MAPPING THE DEVELOPMENT OF

AGROECOLOGY IN EUROPE

COUNTRY REPORTS SERIES

VOLUME 2

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INTRODUCTION

Agroecology is a holistic concept that embraces a diversity of interpretations, intentions, and realities dependent on the country, context, history, stakeholders, and socio-political environment. To scale up agroecology, it is critical to document and analyse its development in different contexts. This is a necessary step to attain larger insights about the state of play in agroecology, as well as to support its expansion and use at the policy level. The "Mapping of agroecology in Europe" is aimed to provide an overview of the reality of agroecology in different European countries. This second volume covers 11 new countries: Denmark, France, Hungary, Ireland, Moldova, the Netherlands, Portugal, Slovenia, Spain, Sweden, and the United Kingdom. This adds to the 13 countries already mapped in the first volume of the country report series (Wezel et al. 2023).

This mapping is not foreseen to be exhaustive but rather illustrative, synthesising and providing key information on the road to building a common understanding of agroecology and its development at the European level (Wezel et al. 2018). This volume identifies various initiatives, cases, examples, and programmes relating to five different activity categories: Practice, Science, Movement, Living Labs, and Education and Training. Moreover, it provides an overview about the current state of agroecology in each country and the barriers and perspectives for the future development of agroecology in Europe.

At the beginning of 2024, the European partnership of Agroecology Living Labs and Research Infrastructures was launched and will provide additional support and knowledge about agroecology, which should further enhance the implementation of agroecology at the European scale.

The mapping was carried out under the Agroecology for Europe (AE4EU) Horizon 2020 project, for two countries in cooperation with the ALL-Ready project, and through a LIFE operating grant. It involved many organisations and mappers who conducted research in European countries.

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Wezel, A., Goris, M., Bruil, J., Félix, G.F., Peeters, A., Bàrberi, P., Bellon, S., Migliorini, P. (2018). Challenges and actions points to amplify agroecology in Europe. Sustainability 10, 1598. https://doi.org/10.3390/su10051598

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[1] https://research-and-innovation.ec.europa.eu/research-area/agriculture-forestry-and-rural-areas/ecological-approaches-and-organic-farming/partnership-agroecology_en
[2] https://www.agroecology-europe.org/mapping-of-agroecology-initiatives/

METHODOLOGY

1. MAPPING ACTIVITY CATEGORIES

The mapping of agroecology was carried out in different European countries with a common methodology. The information collected was organised according to the three major elements commonly recognised as making up agroecology as a scientific discipline, a set of practices, and a social movement (Wezel et al. 2009) (Figure 1).

To take into consideration complementary aspects and the European dynamic on the topic, as well as the European partnership in agroecology, two additional activity categories were added (Figure 1):

- "Living labs", as recognised and spotlighted by the European Commission in its project "Agroecology living labs and research infrastructures"*;
- "Education and training", in order to distinguish the many initiatives, programmes and training existing outside the academic and scientific sphere which would be described under the 'scientific discipline' activity category.

*https://research-and-innovation.ec.europa.eu/research-area/agriculture-forestry-and-rural-areas/ecological-approaches-and-organic-farming/partnership-agroecology_en

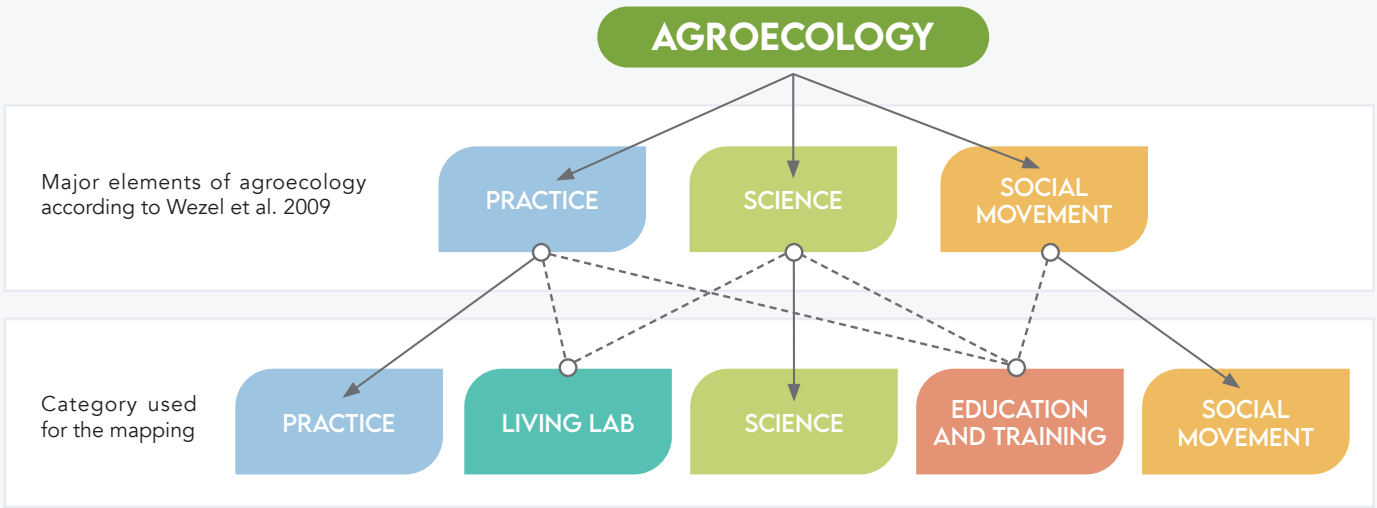

Figure 1: The three major elements of agroecology and the five activity categories used for the mapping of agroecology. The dotted lines indicate that living labs, and education and training can be cross linked to other activity categories. For the mapping of the five activity categories different icons were used to illustrate them in the country reports (Table 1).

[3] We define living labs according to the definition established by the international Agroecosystems Living Laboratories (ALL) working group (Agroecosystems Living Laboratories (ALL) Executive Report 2019, www.macs-g20.org): "Transdisciplinary approaches which involve farmers, scientists and other interested partners in the co-design, monitoring and evaluation of new and existing agricultural practices and technologies on working landscapes to improve their effectiveness and early adoption."

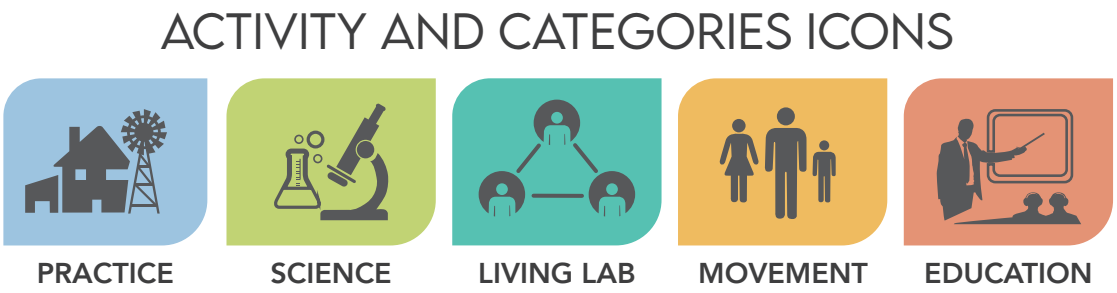

Figure 2: Icons used for the five activity categories of mapping agroecology

Apart from the recognition of these five activity categories, two concepts and notions were at the centre of the mapping:

- Key informants: a diverse range of experts providing information regarding one or more of the established activity categories, e.g., researchers from universities or research institutions, representatives of an NGO or other organisation who is active in agroecology, participants of a national agroecological conference, individuals who had been involved in previous mapping projects.

- Initiatives: understood in this report as a formal action led by an organisation towards agroecology. This can include a diversity of initiatives, examples, or cases related to one or more of the five activity categories:

- Programmes, projects, and initiatives that put agroecology into practice (farms networks, farmer's cooperatives, local markets, etc.);
- Living labs;
- Platforms or organisations that collect information about what they know about agroecology and disseminate it;
- University programmes and courses, or training and teaching courses and activities promoted by any organisation;
- Social movements of people promoting agroecology;
- Research projects and programmes on agroecology, including research infrastructures.

Building on this, the mapping methodology was organised in four steps (Figure 2). The first step mainly consists of finding key informants and interviewing them. Second, initiatives are selected and analysed through in-depth interviews and complemented by desk research. The third step includes the analysis of the data that was collected, complementary desktop research, and evaluation of the case into one of the five activity categories.

Finally, the last step mainly consist of presenting the results for the current state of agroecology in the country in question with a description and analysis of the selected initiatives. A mapping team developed the methodology together, with regular exchanges among the mappers to ensure the quality of data collected and synthetised. All data collected was stored in a common database and a central server. In the following section, each step will be further detailed.

