledge for a successful transition.

As Miller et al. (2022) indicate, conditions for harnessing the potential of transitions to agroecology in Europe require efforts along at least five lines: Policy, human capital development (advice, research, innovation, education), social capital (partnerships, cooperation), and access to data/tools. We may add financial capital to this (see the section on funding for agroecology in chapter three).

First of all, core values and principles and related ethics. Based on that policy at all levels as well as social capital. This must also free financial capital, which can be invested in human capital and physical capital (notably access to data and tools). All this embedded in natural capital.

The quest for complementary (to already existing) approaches to enhancing opportunities for agroecological thinking and practice in Europe, can be expressed through a Multi-Level Perspective such as presented in Figure 20. This perspective, in terms of a roadmap, is about agroecological thinking and practice spreading in different ways to both infuse and transform the way in which farming and food systems function. It involves strengthening (expanding) niches of dedicated agroecological farms, (local) food systems and agroecological territories, as well as a gradual but steady transition of the orientations of mainstream agriculture and food systems towards embracing all agroecological principles. In other words, this is about a short-term and long-term roadmap perspective. Together with Tiftonell's (2023) overview presented in Figure 21, this provides a strategic outlook on what is involved in transitions (as part of a wider transformation) towards agroecological farming and food systems in Europe.

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Figure 20: Illustration of types of transition pathways in relation to dimensions of the Multi-level Perspective. Source: Smith, 2012, adapted in European Environmental Agency, 2018:104.

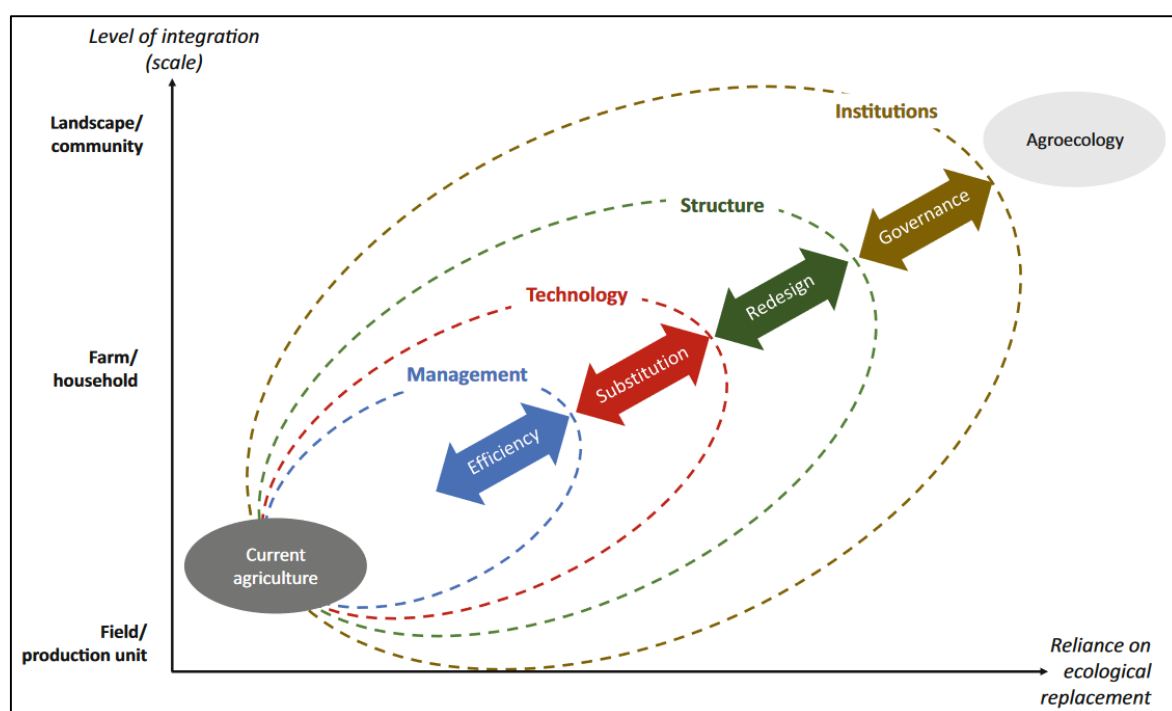


Figure 21: Agroecological transformation of farming and food systems requires working at different scales and in relation to different conditions. Source: Tittone, 2023

5. Conclusions

5.1. Enhancing opportunities for agroecological transformation of farming and food systems

In the previous chapters, we have outlined from various angles what needs to be part of a roadmap for agroecology in Europe. It makes it clear that this is not about addressing just a few things, but rather many. There are things that constrain/undermine/lock-in opportunities for agroecological transformations of farming and food systems, and things that would enable/unlock/enhance this. It involves,

- Factors such as economic, financial, social, agronomic, climate, materials, knowledge, communication, ethics,
- Roles to be played by particular actors,
- Appropriate approaches, narratives, and strategies,
- Relationships and collaboration, networks,
- Initiatives and institutions, incl. living labs, knowledge hubs, research,
- Matching capacities and motivations, dispositions, mindsets,
- Policies and legislation,
- Societal conditions, including market conditions, consumer preferences.

At the same time, it plays out at different scales, such as short term/long-term issues, or local/regional/national/international, which involves differences between (conditions in) countries in Europe.

We may argue that therefore it goes against principles of agroecology to develop one grand roadmap for agroecology in Europe and that, rather, we need a number of different roadmaps. That will do more justice to diverse conditions and needs across Europe. However, there is a need for exchanging about such roadmaps and this may be one of the roles that ENAF could play in the nearby future.

In the following, we share ten recommendations that would help unlock opportunities for agroecological transformations of farming and food systems.