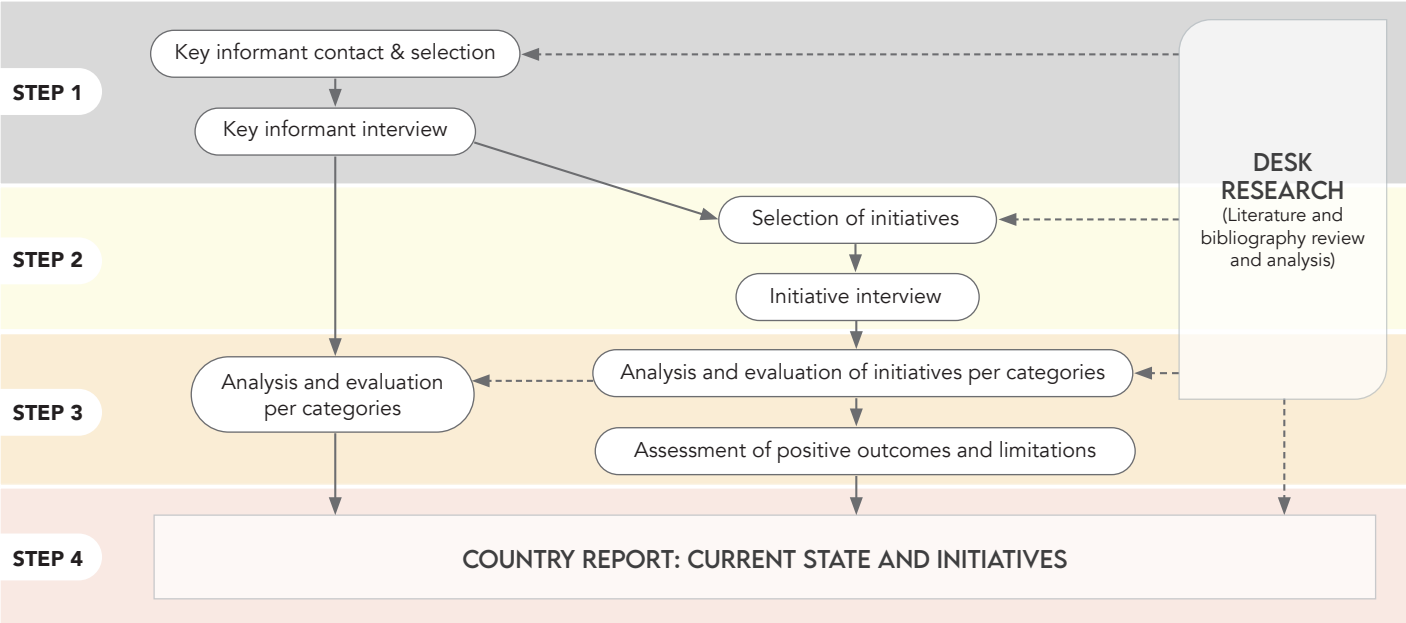

Figure 3: Schema of the four methodological steps used in the mapping.

2. STEP 1: KEY INFORMANT SELECTION AND INTERVIEWS

Key informants were selected according to their knowledge on one or more of the five selected activity categories. They were identified through the AE4EU and Agroecology Europe network, through desk research, the SCAR Agroecology working group* contacts, and/or named by other key informants. All interviews were framed as semi structured interviews conducted preferably in the native languages of the informant to minimise the loss of information. General information about the interviewees were gathered before or during the interview. Each interview lasted 30 to 60 minutes.

The interviews were organised in three main parts:

1. A preamble which aimed to understand the knowledge and vision of the interviewee regarding agroecology. Five key areas (organic agriculture, agroecology, agroforestry, territories and food system, regenerative farming) and associated key words were provided to the interviewee if it was found necessary to clarify their understanding of agroecology.
2. The first part of the interview, which gathered information regarding initiatives known by the interviewee on one or more of the five activity categories. This part started with a general question on known initiatives, followed by an exchange that detailed the information per activity category.
3. The second part of the interview targeted the understanding and perception of key information regarding the present state and recognition of agroecology in the country.
4. The interview ended with questions regarding the barriers, perspective, and any additional information that still could be provided.

The full questionnaire given to key informants is published separately in Grard et al. (2023).

References

Grard, B., Wezel, A., and Gkisakis, V. (2023). AE4EU - Mapping questionnaire for key informant and initiative. Zenodo. https://doi.org/10.5281/zenodo.7520262

*https://scar-europe.org/index.php/agroecology

3. STEP 2: INITIATIVE SELECTION AND INTERVIEW

The most promising initiatives are selected and analysed through in-depth interviews with other key informants and complemented by desk research.

In order to help this selection, five flexible criteria were defined:

1. Initiatives existing for longer than three years, with an exception for initiatives that stand out notably in some aspect of interest that are about two to three years old.
2. Outstanding initiatives that tackle social, environmental, economic problems or difficulties in agriculture.
3. Agricultural initiatives that provide an economic role (such as a living wage to the people involved in the project) and are socially sustainable.
4. An initiative cited by more than one key informant or mentioned in previous mapping exercises.
5. Initiatives that are located in different parts of the country.

Once selected, information was gathered on each initiative according to a grid which was adapted as a questionnaire that aimed to target key points for each activity category. At least one semi-structured interview had to be conducted per initiative to collect the most information possible, and preferably with one of the persons leading the initiative. The full questionnaire is described in Grard et al. (2023).
In order to deepen the analysis of the initiatives, the criteria used in the report "One hundred local initiatives for a responsible and sustainable food system (original title, citation in brackets)" (CERAI 2019) were applied to describe and evaluate their positive impact, as well as their limitations and challenges (CERAI 2019). These criteria allowed to describe dimensions, type of activity, and criteria of the initiatives impact (Table 2).

Table 1: CERAI criteria used to analyse each initiative, as well as the dimensions, type of activity, and icons used.

DIMENSION	TYPE OF ACTIVITY	ICONS
ENVIRONMENTAL	Natural resources and biodiversity management	
	Energy and waste management	
	Health	
POLITICAL	Cooperation	
	Governance	

DIMENSION	TYPE OF ACTIVITY	ICONS
ECONOMIC	Sustainable and fair economics	
	Commercialisation is local, fair and/or collective	
SOCIAL	Traditional food and heritage conservation	
	Society and equity	
	Education	

4. STEPS 3 AND 4: DATA ANALYSIS AND COUNTRY REPORTS

To ensure data reliability and uniformity, a common frame was used as database. This allowed a certain uniformity of data that was then analysed.

Reports were divided into three main parts:

1. Context: a short description of agriculture (based on the literature, as well as interviews) and the state of the art of agroecology in the country.
2. The current state of agroecology: a summary of the collected information divided per activity category.
3. Agroecology initiatives, cases, and examples: a description of the different initiatives analysed per activity category.

Each country report was reviewed internally (within the AE4EU or life project), and if possible, by an expert from that country to ensure the reliability of the shared information.

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CERAI (2019) Sistemas alimentarios territorializados en España. 100 iniciativas locales para una alimentación responsable y sostenible. CERAI, https://cerai.org/publicaciones-de-cerai/100-iniciativas-sat/

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MAPPING AGROECOLOGY IN DENMARK

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DENMARK

EXECUTIVE SUMMARY

The agricultural industry in Denmark stands out for its substantial utilisation of capital and advanced technology, traits that are likewise evident in the country's organic market, proportionally the biggest in the world. This success in organic farming is generally attributed to the government's long-standing commitment to organic production, reflected in Denmark's pioneering role in enacting some of the earliest organic farming legislation globally and establishing state-run organic certification processes. However, the 'success' of organic farming in Denmark has also undermined its importance as a countermovement to contest conventional agriculture and related practices, and existing value chains and distribution networks are biased against small-scale producers with more radically agroecological ambitions. Nonetheless, vibrant social movements for food system transformation and ecological food production exist, including those spearheaded by regenerative agriculture, biodynamic agriculture and permaculture associations. Notably, these movements do not explicitly identify as agroecological.

In Denmark, "agroecology" predominantly refers to the ecological study of agroecosystems, and only in much more limited ways to the social and political dimensions of food systems transformation. Education and training in agroecology-related fields encompass above all agricultural colleges, universities, and the uniquely Danish 'folk high schools'. A small number of 'living labs' were identified in Denmark, the actions of which bear relevance to agroecology even if none of them is specifically focused on agroecological transformation.

DENMARK

EXECUTIVE SUMMARY (IN DANISH)

Landbrugsindustrien i Danmark skiller sig ud ved sin omfattende brug af kapital og avanceret teknologi, træk, der også er tydelige på landets økologiske marked, der forholdsmæssigt er det største i verden. Denne succes inden for økologisk landbrug tilskrives generelt regeringens mangeårige engagement i økologisk produktion, hvilket afspejles i Danmarks pionerrolle i vedtagelsen af nogle af de tidligste love om økologisk landbrug i verden og etableringen af statsdrevne økologiske certificeringsprocesser. Men det økologiske landbrugs "succes" i Danmark har også undermineret dets betydning som en modbevægelse, der anfægter konventionelt landbrug og relaterede praksisser, og eksisterende værdikæder og distributionsnetværk er skævvredne over for små producenter med mere radikale agroøkologiske ambitioner. Ikke desto mindre findes der livlige sociale bevægelser for transformation af fødevaresystemer og økologisk fødevareproduktion, herunder dem, der ledes af foreninger for regenerativt landbrug, biodynamisk landbrug og permakultur. Det er bemærkelsesværdigt, at disse bevægelser ikke eksplicit identificerer sig som agroøkologiske.

I Danmark refererer "agroøkologi" overvejende til det økologiske studie af agroøkosystemer, og kun i langt mere begrænset omfang til de sociale og politiske dimensioner af transformation af fødevaresystemer. Uddannelse og træning inden for agroøkologi-relaterede områder omfatter først og fremmest landbrugsskoler, universiteter og de unikke danske 'folkehøjskoler'. Der blev identificeret et lille antal "living labs" i Danmark, hvis aktiviteter har relevans for agroøkologi, selv om ingen af dem er specifikt fokuseret på agroøkologisk transformation.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Denmark are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in Denmark.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	University	Land use	
2	University	Food system	
3	University	Agroecology	
4	Civil society & business association	Organic agriculture	
5	NGO	Green transition	
6	Civil society association	Regenerative agriculture	
7	Agricultural College	Organic agriculture	

2. CONTEXT

Over 60% of the Danish land surface, which totals about 43,000 km^2, is agricultural land – however, currently 80% of this is used for the production of animal feed. Despite heavy indebtedness since the financial crisis in 2007, the agriculture industry in Denmark has achieved the highest level of structural development in Europe, characterised by its significant use of capital and advanced technology (van der Ploeg et al. 2019). This is also reflected in the country's sizeable organic farming sector. The organic market in Denmark is – proportionally – the biggest in the world: in 2020, organic food amounted to approximately 13% of the total retail food market (Danish Agriculture & Food Council, Organic Denmark, and Food Nation 2020). Regardless of in-country variation of the density of organic farms (Risgaard et al. 2007), 10% of Danish farmers are organic and 11% of Denmark's agricultural land is cultivated by them. This 'success' of organic is generally understood to be due to a long-standing government commitment to organic production and favourable policy support (e.g. Daugbjerg and Halpin 2010). This was recently recognised by the Future Policy Award to Denmark for their effective organic policy, awarded by the World Future Council in partnership with the United Nations' Food and Agriculture Organization and IFOAM – Organics International.

Denmark was the first country in the world to adopt comprehensive legislation on organic farming in 1987. Shortly thereafter, in 1989, it introduced the state-owned "Ø label" to certify organic products via public inspections, as well as instituting financial support for conversion to organic farming (Ingemann 2006). It was also the first country to draw up an Organic Action Plan in 1995. The Danish state has supported research and development in the organic agricultural sector ever since, including through the International Centre for Research into Organic Farming and Food Systems (ICROFS). As frontrunner, Denmark's organic regulations have remained more stringent than EU requirements. Moreover, synthetic fertilisers and pesticides are highly taxed in Denmark, something which is hoped to provide additional discouragement to conventional farming (Danish Agriculture & Food Council et al. 2020).

Since the 19th century, agricultural cooperatives have played a central role in the development of the farming sector in Denmark and are said to have contributed strongly to its international success (Hansen 2021; Nilsson and Büchmann Petersen 2022; Sandhu et al. 2022). Danish cooperatives account for a significant share of agricultural production and several of them are now important corporate players in the international market (e.g. Arla, Danish Agro). The organic cooperatives Thise Dairy and Naturmælk Dairy were central actors in the development of the organic market in Denmark. Coop Denmark, the largest Danish supermarket chain and itself a cooperative, also played a catalytic role in the growth of the national market by reducing its prices for organic products by over 15% in 1993, radically expanding sales (Ingemann 2006). The trend was further cemented through a gastronomic revolution set off by the New Nordic Cuisine Manifesto in 2004, signed by a group of chefs from Nordic countries and spearheaded by Danish chef and food activist Claus Meyer.[1] New Nordic Cuisine focuses on simple, natural, locally sourced and seasonal raw materials that are minimally processed. Many of the farmers delivering produce to the New Nordic restaurants are organic (Danish Agriculture & Food Council et al. 2020). In the current iteration of the Organic Action Plan, organic production is understood as the cornerstone of the wider objective of the green transition of Danish agriculture (Danish Ministry of Environment and Food 2018). Amongst other things, key targets include the organic conversion of public kitchens, conversion of public land, targeted support for organic farms.

[1] https://www.norden.org/en/information/new-nordic-food-manifesto

However, the 'success' of organic farming in Denmark has also undermined its importance as a countermovement to contest conventional agriculture and related practices (Fomsgaard 2006). Highly institutionalised and industrialised, the organic sector in the country is dominated by mid- to large-scale farms, and existing value chains and distribution networks present barriers for small-scale producers or new entrants with more radically agroecological and regenerative ambitions. The mainstreaming of organic is also evident in the structuring of the Danish agricultural knowledge and innovation systems (AKIS). The largest organic and conventional advisory services are part of the same organisation (SEGES) under the auspices of the Danish Agriculture and Food Council. This high level of integration of organic with mainstream agriculture including at the policy level also means that alternatives – i.e. independent horizontal knowledge systems such as that of the regenerative movement – are strongly sidelined.

In Denmark, agroecology has only recently begun to be understood as three-dimensional – as a science, practice and social movement – with characteristics that distinguish it from organic agriculture (see, for example, Aare et al. 2021; Gallardo-López et al. 2018). As a science, it is conceptualised as the study of the interactions between climate, soil, plants, animals and people in agro-ecosystems, as does Aarhus University's Agroecology Department. Interviews revealed that as practice, agroecology is generally taken to be synonymous with organic agriculture. Only NOAH (Danish Friends of the Earth)[2] and 'Frie Bønder, Levende Land' (Danish chapter of La Via Campesina)[3] explicitly identify as participating in agroecological social movements. However, there is a biodynamic farmers' association which can be said to promote agroecological practices, and the budding regenerative agriculture movement as well as the permaculture movement have strong agroecological ambitions, even if they use different terms.

Crucial to understanding the context for agroecology in Denmark is also the importance of associations ("foreninger" in Danish) to society and social organization in the country. As non-profit organizations that are established to promote a common interest or cause, their prevalence is often attributed to the country's strong tradition of civic engagement and social cohesion. Coming together in associations to pursue common goals is deeply rooted in Danish society, backed by the strength of the welfare state and negotiated market economy (Henriksen et al. 2019). Through associations, individuals get involved in the decision-making processes that affect their lives, and influence public policy. Associations are the legal structures of small, local citizens initiatives as well as large and influential organizations at the national level, such as Organic Denmark (Økologisk Landsforening), the multistakeholder platform bringing together organic companies, farmers, professional kitchens and consumers in the country's largest organic sector organisation. As is visible in the following sections, associations are the prevalent organisational form of the agroecology initiatives discussed in this chapter.

[2] https://noah.dk/sites/default/files/2018-01/NOAH_Visioner_for_en_ny_Landbrugspolitik_2018_final_digital.pdf
[3] https://mim.dk/media/218081/frie_b__nder_-_levende_land.pdf

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

Education of relevance to agroecology in Denmark takes a variety of forms. The clearest affinity to the understanding of agroecology as held by AE4EU is represented by the School of Regenerative Agriculture, an independent school under the auspices of the Regenerative Agriculture Association, aimed at the self-funded education of new entrants particularly. Education in organic farming and production management is also available through the Organic Agriculture School at Kalø (formerly the Økologiske Jordbrugsskole in Vendsyssel, one of the first specifically organic agricultural colleges in Europe). However, while students at Kalø are trained in organic agriculture, they graduate with a general certificate as 'trained farmers' rather than with a specialisation in 'organic farming'. The government is currently considering to allow a specialisation in 'organic farming' to be recognised.

The association Økologisk Landsforening works together with schools and colleges to offer courses in organic food production and transformation. They also provide teaching materials for 'organic and sustainable food' for educational programmes aimed at professional kitchen staff. Denmark also has a unique tradition of folk high schools (højskoler in Danish), founded in the 19th century by the social reformer Grundtvig to enable young adults from rural contexts to engage in learning, self-development and community building. While today folk high schools usually ask for tuition fees, there are no other pre-requisites, exams or grades, and the schools attract younger and older adults from Denmark and abroad to their programmes which usually last several months to a year. Several folk high schools (seven were identified in 2022, see Table 2) run courses with relevance to agroecology – e.g., permaculture, forest gardening, self-sufficient agriculture, sustainable food systems. An additional school, Jyderup Højskole, ran a course under the auspices of which students worked as interns on organic and regenerative farms, until it closed in 2022.

Table 2: Folk high schools with agroecology-relevant courses.

Folk high school	Course or Programme name
Brandbjerg Højskole	Forest gardening
Brenderup Højskole	Permaculture
Gram Højskole	Power of Nature (food, sustainability, health, climate, self-sufficiency, foraging)
Højskolen på Kalø	GRO (permaculture, forest garden, kitchen garden, sustainable building)
Krogerup Højskole	Earth Calling (kitchen gardening, climate politics, outdoor living, regenerative agriculture)
Lejre Højskole	From Field to Table (kitchen garden production, food transformation, sustainability, biodiversity)
Rødding Højskole	Self-sufficiency and agriculture
Vestjyllands Højskole	Practical Permaculture

University education in agroecology-relevant subjects were identified at Aarhus University, Copenhagen University and to a lesser degree at Roskilde University Centre and Aalborg University (Table 3).

Table 3: Universities with agroecology-relevant teaching programmes.