5.2. Selected key recommendations

Chapter three already shared many specific recommendations. In the following, we share a selection of recommendations which partly involves clustering of recommendations shared earlier for policy, research, education and training, and movements involvement.

5. Conclusions

- 1) EU and country-level policies and initiatives on agroecology should consider the variety of specific and practical recommendations for the agroecological transformation of farming and food systems provided over the past few years by a range of agroecology researchers.**

Over the past few years, a variety of specific recommendations on enhancing conditions for agroecological transitions have been provided by different researchers and groups of researchers. Some of these recommendations are included in this report, but not all. So far, there appears to be a tendency to cherry-pick loose elements from documented agroecological theory and practice which does not do justice to the integral perspective and the range of opportunities that have been put forward.

- 2) European and country governments must rethink currently dominant approaches to technology, innovation and scaling.**

Do not put “new wine in old wine skins”! If transitions to agroecology do not involve a serious rethinking of the foundations of mainstream farming and food systems, this will not be about sustainable transitions. This means that current dominant approaches to technology, innovation and scaling need to be put up for debate. These approaches tend to be considered as having a definitive say on what is the way forward for farming and food systems. They tend to criticize agroecological approaches for not presenting a realistic alternative, or even go as far as stating that embracing these approaches would increase poverty and vulnerability.

- 3) European and country governments must rethink currently dominant approaches to payments and subsidies for farmers and farming (e.g. in the CAP).**

Currently, much of the way in which payments and subsidies for farmers and farming are organised, is not providing appropriate incentives to support sustainability transitions in farming and food systems in Europe. It would help to phase out current subsidies based on agricultural area and livestock head, and on energy, large equipment and external inputs. And, if basic subsidies are maintained, they should be paid on a full-time equivalent worker (FTE) basis and not on a hectare (or livestock head) basis. The focus of the large amounts of taxpayer’s money spent within the CAP should be allocated to the production of public goods, i.e. the provision of ecosystem services and the restoration of biodiversity and the ecological network.

- 4) Agroecology should be embraced as an integrated farming and food systems approach.**

Sustainable agriculture and fair and sustainable food systems cannot be achieved through the application of a series of ‘solutions’, let alone mere technical/technological ‘solutions. An

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integrated and coherent approach is needed, not just a set of isolated actions. An approach is needed that provides concrete guidance in the form of good principles. And an approach is needed that allows for contextualisation of common principles to create tailor-made specific application options that connect to relevant context conditions. Agroecology offers pathways to localising, contextualising, and diversifying farming and food systems thus connecting to place-based and identity-oriented values. It is therefore well positioned to help guide European as well as country policies in relation to farming and food system transitions over the next decades.

5) Efforts related to agroecological transitions need to pay due attention to the personal motivation dynamics.

Though a systems approach is critical in relation to farming and food system transitions to sustainability, context-appropriateness, and societal fairness, in the end it is people who make the difference. What makes farmers interested in agroecology, what makes policy makers interested in supporting transitions to agroecology, what makes consumers interested in investing in sustainable agriculture and food, and what makes managers of (large) companies interested in making the value chain work for transitions to agroecology: the core motivations of all these people makes opportunities tilt one way or the other. These motivations are being informed and influenced in many ways. Related communications are a battle-ground for the minds and hearts of people. European and country-level decision-makers need to become more aware of this battle ground and invest more in connecting to the core motivations through communication and other means.

6) Agroecology as a term should be reconsidered in light of the need to better communicate agroecology and its related principles and aspired futures.

As reported in this document, the term ‘agroecology’ does not automatically convey a clear image of what the related integral perspective on farming and food (systems) entails. It may serve its purpose when considered as an umbrella for a range of specific approaches such as organic farming, regenerative farming, etc. However, in its reference to being a science, a practice, and a movement, it seems not to communicate sufficiently. Perhaps this is difficult to change, but in that case, more efforts should be invested into communicating the broad perspective on agroecology if it is to become a more prominent orientation of farming and food systems in Europe.

7) Not only consult, but also make active use of the potential of what grassroots, farmer organisation, and agroecological movements can offer to transitions to agroecology.

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There is a significant combined potential and capabilities in existing national and European networks around agroecology which are able to contribute effectively across sectors to agroecological transformations of agricultural and food systems in Europe. This is where the energy and motivation for agroecology is. This is where the people are who dare to explore new ways forward and seriously address concerns regarding the unsustainability of current farming and food systems. This is where also many of the younger generations are involved and it is critical to involve these younger generations in exploring ways forward and give them a serious and significant role in this. This includes investing as EU and countries in knowledgeable and experienced agroecologists as ambassadors of and advocates for the integrated farming and food systems approach to agroecology. The European Network for Agroecological Food systems (ENAF), initiated by partners in AE4EU, is one example of related initiatives that are ready to be invested in.

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8) Make serious efforts to overcome the ‘low ceiling’, limit co-optation and restricted interpretations of agroecology that dilute and weaken the necessary transitions to agroecology.

Partly related to the difficulties related to communicating agroecology, the term has been embraced by many who either limit its meaning to the field of agronomy, or use it for window-dressing conventional approaches to agriculture. These two are probably related in that the restricted interpretation of agroecology basically makes it possible to apply it to any form of agriculture as there is always some level of interaction between agronomy and ecology. This reiterates the need for doing something to 1) better distinguish the broad view on agroecology from other views, and then to 2) communicate this view better in appropriate fora. This includes the need to more actively engage with conventional agriculture in ways that are appealing to farmers.

9) Create space for transitions to agroecology by investing in its underlying science, explorative practice, and related movements.