University	Programmes
Aarhus University	BSc in Agrobiology; MSc in Agrobiology, and it link with a European study programme EUR-Organic with other universities; MSc in Agro-Environmental Management; Erasmus Mundus International Master in Soils and Global Change (together with Universities in Belgium, Austria, and Germany) Course (10 ECTS) on Agroecology, Food Systems and Human Security as part of the MSc in Human Security
Copenhagen University	BSc in Natural Resources; BSc in Food and Environmental Economics; MSc in Agriculture; MSc in Agricultural Economics; MSc in Environmental and Natural Resource Economics; MSc in Sustainable Forest and Nature Management; MSc in Integrated Food Studies
Roskilde University Centre	BSc in Environmental Biology; MSc in Environmental Science
Aalborg University	BSc and MSc in Environmental Science

3.2. LIVING LAB

Living Labs have started to be developed in Denmark in the context of sustainability transformations. While most living labs are linked to energy, housing or health innovations, some of them address food systems. The municipality of Guldborgsund, for example, is part of FEAST, a Horizon 2020-funded project which works with living labs to enable the shift to more sustainable diets. In Guldborgsund, diverse stakeholders are coming together to explore the introduction of sustainable school meals for all pupils in the public school system. The 'Kitchen of Tomorrow Lab' in Copenhagen, linked to the Horizon 2020-funded project FoodSHIFT2030 aims at reconnecting the city with its rural surroundings by strengthening ties between food chain actors and developing social innovations to do so. FUSILLI, another Horizon 2020-funded project, builds local capacity for transformation through a number of actions focused on all dimensions of the urban food system – production, distribution, consumption and waste disposal as well as governance. Moreoever, agricultural research in Denmark has historically been rather demand-driven and participatory. This implies that number of research projects display living lab features but have only recently begun identifying as such. Carbon Farm, a project involving both organic and conventional farmers, advisory bodies and Aarhus University in no till farming is a good example. Living lab methodologies are also increasingly applied by the state advisory system in processes for peatland restoration. While all of these Living Labs intersect with agroecology-relevant actions and enable learning that is fundamental to re-organisation of food systems, none of them is specifically focused on agroecological transformation.

3.3. MOVEMENT

Social movements for food system transformation and ecological food production in Denmark do not self-identify as agroecological, even if they could be classified as such. As already indicated, the organic farming movement has been largely institutionalised and enjoys strong commercial success. It is characterised by large and influential associations, such as Økologisk Landsforening which brings farmers, companies, commercial kitchens and consumers together in a shared interest organisation that is focused on societal transformation through the expansion of the organic market. Nonetheless, the association is moving beyond promotion of the organic label to increasing awareness of the four 'organic principles' (health, fairness, care and ecology) that are the fundament of the organic movement internationally. This can be seen as an attempt to go 'back to basics' even at the more institutionalised pole of the movement.

At the more 'grassroots' pole of the movement, a number of smaller associations are working for ecological transformation of food systems. Of note here are particularly the Association of Regenerative Agriculture, the Permaculture Association, Landsforeningen Praktisk Økologi (Association of Practical Ecology), the Association of Holistic Planned Grazing (HOPLA), Foodprint Nordic, Andelsgaarde, Slow Food Denmark, NOAH and 'Frie Bønder, Levende Land,' several of which are presented in section 4 below.

Key informant interviews, as well as interviews with representatives from agroecological initiatives, have revealed a strong discourse in Denmark on sustainable food being plant-based with an understanding of the central focus of food system transformation as shifting consumption away from animal products. The majority of interviewees contested this view as too narrow and underlined both the question of how plants were produced and how animals were raised as pivotal to any discussion on sustainability in food systems. However, they saw their own perspective as non-mainstream, with relatively unquestioned assumptions regarding plant-based innovations characterizing dominant public debates on climate action imperatives. Social movement organizations and individuals affiliated with permaculture, regenerative agriculture and biodynamic farming hold more nuanced views with respect to animal inclusion in production systems, yet their narratives remain as of yet unconnected.

Overall, interviews underlined that agroecology-relevant social movements in Denmark are well established as well as further on the rise, yet there is a sense that efforts could be better connected to develop synergies, especially at the grassroots end of the spectrum.

3.4. PRACTICE

As already described, organic farming is strongly embedded in Denmark. The majority of organic production is tied into distribution systems for large retailers or export. Farmers' markets exist in the bigger cities, but struggle to get re-established elsewhere. Most interviewees considered this an effect of the 'success' of organic products within the supermarket system. However, farm shops exist in all regions where fresh produce and sometimes other products can be bought directly from farms. In addition, a number of rural housing and working cooperatives distribute certified organic produce through alternative food networks (e.g. box schemes, online shops).

Despite lower real estate prices than in some other European countries, access to land is increasingly difficult. Land ownership has progressively been consolidated over the last few decades – with many small farm houses literally torn down in the process. High levels of capitalisation and inheritance tax make inheriting and taking over a farm a costly endeavour for the next generation. This is in part being addressed by the cooperative movement which has long created a diversity of shared living and working spaces in rural areas (e.g. Svanholm Gods, Friland, Den Selvforsynede Landsby). The association Andelsgaarde is now actively buying up old farms and land to enable young or new entrant farmers with a commitment to regenerative agriculture to be able to afford to start up. The organisation Danmarks Økologiske Jordbrugsfond has been doing the same for organic farms, and there are a small number of other foundations with similar goals. This has been enabled by the easing of farm legislation over the past decades, which has opened up farm ownership to entities other than farmers and thereby resulted in both corporate as well as cooperative ownership forms.

Denmark also has a sizeable number of 'hobby farmers' – a term given to people who run (often small) farms to provide for themselves and their families, not-for-profit and/or alongside their main income generating activity. Many 'hobby farms' or even just households with kitchen gardens will offer fresh surplus produce (eggs, vegetables, honey…) on small roadside stalls whenever available, to be paid for via 'honesty boxes' or the ubiquitous 'mobile pay' option via telephone.

The Biodynamic Agriculture Association regroups and supports biodynamic farmers in the country through knowledge exchange events and peer-to-peer learning since 1936. In 2023, 50 farms were registered as members of the association. Furthermore, since 2019 regenerative practices are beginning to be more widely disseminated and encouraged through the Regenerative Agriculture Association and its school.

Conservation agriculture is also receiving increasing attention in Denmark, and FRDK-SundJord, an association for reduced tillage is worth mentioning in this context. As this association consists of mainly conventional farmers, however, important agroecological principles of the elimination of synthetic inputs are not addressed by FRDK.

3.5. SCIENCE

In Denmark, the term agroecology is mostly associated with science, namely, the ecology of agroecosystems. This is also the focus of the Department of Agroecology at Aarhus University. The department received its current name in 2011, but has much older roots in the Danish Institute of Agricultural Sciences. At the department, the research and teaching focus is firmly centred on agronomy and technological interventions for emissions reduction (both GHG or environmental) in support of the green transition. Similar work is ongoing at Copenhagen University (KU), at the Department of Plant and Environmental Sciences. At KU's Institute of Food and Resource Economics, some work aims to support the green transition of food and farming systems, but not specifically in agroecological ways. Anchored in the environmental humanities' Centre for Sustainable Futures, Cattle Crossroads, a research project funded by the Danish public research fund DFF (Danmark's Frie Forskningsfond) investigates alternatives to conventional livestock production, in the context of Danish dairy. While it is not defined as an agroecological study, it nonetheless intervenes in transdisciplinary

ways in the country's dominant public debate regarding livestock and feed production vs. plant-based proteins by questioning conventional practices and divides and focusing on what hinders more small-scale, agroecological approaches to animal husbandry as a pathway to sustainable foodways which respect planetary boundaries.

Furthermore, there are other individuals and small research groups at Danish universities whose work supports agroecological transformation of food systems from both a natural science and social science perspective. Examples here are the KU team involved in the NOVA-Agroasis network bringing together researchers working on and teaching agroecology in Nordic countries; a small team focusing on food and farming at the Department of People & Technology at Roskilde University Centre (RUC), and involved in the EU-funded Agroecology-TRANSECT project; as well as the Centre for Rural Research and the embryonic Food Lab at the University of Southern Denmark (SDU).

Finally, the Innovations centre for Økologisk Landbrug, a not-for-profit research organisation established in 2021, aims to support the advancement of organic agriculture in Denmark through research, experiments and knowledge sharing.

[31] https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience/cawr-staff-list/
[32] Biotechnology and Biological Sciences Research Council

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 4: An overview about initiatives, cases, and examples described and analysed in Denmark.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Regenerative Jordbrugskole** *School of Regenerative Agriculture*	National	Civil Society Association	Regenerative agriculture: education & promotion					
2	**Nordic Permaculture Academy**	National/ Regional/ Inter-national	Civil Society Association	Permaculture: education & promotion					
3	**Kalø Økologisk Landbrugskole** *Kalø School of Organic Agriculture*	National	College	Organic agricultural college					
4	**Andelsgaarde** *Cooperative Farms*	National	Civil Society Association	Land access for small regenerative farmers and new entrants					
5	**HOPLA** (Association of Holistic Planned Grazing)	National	Civil Society Association	Holistic planned grazing: education & promotion					
6	**Foodprint Nordic**	National	NGO	Promoting and funding regenerative agriculture					
7	**Svanholm Storkollektiv** *Svanholm Collective*	Local	Working and Housing Cooperative	Living and working together rurally					

Table 5: Examples of additional initiatives, cases and examples in Denmark.

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Ærø Iværk *Ærø Start-up Hub*	Local	Producers network	Mutual support network for local producers			✓	✓	
Agroecology Dept, Aarhus University	National/ Inter-national	University	Mainly rteaching & research on agroecology as science, with more holistic agroecoly research and teaching in the Farming Systems section	✓				✓
Cattle Crossroads	National	Research project	Research					✓
Danish Centre for Rural Research, SDU	National/ Inter-national	University	Teaching & research on development & change in rural areas	✓				✓
Danish Association for Nature Conservation *Danmarks Naturfredningsforening*	National	Civil Society Association	Nature conservation & biodiversity			✓		
Den Selvforsynede Landsby *The Self-Sufficient Village*	Local	Housing Cooperative	Living & producing food together				✓	
FavnenFuld *FullEmbrace*	Local	Farm	Conservation of traditional landraces				✓	
Food2030 Kolding	Local	Living Lab	Urban food system transformation		✓			
Foreningen for Biodynamisk Jordbrug *Association for Biodynamic Agriculture*	National	Civil Society Association	Biodynamic Farming				✓	
Graesmaelk *Grassmilk*	National	Producers network	Support for pastured dairy producers				✓	

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Hojskole (Vestjyllands & Lejre) *Folk High Schools*	Local/ National	School / college	Teaching permaculture, regenerative agriculture, nature-connectedness					
Holistisk Oekologi *Holistic Ecology*	Local	Farm	Holistic planned grazing					
Landsforeningen for Økosamfund *Nationwide Association for Eco-Villages*	National	Civil Society Association	Living collectively, rurally and on organic principles					
Nordic Forestry, Veterinary and Agricultural University Network (NOVA) Agroecology network (AGROASIS)	Inter-national	University network / working group	Teaching agroecology					
Økologisk Landsforening *Organic Denmark* https://okologi.dk	National	Civil Society & Business Association	Representing interests of all organic food producers and stakeholders					
Permakultur Danmark *Permaculture Denmark*	National	Civil Society Association	Permaculture: promotion					
Permakulturhaven Myrrhis *Permaculture garden Myrrhis*	Local	Farm	Permaculture: promotion, teaching, food production					
RGO: Rådet for Grøn Omstilling *The Council for Green Transition*	National	NGO	Green transition advocacy and think tank					
Skovvirke (Permakulturgaarden) *The Permaculture Farm Skovvirke*	Local	Farm	Permaculture: promotion, teaching, food production					

INITIATIVE N°1 – DEN REGENERATIVE JORDBRUGSKOLE

Website: https://regenerativ.dk/den-regenerative-jordbrugsskole/

DEN REGENERATIVE JORDBRUGSKOLE

THE REGENERATIVE AGRICULTURE SCHOOL

The Regenerative Agriculture School is an independent school organised by the Regenerative Agriculture Association (Foreningen Regenerativt Jordbrug), which offers a two year agricultural training programme for aspiring regenerative land workers to gain both practical and theoretical skills.

The school provides an alternative to the prevailing Danish agricultural education system and is specifically aimed at students who want to learn about the regenerative movement in a freer environment. Working together with regenerative farms which host students during the first practice-based year, the school creates a framework which enables farms without the resources to pay a regular (state-regulated) student salary to invest in farmers of the future.

Having started in 2022 with the first class of 10 students, the programme consists of seven one-week seminars held at a regenerative farm, which offers practical examples and solutions for both agronomic and socio-economic aspects of regenerative work. After the first practice-based year, the second year focuses on entrepreneurship and empowering students to start their own regenerative farming initiatives. Instructors at the school are all agricultural practitioners who share their knowledge and experience directly from the field. Moreover, the school is democratically organised and both teachers and students work together to develop the school further.

WHAT CAN WE LEARN?

The Regenerative Agriculture School is an inspiring example of self-organisation and social movement innovation. Purposefully and explicitly located beyond the state-funded and state-regulated ambit of the conventional agricultural education system, the association-run school as complete operating freedom and is thereby able to cater to the needs of students and farmers who feel limited by the conventional system's strictures.

KEY FEATURES

- **Type of education and training:** independent agricultural training
- **Main topic:** regenerative agriculture
- **Training duration:** 2 years
- **Type of legal entity:** association
- **Founded in:** 2022

Picture 1: Minimal soil disturbance in regenerative vegetable production. Source: Nanna Thomsen.

Picture 2: Regenerative market gardening. Source: Nanna Thomsen.

Picture 3: Silvopasture - sheep grazing in orchard. Source: Sandra Villumsen.

Website:
https://nordicpermacultureacademy.org

NORDIC PERMACULTURE ACADEMY

The Nordic Permaculture Academy (NPA) was established in 2021 as a part of the association Permakultur Danmark, before becoming an independent 'Association with Limited Liability' (FMBA) in early 2023. NPA emerged from collective reflections and the perceived necessity to establish, develop, and maintain a Nordic permaculture diploma system. Its primary purpose is to provide facilitation, mentoring, and networking services to apprentices pursuing a Diploma in Applied Permaculture Design. Additionally, NPA aims to strengthen the regional presence of the permaculture movement and contribute to the further development of its knowledge system.

The diploma programme offers further self-led education to holders of a Permaculture Design Certificate (PDC), a 72-hour introductory course. The diploma pathway spans a minimum of two years and requires the realisation of ten permaculture designs during this period. To be eligible for the programme, apprentices must have developed a relevant, informal portfolio of merits since completing their PDC. One of the ten designs must focus on a design for a third party, reflecting the social dimension of permaculture. Currently, NPA has more than 50 apprentices, and their self-directed learning pathways toward certification as permaculture designers are guided by three diploma holders, who are experienced designers, implementers, teachers and mentors. The academy hosts a monthly virtual meeting and two in-person three-day gatherings annually for a growing network. They also offer specialised courses (mentor and teacher training, job shadowing) to enhance and encourage learning opportunities.

WHAT CAN WE LEARN?

NPA presents a radical and distinctive alternative to existing educational possibilities and has grown rapidly since its establishment. This signifies the enduring appeal of the permaculture approach, which dates back to the 1970s. Beyond addressing concerns related to soil depletion and nutritional value in industrial food systems, NPA serves as an experimental ground for creative, regenerative designs in various domains, including social, economic, education, food systems, housing, and landscaping methods. It is particularly popular among people seeking to transform their livelihoods and achieve varying degrees of self-sufficiency, reflecting elements of what is known as 'transformative agroecology'.

KEY FEATURES

- **Type of education and training:** mentoring programme and accreditation (Diploma in Applied Permaculture Design)
- **Main topic:** permaculture
- **Training duration:** minimum 2 years
- **Type of legal entity:** association
- **Founded in:** 2021 (legal entity formally created in 2023)

Picture 4: Nordic Permaculture Academy in action. Source: Nordic permaculture academy.

Picture 5: A forest garden. Source: Nordic permaculture academy.

kalø Økologisk Landbrugsskole
Bæredygtighed og godt landmandsskab...
viden djurs

Website:
https://videndjurs.dk/kaloe-oekologisk-landbrugsskole

INITIATIVE N°3 – KALØ ØKOLOGISK LANDBRUGSKOLE

KALØ ØKOLOGISK LANDBRUGSKOLE
KALØ ORGANIC AGRICULTURAL COLLEGE

Kalø Organic Agricultural College is one of the first specifically organic agricultural training colleges in Europe, with its first incarnation having educated the first student cohort in 1982. With up to 100 students and 20 staff, Kalø is the also largest specifically organic agricultural college in Denmark, and the only agricultural college offering its educational programme in English, making it an attractive choice for foreign students who currently make up about 25% of all Kalø's students.

The college is mostly state-funded, with students paying for their own board and lodgings only.

The school emphasises practical skills. Active engagement in farming is therefore an important part of the education and everyday life. The practical learning facilities include 50 ha of organically cultivated farmland and infrastructures for both crops and animals, and the school canteen is certified with the Danish "organic gold" label which means that a minimum of 90% of all ingredients used are organic. The college aims at a high degree of self-sufficiency, both with respect to fodder and other farm inputs, as well as in terms of its canteen.

While the college is under the same regulations as all other farming schools in the country, it has been politically active by working for a specialisation in 'organic agriculture' as recognised degree in the Danish context, where so far students can only graduate with degree specialisations in either crops, livestock or machinery.

The training programmes last between 3 and 3.5 years and include practical internship at organic farms, with students often opting for internships abroad.

WHAT CAN WE LEARN?

Kalø Organic Agricultural College is a well-established educational institution training young farmers in specifically organic production methods. Centering biological and ecological systems in their pedagogy, students learn about the effects of their practices and the way in which agriculture can work with ecological cycles and relationships. As a state-funded and recognised institution, Kalø is accessible financially and open to all. Its policy work is important with respect to the recognition of organic agriculture as an educational pathway that is different to other forms of agriculture.