Investments in agricultural research and development as well as investments in value chains have gone mostly to conventional approaches. Hence, conventional approaches have made big steps in terms of fine-tuning systems and applications. In terms of efficiency, agroecology may be lagging behind (also depending on what kind of accounting is applied), but that is not strange given the fact that only a small percentage of investments in conventional approaches is invested in agroecological approaches. To see the full potential of agroecology materialise, serious investment in agroecology as science, practice, and movement is needed. Currently, one very practical way to do this would be to create new funding options for this through both

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the EU Partnership on Agroecology, and through the EU Partnership on Sustainable Food Systems.

10) Embrace agroecology as in fact the only coherent and integrated approach to enhancing resilience and reducing vulnerability of farming and food systems.

Agroecology is not just about another way to approach farming and food systems. It is also activating characteristics (diversity, redundancy, flexibility, connectivity, collaboration, etc.) which are generally agreed as building resilience. And that will be increasingly more important as we face increasing challenges such as related to the impact of climate change. Mixed crop-livestock systems, integration of perennial crops and trees/shrubs into farming systems, etc. will become more important. Lower-intensity or lower-input agriculture applies the principle of redundancy, not letting animals, soils, and crops ‘walk on their toes’ of maximum productivity, which increases vulnerability.

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Annex 1: Brief explanation of the project background and co-design sessions

This document describes the way in which AE4EU interacted with various stakeholders and consulted relevant (recent) literature towards the development of a perspective on enhancing opportunities for agroecological transitions in Europe in ways that are complementary to what other relevant initiatives, notably the sister CSA ALL-Ready and the EU partnership on agroecology, have proposed in relation to the same quest. To develop such complementary perspective, agroecology grassroots and farmer representative organisations were consulted. This is what is referred to in the task description as a European living lab (LL) for agroecology (ELL4AE). Also, representatives of partner organisations that are active in the different work packages of AE4EU have engaged in a number of ways in exploring ways forward for the practice of agroecology in Europe.

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In Deliverable 6.2 of AE4EU we have already described the new initiative of the European Network for Agroecological Food systems (ENAF), and its intended role in enhancing opportunities for agroecological transformations of farming and food systems in Europe. It is a first concrete outcome of the deliberations that were part of the interactive processes that led to the perspectives that we present in this document. In this current document, we refer to the envisaged role of ENAF, but will describe a broader perspective on enhancing opportunities for agroecological transformations of farming and food systems in Europe. ENAF is meant to enhance the collective efficacy of initiatives which are labelled differently, but have much in common in relation to subscribing to agroecological principles and practices. Since these two strands of work have been approached in an integrated way, Deliverable 6.2 can be considered as a companion document to this Deliverable 5.5.

Since early 2022, over 30 organisations and initiatives have, some in more, some in less direct ways, taken part in a co-creation process towards the establishment of what is now known as ENAF. However, particularly in its early phase, the interactions also addressed broader needs for bringing agroecological thinking and practice more to the fore across Europe. This current document builds on ideas shared during that time. During annual meetings, and a series of online interactions, as well as through products such as deliverables and policy briefs, work package and task leaders of AE4EU have contributed to the perspective presented here.

The work under task 5.3 and task 6.1 have become rather intertwined since 2021. This, because AE4EU has sought to complement the work and developments done in relation to the EU partnership on agroecology and the earlier started interactions of the sister project of ALL Ready, rather than to double up what was already being covered. It meant that AE4EU has developed two lines of contribution to enhancing opportunities for agroecological transformations of farming and food systems in Europe: 1) a course of action that would take more advantage of the capacities, motivations, and energies of grassroots agroecological movements and associations (which is currently not well represented in other EU-level initiatives), and 2) a (co-created) network of agroecological networks

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and associations spanning across all parts of Europe, which has become the European Network for Agroecological Food systems (ENAF). Both lines of contribution, however, are closely connected. In this deliverable D5.5, we focus on that first line of contribution, which is that broader perspective and related course of action which we frame as a complementary road map for agroecology in Europe.

In deliverable 6.2, we focus on the second line of contribution, which is on how ENAF came into being, how it has tentatively been organised and meant to be taken into the future by a group of co-founders, and what it is meant to contribute to agroecological transformations of farming and food systems in Europe. For more elaborate information on ENAF we refer to Deliverable D6.2 of AE4EU.

During annual meetings, and a series of online interactions, as well as through products such as deliverables and policy briefs, work package and task leaders of AE4EU have contributed to the perspective presented here.

Annex 2: Promising initiatives for agroecology in Europe

The three examples in this annex illustrate how opportunities for agroecological transformations of farming and food systems may be created

Annex 2.1 Agroecology Network Netherlands

A. Development of the AE network/living lab in the Netherlands

Background

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Since the second World War, the general trend within the Dutch agricultural sector has been to increase and highly intensify (i.e. efficient or industrialized) production, with negative side-effects for biodiversity and the natural environment. Currently the agricultural sector is a large contributor to national greenhouse gas emissions. Numerous and very recent calls have been made by many stakeholders (e.g. farmers, citizens) to transform the current production systems into more sustainable ones; delivering food within ecological limits. As a response, two alternatives have been proposed by the Dutch Ministry of Agriculture, Nature and Food Quality: the concept of circular farming and nature-inclusive agriculture. Currently in the Netherlands, organic agriculture, regenerative agriculture and agroecology are the most visible alternative sustainable approaches and these are therefore promoted as ‘innovative’ and promising alternatives.

Agroecology is currently gaining popularity in the Netherlands, which can be attributed to the emergence and success of various associations, foundations, cooperatives, and organisations that promote it (Jansen, 2020). The past decade has seen a strong, yet severely fragmented growth of Dutch organisations that could be considered as part of the agroecological movement (Visser et al., 2020). Research carried out by Nieboer (2022) found a total of 66 organisations and 6 educational institutions connected to the Dutch agroecology movement. However, this number is probably incomplete, as local organisations might not have been encountered or might have been formed since the time of the research.