KEY FEATURES

- **Type of education and training:** agricultural college
- **Main topic:** organic agriculture
- **Training duration:** 3-3.5 years
- **Type of legal entity:** not-for-profit educational institution
- **Founded in:** 1982 (as Den Økologiske Jordbrugsskole, merged with Kalø Landboskole to become Kalø Økologisk Landbrugskole in 2003)

Picture 6: Organic vegetables from Kalø. Source: Kalø organic agricultural college.

Picture 7: Learning on the farm at Kalø. Source: Kalø organic agricultural college.

Picture 8: Beekeeping at Kalø. Source: Kalø organic agricultural college.

INITIATIVE N°4 – ANDELSGAARDE

ANDELSGAARDE

https://www.andelsgaarde.dk

ANDELSGAARDE
COOPERATIVE FARMS

Andelsgaarde (which translates as "Cooperative Farms") is a recently launched cooperative movement with the aim of acquiring, rebuilding, and leasing farmland to enable regenerative farming practice. Their mission is to play a part in mitigating the climate and biodiversity crises while increasing the production of healthy food and creating more natural spaces.

Founded in 2018, Andelsgaarde acquired its inaugural farm in 2019 and by 2023 had grown to over 3,300 members, who collectively own three functioning farms with a fourth one on its way. In classic cooperative fashion, each member has one vote at general assemblies. Membership fees amount to 150 DKK per month per person (the equivalent of about EUR 20), which allows the purchasing of property and payment of loans to the same end. Any surplus is invested in new acquisitions or leasing agreements to convert ever more land to regenerative principles.

Andelsgaarde's farms are run by steward-farmers who pay a small rent for living quarters and use of the land. Farms are also envisaged to have community spaces for members for common events such as talks, communal dinners and others. Members also form volunteer groups and actively support the farms in a variety of ways (such as: organisation of events, building support, emergency help).

WHAT CAN WE LEARN?

Andelsgaarde shows that the cooperative model holds great promise as a pathway to agroecological transformation of food systems, which is so reliant on enabling access to land for young or first entrant farmers with no or very little capital on their own, yet the passion and willingness to invest time and labour in innovative, regenerative practices.

KEY FEATURES

- **Type of organisation:** association
- **Main goal:** to enable more regenerative farming and free space for nature
- **Farming sector:** regenerative agriculture and horticulture
- **Scale of the organisation:** national; 4 farms, more than 2000 members
- **Founded in:** 2018

Picture 9: Working the land together. Source: Kompas omm.

Picture 9: Growing herbs regeneratively. Source: Andelsgaarde.

FORENING FOR HOLISTISK PLANLAGT AFGRÆSNING (HOPLA)

ASSOCIATION FOR PLANNED HOLISTIC GRAZING

HOPLA consists of farmers, agricultural consultants and other interested parties and aims to promote holistically planned grazing and to educate its members and others about this pasture management system and its environmental benefits, such as increasing soil carbon content, grass lushness and increasing soil health and microbiology. In this way, HOPLA supports agricultural, development and research activities that promote holistically planned grazing. The association also works to obtain, disseminate and exchange knowledge among Danish farmers and between farmers and others in Denmark and abroad whose interests that coincide with those of the association.

HOPLA facilitates experience groups for farmers, organises courses and collaborates with the Savory Institute, the international organisation for holistic management – there is an overlap between members of the Danish hub of the Savoury global network and the HOPLA steering group.

The promotion of soil carbon sequestration and knowledge about it is key to HOPLA's mission, and they are currently realizing an Environmental Outcome Verification study under the auspices of the Innovations centre for Økologisk Landbrug, to evaluate the methodology's utility in verifying carbon sequestration and improvements in fertility under Holistic Planned Grazing.

WHAT CAN WE LEARN?

The importance of farmer networks and farmer-to-farmer knowledge exchange opportunities cannot be underestimated in the endeavour to transform food systems through agroecology. Associations such as HOPLA play crucial roles in building understanding, experience and knowledge on what are still marginal farming practices.

KEY FEATURES

- **Type of organisation:** association
- **Main goal:** promote holistically planned grazing in Denmark
- **Farming sectors:** grass-based pasture livestock production
- **Scale of the organisation:** national
- **Founded in:** 2018

Picture 11: Impact monitoring and evaluation of holistic planned grazing. Source: Hopla.

Picture 12: Tall grass grazing. Source: Hopla.

https://www.foodprintnordic.org

INITIATIVE N°6 – FOODPRINT NORDIC

FOODPRINT NORDIC

Foodprint Nordic partners with restaurants which commit to add 1% to their customers' bills to be donated to Foodprint Nordic's Restoration Fund, which funds regenerative farming projects. In exchange, restaurant members receive communication materials to inform their guests of the initiative and the farmers which they thereby support. In this way, Foodprint Nordic extends the model developed by the US organisation Zero Foodprint and is part of a growing network of "zero foodprint" organisations, including in Germany and in Asia.

The association teams up with innovative farmers across the Nordic countries who are working to transform agriculture with regenerative practices. To this date, seven farming projects have been funded through the Restoration Fund which is replenished through restaurant members contributions as well as philanthropic support and aligned investments.

Foodprint Nordic projects all monitor impact and progress through the measurement of soil microbiology and carbon levels over 3 years. Additionally, the organisation advocates for measuring nutrient density of produce in support of regenerative food systems.

Foodprint Nordic is also launching the project 'Top 50 farmers', an acceleration platform to scale regenerative agriculture and healthy soil in the EU.

WHAT CAN WE LEARN?

The experience of Foodprint Nordic shows that innovative funding models for an agroecological transformation of food systems are already underway, can connect diverse actors, and promise to be able to scale out regenerative practices. Moreover, monitoring and demonstrating impact of transformative initiatives through the evaluation of soil health, biodiversity and other benefits does not have to be complicated to implement and can push the agroecological agenda forward.

KEY FEATURES

- **Main goal:** to change the way that food is grown in the Nordic countries to secure soil health and regenerative food in the future
- **Type of organisation:** association
- **Farming sectors:** regenerative agriculture and horticulture
- **Scale of the organisation:** national/regional (Denmark and other Nordic countries); 11 member restaurants, 7 farming projects
- **Founded in:** 2021

Picture 13: Growing vegetables regeneratively. Source: Foodprint Nordic.

Picture 14: A plate full of vegetables grown regeneratively and supported by Foodprint Nordic. Source: Foodprint Nordic.

Picture 15: Out in the field together. Source: Foodprint Nordic.

INITIATIVE N°7 – SVANHOLM STORKOLLEKTIV

https://svanholm.dk

SVANHOLM STORKOLLEKTIV
SVANHOLM COLLECTIVE

Svanholm Storkollektiv is a collective housing and working cooperative that has played a pioneering role in the organic and eco-village movements. They actively contributed to the formation of Økologisk Landsforening, Denmark's largest organic farmers' association, in 1981, which then played a central role in developing the state-owned 'Ø-label' certification (see also section 3.4 on context above).

Within the community, most of the 80 adult members hold external jobs, while a few are employed to manage day-to-day operations. The collective is diverse, encompassing individuals of various ages, genders, and educational backgrounds, devoid of a specific ideology or religion. Decision-making relies on open discussions and consensus, fostering a strong sense of togetherness and community building. The General Assembly ('Fællesmødet') holds primary authority and defines the vision and future direction, while various working groups make minor decisions daily, with respect to their areas of responsibility.

Spanning 414 ha, the community engages in diverse agricultural activities, including growing grains for their dairy herd of 120 jersey cows, cultivating a wide selection of vegetables, and producing fruits. Noteworthy for both its community and produce, Svanholm feeds around 120 members daily and supplies local markets, regional food buying groups, and upscale restaurants across the country. The collective also provides space for music, workshops, parties, festivals, and informal gatherings at their 'Friday bar'. Svanholm welcomes national and international volunteers, thereby contributing to work experiences for (young) adults in the areas of agriculture, building and food preparation.

WHAT CAN WE LEARN?

Svanholm Storkollektiv serves as an exemplary model for the future of food systems transformation. Having played a crucial role in shaping the organic food and production concept, they continue to experiment and explore innovative ways to advance sustainability, diversity, and community engagement. For instance, they introduced holistic planned grazing in 2016, calf-at-foot methods in 2018, and consistently seek to integrate their customers into resource optimization and biodiversity initiatives. Svanholm constitutes an enduring, popular laboratory of multiple dimensions, inspiring the pursuit of a more sustainable and community-driven future.

KEY FEATURES

- **Agroecological practices concerned:** collective, organic, mixed farming
- **Leading organisation:** Svanholm Storkollektiv
- **Farming sectors:** arable, horticulture, dairy
- **Scale of the organisation:** local/national; 414 ha farm, with 80 adult members and 50 children
- **Founded in:** 1978

Picture 16: Polytunnel polyculture. Source: Svanholm.

Picture 17: Svanholm community living. Source: Svanholm.

Picture 18: Svanholm dairy herd. Source: Kristine Dalbach.

5. CONCLUSION AND FUTURE PERSPECTIVE

Denmark's agricultural landscape is characterised by a large share of organic farming, driven by extensive government support and pioneering initiatives. However, this success has favoured institutionalization and larger farms, limiting opportunities for smaller-scale agroecological ventures.

Agroecology is gradually gaining recognition in Denmark but is still mostly understood as organic agriculture and the science of agroecosystems. While there is no distinct agroecological movement, related movements like regenerative agriculture and permaculture share similar goals under different names.

Associations play a pivotal role in shaping the agroecological landscape in Denmark. Organizations like Organic Denmark, at the more institutionalised end, and the Regenerative Agriculture Association, at the more grassroots end, unite diverse actors and advance distinct yet agroecology-relevant initiatives in the country.

In summary, Denmark's journey underscores the achievements of organic farming and the complexities of balancing institutionalization with agroecological ideals. The future of sustainable agriculture in Denmark holds promise, but there remains a need for better connections, especially among grassroots initiatives.

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MAPPING AGROECOLOGY IN FRANCE

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FRANCE

EXECUTIVE SUMMARY

This report analyses the current state of agroecology in France (metropolitan area) and is part of the H2020 project Agroecology for Europe[1] (AE4EU). Information and data provided here are the results from interviews conducted with 14 experts (key informants) and 23 initiative representatives, and desktop research carried out from March to June 2022. In this study, information on the development of agroecology and existing initiatives were collected classified into five activity categories: Education and Training, Living Lab, Movements, Practice, and Science.

France's situation is unique compared to other European countries, being the only one to have more strongly institutionalised agroecology in its public policy. This has facilitated the development of projects referring to agroecology by diverse sectors by creating funds and supportive tools. All categories of agroecology analysed in this study are represented with different initiatives, examples and cases. However, scientific institutions and research appear to be the most developed with a broad variety of topics while education is more recently starting. New higher degree academic programmes are starting to emerge, with a few exceptions of long existing programmes.

Social movements can be considered as the second most represented category in the mapping. Humanitarian approaches are used in France and internationally by associations and NGOs defending the concept of peasant agroecology. Documented examples and initiatives with agroecological practices seem to develop slower in some parts of the country, and are even more difficult to evaluate. According to the interview data, some local stakeholders manifest an enlargement of implementation of sustainable practices in the field, while national experts do not notice a clear improvement. Even though some French regions possess a larger concentration of agroecological initiatives than others, initiatives were found from all over the French metropolitan territory. Local policies play an important role in engaging stakeholders in the local and regional territories. As a result, living labs seem to start hatching in some regions with the support of regional administrations.

Although France has the capacity to be a pioneer in the European agroecological sphere with leading policies, innovative stakeholders and various examples of agroecology development, key informants stated that barriers remain to advance in the transition such as conventional agriculture lobbying and the economic risk of transition for farmers. A better structure of support and guidance would be needed to facilitate the engagement of farmers.

[1] www.ae4eu.eu

FRANCE

EXECUTIVE SUMMARY (IN FRENCH)

Ce rapport analyse l'état actuel de l'agroécologie en France métropolitaine à travers le projet H2020 « Agroecology for Europe »[2] (AE4EU). Les informations et les données fournies ici sont les résultats d'entretiens menés avec 14 experts (appelés « key informants »), 23 représentants d'initiatives et des recherches bibliographiques qui ont eu lieu entre mars et juin 2022. Dans cette étude, les informations sur le développement de l'agroécologie et les initiatives existantes ont été collectées selon cinq catégories : Éducation et formation, Living Lab, Mouvements, Pratique et Science.

La situation de la France est unique par rapport aux autres pays européens, étant le seul à avoir fortement institutionnalisé l'agroécologie dans ses politiques publiques. Cette action a permis de faciliter le développement de projets se référant à l'agroécologie dans divers secteurs d'activité en de créer des fonds et des outils de soutien à la transition agroécologique. Toutes les dimensions de l'agroécologie ciblés dans cette étude semblent être riches en initiatives. Cependant, le secteur de la recherche semble le plus développés sur le sujet alors que celui des formations commence seulement à émerger avec des programmes académiques dans l'éducation supérieure.

Les mouvements sociaux peuvent être considérés comme le second pilier le plus développé de cette étude. Les approches humanitaires sont utilisées en France et à l'international par des associations défendant le concept d'agroécologie paysanne. Les pratiques agroécologiques sont difficilement mesurables sur le territoire. Lors des entretiens, les acteurs locaux ont souligné une amélioration des pratiques sur le terrain alors que les experts nationaux ne constatent pas de nette amélioration. La cartographie des initiatives a démontré que l'évolution de l'agroécologie diffère selon les régions considérées. Les politiques locales jouent un rôle important dans l'engagement des parties prenantes de leurs territoires. Ainsi, les Living labs semblent avoir commencé à éclore dans les régions du sud avec le soutien des administrations régionales.

Bien que la France se soit présentée comme un bon exemple de développement de l'agroécologie, les « key informants » ont déclaré que des obstacles subsistaient pour avancer dans la transition, tels que le lobbying porté par des agriculteurs « conventionnels » et le risque économique d'une transition pour les agriculteurs. Un soutien, des orientations et un cadre plus structurés et ciblés semble aujourd'hui nécessaire pour faciliter l'engagement des agriculteurs. La France a la capacité d'être un pionnier dans la sphère agroécologique européenne avec des politiques de pointe et des acteurs innovants.

[2] www.ae4eu.eu

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in France are summarised in Table 1. For more details on the research methodology of all country reports, see the methodology section of the edited volume.

Table 1: List of key informants in France.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	Research institution	Agriculture, water quality, agroecology	
2	Private company	Director of the company and vegetable grower	
3	Technical institute	Biodiversity management	
4	Association	Expertise in gardening, farms, and territories	
5	Private company	Agro-industrial relationship, agroecological practices	
6	Ministry of Agriculture	Agroecology, environmental values, GIEE	
7	Association	Agroecological transition	
8	Association	Farmers land ownership, public awareness	
9	Research institution	Crop-livestock systems, innovation	
10	Private company	Agroforestry, sustainable development	
11	Research institution	Agriculture, environment, methanisation	
12	Public organisation	Public relations	
13	Chamber of agriculture	Agronomy, environment, biodiversity	
14	University	Agroecological practices, environment, ecosystem services	

2. CONTEXT

Agriculture is carried out on more than 50% of land in France (Garnier et al., 2019). France is a historically food and commodities producing country which accounts today for 25% of European cattle production. Around 40% of arable land on French territory is used for growing cereal crops. Agricultural practices have always been shaping the cultural heritage and landscape of French regions (Beudou et al., 2017). For example, the Aubrac region is known for its cattle breed of the same name. Over the decades, crop and livestock production have not only provided the population with food but also developed as a large economic asset and cultural heritage (Beudou et al., 2017). France experienced significant changes in agricultural production during the green revolution in the 1970s. Prior, France relied on traditional, small-scale systems based on diversification. Cereal production increased per ha with a much larger inequality between regions (Garnier et al., 2019). The opposite trend can be observed for permanent grassland, which used to cover 60-80% of the agricultural area and is now closer to 20-40% with an increase of livestock density in specialised regions. Yield increase not only came from increase in land area but from in the addition of inorganic inputs. This is especially the case for nitrogen, whose application almost tripled in crop fields since 1970 for certain areas. The specialisation of production and the increase of chemical use engendered also negative effects on the environment.

The context of agroecology is unique in France. It was the first and is still the only European country to have developed a public policy framework around agroecology and even established a law for agroecology in 2014 (Wezel and David, 2020). France uses agroecology as the official strategy for transitioning to more sustainable agricultural systems. This initiative allowed many governmental actions and funding schemes to emerge and support programmes to transform agriculture (Lampkin et al. 2021). The "Collectifs agroécologiques[3]", that encourage groups of farmers to engage in sustainable agriculture, are the main examples of governmental actions. Those initiatives have also relied on a network of farmer's organisations that show to be well structured in France. Among them, chambers of agriculture are present within each region and district. At the regional level, public structures such as the Regional direction regarding food, agriculture and forest (DRAAF) allocate funds to farming organisations linked to agroecology. At the local level, farmers can be part of cooperatives in charge of sharing knowledge and centralising commerce.

In France, the number of farms converted to organic agriculture represent about 13% of all farms. This is equivalent to 2.8 million hectares of land[4]. Recently, other labels have been developed by the French government such as the "High Environmental Value" (HVE) label by the French government[5]. This label claims to encourage the use of agroecological principles and foster more sustainable practices. France possesses one of the most organised CSA systems in Europe (Wezel et al., 2018a). Through a CSA network (in French called AMAP)[6] deployed in every region, direct consumer-producer links are established through short supply chains supporting local producers. Other initiatives of CSA systems in France exist such as "La ruche qui dit oui" (Beehive that says yes).