Thus far, in the Netherlands there is no concrete agroecology strategy for the food system, regarding practice, research and policy (Wezel et al., 2018). This may lead to variation and difficulties for the amendment of the overall national plans, as well as reduce the effects of social recognition and value chain transformation (Wezel et al., 2018). Collaboration lies at the heart of agroecology (Méndez et al., 2013), however there is a large number of agroecological organisations with different priorities and focus. For instance, organisations focus on advocacy, seed saving, soil management, training, as well as on the production chain of sustainable food systems (Visser et al., 2020).

Network building: Start of the Agroecology movement

A strong push was given to the agroecology movement since 2012 by joint activities and efforts from farmers’ organisations, NGOs, students and researchers. They created the network ‘Voedsel Anders’ around the term agroecology of more than 2500 farmers, citizens, activists, researchers and students from the Netherlands and Flanders participated in a growing network for an alternative food system. Key issues were fair price for farmers, farming in harmony with nature, less power for the agroindustry, healthy and tasty food, short supply chains, fair supply chains, access to land and

influence of farmers and citizens on food. The first conference in 2014 was attended by 800 people and a second one in 2016 by 1000 persons. The third conference in 2022 organised by civil organisations and small farmers' organisations was attended by 400 NGOs, farmers, researchers and policy makers. Agroecological farmers also took steps to organise themselves.

The organisation 'Toekomstboeren' (www.toekomstboeren.nl; Future Farmers) consisting of primarily first generation farmers, was founded in 2015. The Biogardeners organised themselves in an organic horticulture organisation and the CSA association was founded in 2019. These organisations together with permaculture farmers and the network of vegan farmers merged in the Federation of Agroecological farmers in 2019. The establishment of the national federation of Agroecological farmers in 2019 was a crucial milestone.

The situation concerning agroecology in the Netherlands around 2020 can be described as follows:

- Limited connection between the pioneering AE farmers and more “conventional farmers” and with research, policy makers, NGOs.
- Limited visibility of the agroecology networks in the Netherlands.
- Different perceptions on Agroecology. The ministry of Agriculture and many researchers are not familiar with the Federation of Agroecological farmers and their vision.
- Increase sense of urgency for transforming the Dutch agricultural and food system due to negative impact of current practices, polarization between farmers' organisations and policy makers due to increased political pressure on farmers to speed up the transformation.

B. On the development of a national agroecology living lab in the Netherlands

The development of a specific agroecological living lab at national level started in July 2021, to support the agroecological transition in the Netherlands. This living lab was an initiative of the farmers' networks united under the Federation of Agroecological farmers. They were supported by the Trans National Institute (TNI) and researchers of Wageningen University and Research participating in the EU project AE4EU. The founding group identified the objectives of the living lab:

- Increased visibility AE and principles adopted by Federation AE farmers
- Develop strategies to deal with challenges and strengthen AE
- Connecting separated actors
- Developing network of the “willing” including AE pioneers and other farmers
- Joint problem definition, research, action agenda to stimulate AE

The first meeting of the Dutch ‘Agroecology Network’ took place in July 2021 and had 30 participants. It focussed on connecting agroecology-related actors to strengthen the network and develop a strategy to tackle the challenges agroecological farmers experience and support the transition to agroecology. Four discussion groups were created to discuss issues related to: i) policy for agroecology and access to land; ii) agroecological research and potential of a national institute for agroecology; iii) commons and solidarity economy; and iv) movement building.

These discussion groups became more formal working groups within each group a number of people taking responsibilities to organise exchanges and events.

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The second meeting took place in October 2021 at the University of Leiden and hosted twice as many as the first meeting; a total of 60 participants. With this meeting a much broader group of researchers became connected to the AE network. The meeting included a farm visit as well as discussion topics related to knowledge for agroecology, policies, movement building and other topics.



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Figure A1: Compilation of photos taken during a meeting of the Agroecology Network (source: ...)

These meetings fuelled enthusiasm among participants and helped strengthen the Dutch Agroecology Network, connecting agroecological farmers, existing agroecology networks, as well as NGOs and researchers. The network with the four working groups decided to meet 4 times a year. During 2022, four meetings were organised. Each meeting was prepared by one of the working groups. During the meetings the groups discussed and shared their ambitions and activities. Due to the participation and interaction between farmers, researchers and representatives from NGOs a transformative learning environment was created leading to a number of actions to strengthen AE in the Netherlands. Specific actions included creation of a knowledge agenda, interaction with policy makers, ambition to create an “institute for Agroecology” and also campaigns for land tenure rights and commons. The meetings have led to concrete actions and separate follow-up meetings and increased the visibility of agroecology in the Netherlands. All of the above helped to support exchange with policy makers.

During the meetings it became increasingly clear the greenwashing of agroecology was serious risk. Therefore a paper and outline were prepared stating the key principles of the network. Key principles on which all members agree: agroecology is a science, a movement and a set of practices that design, develop and transform the Dutch agricultural and food system based on agroecological principles as described in the Nyéléni declaration. (www.eurovia.org/publications).

Major developments

Based on the analysis of pressing issues and opportunities and also interest of the living lab participants several events and developments took place initiated by the living lab.

Connecting with the ministry to address and solve practice issues

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In November 2021 a meeting for the ministry of Agriculture, Nature and Food Quality and the ‘Rijksdienst voor Ondernemend Nederland’ (RVO) was organised on an agroecological farm. Six agroecological farmers, four researchers and seven policymakers discussed issues related to access to, and support from, policy and research, access to land, and agroecology-hindering regulations. This event was important because policy makers at the ministry became aware of the administrative and policy challenges many small scale agroecological farmers are facing. It stimulated commitment to solve most pressing issues and continue the conversation.

Influencing policies with other “green farmers organisations”

The Federation also joined forces with other ecological oriented organisations and networks, such as ‘BoerenNatuur’, ‘Herenboeren’ and Caring Farmers in order to influence agricultural policies. In 2021 and 2022 they presented a ‘Groen Boeren Plan’ and were invited by the minister to share their ideas. This resulted in a number of appointments where obstacles for implementing agroecological practices and the future of the Dutch farming and food system were discussed.

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Connecting with activism: Places of Hope and climate action

In 2022 NGO’s like Greenpeace and Extension Rebellion joined the Agroecology Network. This stimulated the discussions about different strategies to realise the full potential of Agroecology, fuelled enthusiasm to join forces in climate actions and resulted in Places of Hope: Farms where AE farmers and activists meet, where activists can find inspiration and where activists support farmers with their practical work.

New governance and reflection on strategies

At the end of 2022 it was realized that the governance and work structure should be updated in order to become more effective in stimulating visibility of the AE network and the Nyeleni principles, mobilizing people, influencing narratives and policies and internal and external knowledge sharing. 2023 became the period of consolidation and restructuring the living lab. A core group with representatives of all stakeholders was established. Some basic funding for coordination activities was found and a strategy meeting was held. During this meeting it was realized that

- Internal and external communication should become more professional: a Signal group and logo were created and a website is almost ready.

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- More in depth reflection on how different strategies for change (build, grow, break and push) are used by different actors of the network and how they can strengthen each other.
- There is need for an inspiring vision about how the Netherlands would look like when all AE principles would have been implemented.

A two day reflection meeting with professional support for approximately 40 stakeholders participating in the network is foreseen for October 2023 to focus on strategies and future vision.

C. Initial results and learning

Main results in summary

- An active network of AE farmers/networks, Researchers, NGO's and Activists has been established
- Climate justice and Agroecology and concrete actions/activism
- Increased visibility of Agroecology based on the Nyeleni declaration among policy makers and researchers
- Collaboration with "Green Farmers" and joint political agenda
- Exchanges with ministry and policy makers; participation in policy processes
- Basic funding for network and structure
- Future vision and strategy in progress
- Many young people have become active in the network
- Enthusiasm

Participating partners in the AE living lab

Farmers' networks, NGOs, Researcher organisations:

1. Stichting Demeter, Biocyclyc Vegan Network, CSA-Network, Toekomstboeren, Agroforestry Nederland, Buurttuinen, Drechtstadsboer, De Plaetse, Caring farmers
2. Extinction Rebellion (XR), Transnational Institute, Toekomstboeren, Greenpeace, Transnational Institute (TNI), ASEED, Solidariteitsnetwerk Buurttuinen, ActionAid, ECVV, Voedsel Anders, Cultivate! Collective, WWF-NL, Oxfam Novib, Both ENDS, Transnational Institute, Profundo, Gira Holanda, protopia.be, Het Middenland, Eerlijk Loon!, Milieudefensie, Natuur en Milieufederaties, Lenteland, St. Kapitalocean, Jade Reforestry, Boerengroep, de Kleine Aarde
3. Wageningen University and Research, University Leiden, University of Twente, Utrecht Universiteit, Maastricht Sustainability Institute & Hogeschool Inholland, TiFN, Universiteit Groningen, Louis Bolk Institute.

What can we learn?

By collaboration between farmers, NGOs and researchers and reaching out to other networks and policy makers the visibility and potential impact has increased considerably. As highlighted during the process of creation of the network, a great commitment of key actors is crucial for building a strong network and organisation.

Developing trust and understanding between farmers, NGOs and researchers needs time and is crucial for successful joint action. Relying on a set of key principles (based on Nyéléni declaration) is important to prevent green washing and preserve transformative character.

Annex 2.2 Land Unlocked, UK

Annex 2

This is about the Food, Farming and Countryside Commission in the UK (<https://ffcc.co.uk/agroecology>). Agroecology is presented here as a growing movement including farmers and food producers who are using fair and sustainable regenerative practices. It is considered to be about more than a way of farming - it is a way of describing a healthy food system with huge potential to tackle climate change, regenerate landscapes and restore nature.

Basic information about the Land Unlocked initiatives can be found here: <https://ffcc.co.uk/land-unlocked>, and an inspirational movie about it can be viewed here: https://www.youtube.com/watch?v=a_gDKm3KdII

Annex 2.3 Living Lab Val Varaita, Italy

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The agroecological Living lab of Val Varaita (Italy) and its Farmer Market

The regional Italian living lab (LL) has been organized within the AE4EU project by the researchers of the agroecology group of the University of Gastronomic Science (UNISG, Italy). The LL is settled in the Varaita Valley, in the Province of Cuneo, Piedmont, and all stakeholders of the local food chain (farmers, food producers, CSA) were invited into the LL activities.

The main motives to create this living laboratory are: (i) enhancing the local territorial development and of enabling local food sovereignty, (II) the recognition and valorization of the biocultural diversity of mountain areas, and (III) the improvement of the fertile territory of Val Varaita with movement of people re-populating the valley through sustainable agriculture and related activities. The Social Promotion Association Il *Limone Lunare*¹¹ was involved in the facilitation of the participatory workshops of the LL.

The 4 most interesting themes of the living lab are: (I) Creation of food district in the valley; (II) Relational Economics; (III) Tourism in Low season; (IV) Food Sovereignty and land access. Meetings with the representatives of local authorities (municipalities of the Mountain Union¹²) were organized to involve policy-makers in the LL activities.

The LL methodology used within the AE4EU project included three workshops with 60 participants organized by UNISG focused on problems, implementation and dissemination. Besides, several meetings - enhancing a dialogue between the operational group of the LL and regional policy makers - were organized through communication in a dedicated communication channel.

The 3 years process of this living lab created a model that can be replicated in other Italian and European contexts.

¹¹ <https://www.illimonelunare.it/>

¹² <http://www.unionevallevaraita.it/>

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The main outcome of this work is the first Farmer and Artisanal Market in Val Varaita (province of Cuneo, Piedmont). This is an example of an alternative market channel for small food producers working in a valley with low access to existing global chains. Thus, a new short food supply chain allowed to avoid intermediaries thereby creating relationships and dialogue between producers and consumers.

The local food producers participating in the Market respect the 13 agroecological principles. Thus, the consumers could buy and taste agroecological food products. Sixteen stands have participated in the Market with organic fruits and vegetables, sourdough bread, flours and legumes, meat from a short food supply chain of wild-breeded animals, beers, wines and ciders, and mountain honey as well. The consumers had pizza, aperitivo, drinks and a lot of fun from direct dialogue with the producers.

This is a win-win outcome for both producers and citizens that demonstrates a visible result of the LL activity.

Instagram page of the market: <https://www.instagram.com/mercatocontadinovallevaraita/>

After two years (2021 and 2022) of intensive work focused on facilitation of **the italian LL** activities, it is possible to distinguish actual aspects related to the agroecological principles and related transition:

- 1) The **principle of economic diversification (new market)** was addressed through developing the new local food chain and providing access to the new market channel, creating an additional income for the LL participants.
- 2) The **principle of fairness (new market)** was addressed through a fair engagement of different small-scale food producers and consumers at the same time and space. In the LL, all LL producers took part in the fair remuneration across all the steps of the food chain.
- 3) Bringing together actors and creating a multi-stakeholder group that participated in the regular meetings of the LL was related to the **principle of connectivity**. The group includes farmers, researchers, policy makers, CSA, chefs, food producers, associations. Joined forces of all these stakeholders allowed to organize the new market thereby providing an embedded value chain to the local economy and a social inclusion of different stakeholders of the valley.
- 4) The **principle of land and natural resources governance** was one of the most important issues of the LL due to numerous abandoned lands in the valley. Land access for the new agroecological farmers and access to abandoned lands was one of the main topics of the LL and one of the most important points for collaboration with the policy makers. Issue of the land access is strictly linked to ensuring the local food sovereignty and fostering re-localisation of the food production, food autonomy which finally affects the re-resilience of food chains in the valley.
- 5) The **principle of social values and diets** was addressed through horizontal collaboration and networking activities of the LL participants. The network's relational objectives include community building for increasing Social inclusion, strengthening of the connections between all local stakeholders and providing different mutual benefits.

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6) The **principle of participation** was addressed through encouraged involvement of the LL participants into the network activity and through their collaboration with policy makers which indirectly improves decision making process at local and regional levels. Participation of the LL in the local institutional events is a key factor for improving a dialogue between farmers and policy makers for enabling further territorial development.

Annex 3: Policy brief – Enhancing opportunities for agroecological transformations of farming and food systems in Europe – addressing missing links



Enhancing opportunities for agroecological transformations of farming and food systems in Europe—addressing missing links

AE4EU

November 28, 2023

The challenge

Our current food systems cannot continue as they are. Soils, rivers, and the atmosphere are polluted, biodiversity, in particular of insects, and ecosystem services are declining rapidly due to continued use of chemical industrial agricultural inputs, while a third of all food produced is wasted. In addition, the lack of ‘animal welfare’ (lack of daylight, not free-range), and ‘farmer welfare’ (long hours, low social status) is unsustainable.

Agroecology aims to comprehensively transform food and farming systems in all dimensions, from production to distribution and consumption as well as governance. The aim is to achieve greater environmental and societal benefits while reversing the negative effects caused by existing food systems. Yet, an agroecological transformation – involving a range of transitions in relation to the above-mentioned dimensions of farming and food systems – requires valuing agroecology and making available investments that strengthen innovative agroecological approaches, support new (types of) markets, and help food system actors break free of current lock-ins. Knowing where the constraints and challenges lie, as well as knowing how these could be addressed, is important for enhancing existing strategies and policies, overcoming piecemeal engineering and window dressing, and taking advantage of the full potential of agroecology.

This policy brief provides a short synthesis of insights that emerged from various interactions with key stakeholders involved in the co-creation of the European Network for Agroecological Food systems (ENAF), the various strands of work done as part of AE4EU, and recent literature. This is meant to complement already ongoing initiatives in Europe such as the EU Agroecology Partnership.



The potential and constraints of agroecology in Europe

The potential of agroecology is multifaceted.

Agroecology is an answer to a need: the widely agreed need for a food system transformation to sustainability, the need for a coherent, integral food system perspective based on a (holistic) systems perspective. Agroecology, in the way we present it here, provides just that.

Agroecology is inherently resilience oriented. Agroecology offers value-based principles that are practical in application. Food systems do not become more resilient by aiming for certain goals or visions but through the application of resilience principles/characteristics in the process of working towards such goals and overall vision. This creates a much stronger basis for working towards sustainable food systems.

Agroecology supports the maintenance of uniqueness in a variety of ways by creating room for applications that are fine-tuned to local circumstances. Rather than delivering standardised practices, it focuses on local, cultural, societal, and economic appropriateness. Thus, it counteracts the McDonaldization of society and in turn supports the persistence of variety and uniqueness, which have always been the beauties of cultural diversity and the heritage of unique agricultural systems and practices across the globe.

Agroecology is inherently transdisciplinary in its orientation, a platform where science and society (through movements) not only meet and talk but truly work together, combining different rationalities, experiences, and methods towards transdisciplinary collaboration. In other words, it is inherently transdisciplinary in nature, which cannot be said of mainstream approaches to farming and food systems.

Agroecology is not mere idealism but evidence oriented. There is a growing evidence-base for the efficacy of agroecology for food security. It has been



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stated that “a fully agro-ecological Europe [...] could sustainably feed 530 million Europeans by 2050” (Aubert, 2018).

Nevertheless, there are also constraints to agroecology. In the area of transforming agricultural production systems, a constraint is in a lack of practical knowledge about agroecological farming systems. The application of mixed cropping, trap crops, push-pull-systems, wildflower strips tailored to the needs of functionally important arthropod groups such as crop pollinators or natural biocontrol agents, companion plants, or permanent soil cover is almost unknown in practical farming of Europe. Some research exists, but there is a lack of evidence and hence trust in the applicability and functioning (from economic, social and environmental perspectives) of such farming practices. A further constraint is in the missing regional infrastructures for processing produce (e.g. mills, slaughterhouses, roasting facilities etc.), limiting the possibility of establishing regional value chains for agroecological products.

Addressing missing links

Over the past few years, a variety of specific recommendations on enhancing conditions for agroecological transitions have been provided by different researchers and groups of researchers. Some of these recommendations are included in this report, but not all. So far, there appears to be a tendency to cherry-pick loose elements from documented agroecological theory and practice that does not do justice to the integral perspective and the range of opportunities that have been put forward.

Sustainable agriculture and fair and sustainable food systems cannot be achieved through the application of a series of solutions, let alone mere technical/technological solutions. An integrated and coherent approach is needed not just a set of isolated actions. An approach is needed that provides concrete guidance in the form of good principles. And an approach is needed that allows for contextualisation

of common principles to create tailor-made specific application options that connect to relevant context conditions. Agroecology offers pathways to localising, contextualising, and diversifying farming and food systems, thus connecting to place-based and identity-oriented values. It is therefore well positioned to help guide European as well as member state policies in relation to farming and food system transformations over the next decades.

The term ‘agroecology’ does not automatically convey a clear image of what the related integral perspective on farming and food (systems) entails. It may serve its purpose when considered as an umbrella for a range of specific approaches such as organic farming, regenerative farming, etc. However, in its reference to being a science, a practice, and a movement, this is not yet a common understanding. Different people interpret the term agroecology in quite different ways.. Perhaps this is difficult to change, but in that case, more efforts should be invested into communicating the broad perspective of agroecology, if it is to become a more prominent orientation of farming and food systems in Europe.

Partly related to the difficulties related to communicating agroecology, the term has been embraced by many who either limit its meaning to the field of agronomy or use it for window-dressing conventional approaches to agriculture. These two are related in that the restricted interpretation of agroecology makes it possible to apply it to any form of agriculture, as there is always some level of interaction between agronomy and ecology. This reiterates the need for doing something to 1) better distinguish the broad view on agroecology from other views and then to 2) communicate this view better in appropriate fora. This includes the need to more actively engage with conventional agriculture in ways that are appealing to farmers and other actors in the food system.

There is a significant combined potential and capabilities in existing national and European networks around agroecology that can contribute effectively to agroecological transformations of agricultural and food systems in Europe. This is where the energy and motivation for agroecology is. This is where the people



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are who dare explore new ways forward and address concerns regarding the unsustainability of current farming and food systems. This is where younger generations are involved—it is critical to involve them in exploring ways forward and give them a serious and significant role in food system transformation. This includes investment by the EU and member states in knowledgeable and experienced agroecologists as ambassadors of and advocates for the integrated farming and food systems approach to agroecology. The European Network for Agroecological Food systems (ENAF), initiated by partners in AE4EU, is one example of related initiatives that are ready for investment.

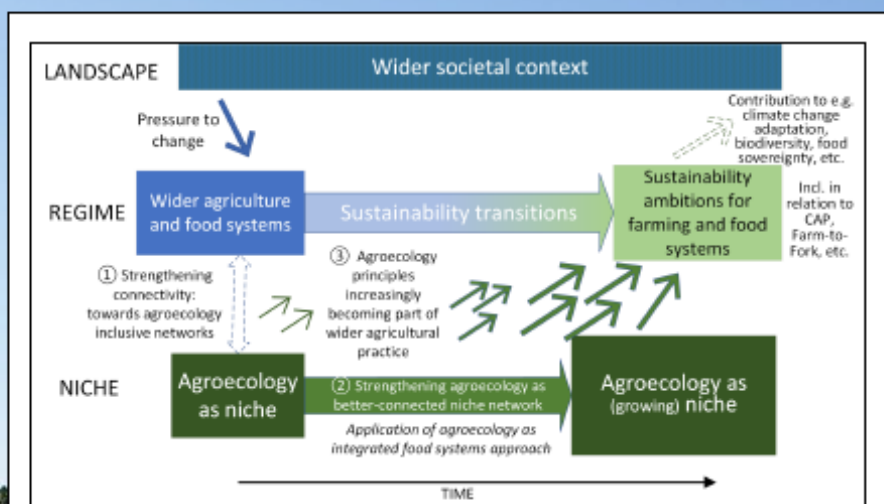
Although a systems approach is critical in relation to farming and food system transitions to sustainability, context-appropriateness, and societal fairness, in the end it is people who make the difference. What makes farmers interested in agroecology, what makes policymakers interested in supporting transitions to agroecology, what makes consumers interested in investing in sustainable agriculture and food, and what makes managers of (large) companies interested in making the value chain work for transitions to agroecology? The core motivations of all these people makes opportunities tilt one way or the other. These motivations are shaped by people's worldviews, values, and principles, but also by what they do and don't know about. Related communications are a battleground for the minds and hearts of people. European and country-level decision-makers need to become more aware of this battleground and invest more in connecting to the core motivations and values behind agroecology through information and communication.

If transitions to agroecology do not involve a serious rethinking of the foundations of mainstream farming and food systems, they will not add up to a sustainable transformation. This means not putting “new wine in old wine skins”! Current dominant approaches to technology, innovation, and scaling of innovations, as well as payments made to farmers need to be put up for debate. These approaches tend to be considered

as having a definitive say on the way forward for farming and food systems. They tend to criticize agroecological approaches for not presenting a realistic alternative, or even go as far as stating that embracing these approaches would increase poverty and vulnerability. This may, however, in many cases be considered as “technology bluff”, as Jacques Ellul (1986) framed it.

Investments in agricultural research and development as well as investments in value chains have gone mostly to actors operating with conventional approaches. Hence, conventional approaches have made big steps in fine-tuning systems and applications. In terms of efficiency and productivity, agroecology may be lagging behind, but that is not strange given that only a small percentage of the amount invested in fine-tuning conventional approaches is invested in fine-tuning agroecological approaches. Moreover, agroecology does not reduce farming and food systems to just their efficiency and productivity but pays due attention to other values, to externalized costs, ecosystem services, healthcare implications, farmer livelihoods, etc. To see the full potential of agroecology materialise, serious investment in agroecology as science, practice, and movement is needed. Currently, one very practical way to do this would be to create new funding options for this through both the EU Partnership on Agroecology and through the EU Partnership on Sustainable Food Systems.

Agroecology is not just about another way to approach farming and food systems. It inherently activates resilience characteristics (diversity, redundancy, flexibility, connectivity, collaboration, etc.) of food systems (Zurek et al. 2022). Resilience is ever more important as we face increasing challenges related to the impact of climate change and conflicts. Mixed crop-livestock systems, integration of perennial crops and trees/shrubs into farming systems are important. Lower-intensity or lower-input agriculture enhances resilience by not letting animals, soils, and crops ‘walk on their toes’ of maximum productivity. These are just some examples of enhancing resilience of farming and food systems and reducing their vulnerability through agroecology.



Making agroecology work for sustainable farming and food systems in Europe: from niche to norm

Inspiration from the newly established Dutch Agroecology Network

Since World War II, the general trend within the Dutch agricultural sector has been to increase and highly intensify (i.e. efficient or industrialized) production, causing negative side-effects for biodiversity and the natural environment. However, agroecology is currently gaining popularity in The Netherlands, which can be attributed to the emergence and success of various associations, foundations, cooperatives, and organisations that promote it.

Since 2012 joint activities and efforts of farmers' organisations, NGOs, students and researchers have given a strong momentum to agroecology. They created the network 'Voedsel Anders' around the term agroecology. More than 2,500 farmers, citizens, activists, researchers, and students from The Netherlands and Flanders, Belgium, participated in a growing network for an alternative food system. Key issues were fair price for farmers, farming in harmony with nature, less power for the agroindustry, healthy and tasty food, short supply chains, fair supply chains, access to land, and influence of farmers and citizens on food.

As of late 2023, first results are promising. Through collaboration between farmers, NGOs, and researchers, and by reaching out to other networks and policymakers, the visibility and potential impact of the Dutch agroecology network has increased considerably. As highlighted during the creation of the network, the commitment of key actors is crucial for building a strong network and organisation. Developing trust and understanding between farmers, NGOs and researchers needs time, but it was found to be crucial for successful joint action. Relying on a set of key principles (based on Nyéléni declaration) is important to prevent greenwashing and preserve the transformative character and orientation of the network.

Recommendations

- 1) EU and country-level policies and initiatives on agroecology should consider the variety of specific and practical recommendations for the agroecological transformation of farming and food systems provided over the past few years by a range of agroecology researchers.
- 2) European and country governments must rethink currently dominant approaches to technology, innovation and scaling.
- 3) European and country governments must rethink currently dominant approaches to payments and subsidies for farmers and farming (e.g. in the CAP).
- 4) Agroecology should be embraced as an integrated farming and food systems approach.
- 5) Efforts related to agroecological transitions need to pay due attention to the personal motivation dynamics.
- 6) Agroecology as a term should be reconsidered in light of the need to better communicate agroecology and its related principles and aspired futures.
- 7) Not only consult but also make active use of the potential of what grassroots, farmer organisation, and agroecological movements can offer to transitions towards agroecology.
- 8) Make serious efforts to overcome the 'low ceiling': limit co-optation and restricted interpretations of agroecology that dilute and weaken the necessary transitions to agroecology.
- 9) Create space for transitions to agroecology by investing in its underlying science, explorative practice, and related movements.
- 10) Embrace agroecology as in fact the only coherent and integrated approach to enhancing the resilience and reducing the vulnerability of farming and food systems.

The way forward



There are said to be three major themes of barriers to agroecological transitions: actor capacity, value chain, and policy (Gava et al. 2022). This policy brief illustrates how unlocking the potential of agroecology goes deeper than addressing these challenges, because they (e.g. the lack of appropriate policies) connect to deeper root causes related to mindsets, dispositions, and values. We do see more happening than ever before on the European landscape, putting agroecology on (policy) agendas (Miller et al. 2022). The EU Agroecology Partnership offers new opportunities for advancing agroecology through its orientation on strengthening living labs and research infrastructures. However, as significant as this is for agroecology in Europe, it also has its limitations. Therefore, complementary initiatives and approaches are necessary to enhance opportunities for agroecological transformation of farming and food systems in Europe. The European Network for Agroecological Food systems (ENAF) is but one of such initiatives.





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