[3] www.collectifsagroecologiques.fr [4] https://agriculture.gouv.fr/quels-sont-les-chiffres-du-bio-en-2021
[5] https://agriculture.gouv.fr/la-haute-valeur-environnementale-une-mention-valorisante-pour-les-agriculteurs-et-leurs-pratiques [6] http://www.reseau-amap.org/amap.php

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

Education degrees in agroecology slowly emerge in France. Universities are proposing master's programmes or specialisations to equip the new generation with necessary skills in the agroecological transition. ISARA was a pioneer in the domain about 20 years ago by opening an agroecology specialisation in its master's degrees collaborating with foreign universities and started an MSc in Agroecology in 2007 in collaboration with partners worldwide and semesters abroad (FRA-KI-14; Table 2). AgroParisTech offers a specialisation in the second year of their Agronomy, Environment, Territory, Landscape and Forest (AETPF) master's degree named "De l'agronomie à l'agroécologie" (from agronomy to agroecology) (FRA-KI-7). In Dijon, the AgroSup institute opened a full master's degree entirely on agroecology two years ago with all semesters conducted in France (FRA-KI-3; see Table 2). All curricula propose a systemic approach to agroecosystems combined with a deepened understanding of natural systems and ecology.

The academic scene is not the only one developing teaching materials and trainings in agroecology. "Terre&Humanisme" hosts every year thousands of trainings on permaculture gardening and agroecological principles in their gardens (FRA-KI-9). Different trainings are offered for professionals and technicians but also amateurs who want to learn about permaculture and the concept of agroecology. Other structures such as "Ver de Terre Production" are gaining traction in the agriculture world by conducting conferences and training on soil regeneration practices (FRA-KI-2). They target professionals but also the public by using different communication media. On the academic side, the concept of agroecology is rarely present in college education for farmers (FRA-KI-7). The "Plateforme Agroécologique", an academic structure, is recently introducing a new approach to professional teaching including agroecological principles and participative education with farmers (FRA-KI-4). The program was initiated by the "Cité Verte" to introduce agroecological notions into agricultural high school curricula.

Table 2: Programmes and courses in French universities and engineering schools.

UNIVERSITY	COURSE OR PROGRAMME NAME	WEBSITE
Institute Agro Dijon	Master en agroecologie (Master in agroecology)	https://institut-agro-dijon.fr/formations/masters/agroecologie
Université Paris-Saclay - AgroParisTech	Master "de l'agronomie à l'agroecologie" (from agronomy to agroecology)	https://www.universite-paris-saclay.fr/formation/master/agrosciences-environnement-territoires-paysage-foret/m2-de-lagronomie-lagroecologie
ISARA, Lyon	Master of Sciences in Agroecology	https://www.agroecos.fr https://www.agroecology.fr

[7] https://plateforme-agroecologie.fr

3.2. LIVING LAB

As a relatively new approach to innovation development, living labs are still a niche and can be found under different forms in France (FRA-KI-1). If the development of living labs, a link to agroecology seems to be still scarce. Different initiatives exist that could be seen as living labs, although they do not identify themselves as such. Created in the 1970s, the territory of the Biovallée is now a successful model of organic transition (FRA-KI-12). Thanks to a cooperation between public organisations, farmers, and agro-industries to develop organic agriculture on the territory, 35% of agricultural land is now certified organic. Institutions and public authorities have developed similar approaches recently in France, some promoting the living lag approach. "Terre de Sources" (Land of water[8]) in the Bretagne region and the Territorial Innovation Laboratory[9] (LIT) in the AURA region developed territorial strategies with different objectives. "Terres de Sources" aims at implementing agroecological practices to preserve water resources degraded and depleted in the region. The LIT has the objective to develop innovations for arable crop producers. Both associations do so by collaborating with different actors of the territory, integrating research projects, calling for entrepreneurs' ideas, and including the population in the discussion.

Other examples refer directly to the living lab concept. For instance, "OccitANum[10]", a research project initiated by INRAe, covers the entire Occitanie region and manages multiple living labs of different thematic and production types. VitiRev also gathers living labs in the Nouvelle-Aquitaine region to help wine growers to engage in an agroecological transition. These two examples illustrate the existing willingness of different stakeholders, including public authorities, to foster the agroecological transition through living labs.

Generally, the term living lab is rarely or never used in France, but initiatives are now slowly emerging involving cooperation and interaction of different stakeholders and developing co-designed innovation environments for more sustainable agriculture.

3.3. MOVEMENT

Agroecology as a movement in France started to become more known with the initiative of Pierre Rabhi who created the NGO "Terre & Humanisme" in 1984 and "Les Colibris" in 2007 (Bellon and Ollivier, 2018). These associations focus on traditional, manual, small-scale practices. Both initiatives created an interest around the concept of agroecology (FRA-KI-4). In their vision of agroecology, they promote a certain philosophy and initiated permaculture, local and holistic production. The movement gave birth to associations such as "Terre de liens"[11], "Réseaux des Agroécologistes Sans Frontière"[12], RAESF, and SOL[13] (Bellon and Ollivier, 2018). These initiatives promote peasant agroecology (FRA-KI-8) and encourage small scale and diversified farming systems. They advocate for a minimum, if not zero chemical inputs. They also stand out by their numerous humanitarian missions helping farmers and sometimes entire communities to reach food sovereignty through agroecology.

Community Supported Agriculture (CSA) is another type of movement aligning with the principles of agroecology that are well developed on French territory (FRA-KI-13). The AMAP network, the French equivalent term for CSA present in every department in France and coordinated at the national scale, is one of the most organised CSA systems in Europe (Wezel et al., 2018a). It aims to recreate a link between producers and the local population by organising events and promoting local products through short supply chains.

[8] https://terresdesources.fr [9] https://www.lit-gca.com [10] https://occitanum.fr [11] https://terredeliens.org [12] https://agroecologistesf.org [13] https://www.sol-asso.fr

The unique institutionalisation of agroecology in France gave rise to initiatives at the governmental level (FRA-KI-6). The 4per1000 programme was initiated during COP21 in Paris by the French government aims at developing systems and implement agricultural practices that sequester more carbon in soils (FRA-KI-1). With a different approach, they collaborate with entire countries and international companies to influence regulations and indirectly improve agricultural systems.

3.4. PRACTICE

The institutionalisation of agroecology contributed to the emergence of governmental programmes to encourage farmer's innovation for sustainable practices implementation. The EcoPhyto programme developed in 2008 helps farmers reduce their use of crop protection products by alternative inputs or practices initiative encouraged the establishment of groups of farmers targeting one specific environmental, social, and economic issue of agriculture development. The projects in the programme, funded by the ministry of agriculture, are diverse depending on the type of production and the region. Both EcoPhyto and GIEE programmes now gather groups and projects under the "Collectifs agroécologique"[14] (agroecological groups) and are monitored at the regional and national levels. Another governmental institution, "Office Français pour le Biodiversité" (French Office of Biodiversity, OFB), is involved in the agroecological transition. It is focused on biodiversity and nature conservation and directly interacts with farmers to adapt their practices for biodiversity preservation purposes. For this, it promotes the use of agroecological practices such as soil conservation, agroecological infrastructures, and crop diversification. This institution is also responsible for the EcoPhyto funding management.

According to key informants, most implemented agroecological practices in France are cover crops, reduced tillage, crop rotation, and crop diversification (FRA-KI-2,7,9 &14). Initiatives implementing practices referred to working towards broad objectives to achieve holistic system transformation. Therefore, agroecological organisations in France mainly aim at soil conservation, transforming systems, reducing pesticide use, and increasing biodiversity (FRA-KI-2, 6 & 9). The national government encouraged the development of agroecological practices through campaigns and redirected strategies of regional farming organisations such as the DRAAF, CUMAs[15] (cooperative to share materials among farmers), and CIVAMs[16] (network to favour exchange among farmers and other stakeholders of the food system; Wezel and David, 2020). The discontinuity in politics between previous and current governments has slowed down the process put in place with these initiatives (FRA-KI-6, 7 & 13). The word "agroecology" is now used in almost every project concerning agriculture, as it has become the most likely avenue to get funding. While this may push public initiatives to integrate a sustainable approach, many projects define themselves as "agroecological" without properly responding to the frame of the concept (Bellon and Ollivier, 2018).

3.5. SCIENCE

In 2010, INRAe (National Institute of Research for Agriculture and Environment) and other research institutions started designing a research agenda to promote the development of agroecology in research (Lampkin et al. 2021). INRAe leads research programmes in many regions of France and collaborate on agroecology with universities such as AgroSup Dijon and ENSAT Toulouse (Wezel et al. 2018a). The term agroecology is at the centre of research projects on sustainability following the French government initiatives

[14] https://collectifs-agroecologie.fr [15] http://www.cuma.fr [16] https://www.civam.org

(see above; FRA-KI-1). Other institutes such as the International Centre of Research for Agriculture and Development (CIRAD) also develop agroecology projects but normally outside of France (Wezel and David 2020). The Institute of Research and Development (IRD) and the National Centre of Scientific Research (CNRS) are other two institutes active in agroecology. Table 3 summarises the main research teams existing in France on agroecology.

Research programmes in France are mostly organised in Mixed Research Units (so-called UMR). They are units of research organised around multiple themes and are composed of researchers from different research institutions or academic structures (FRA-KI-9). As shown in Table 3, the "UMR AGIR" is focused on transforming current systems at the farm and community level. It is mostly composed of researchers from INRAe and the Toulouse Agriculture School (ENSAT). "UMR Innovation" and "UMR Agroécologie" aim at developing tools and methodologies on the field. "UMR Agroécologie" works on subjects such as microorganism ecology and genetic varieties. It is composed of researchers from INRAe and University of Bourgogne (Table 3).

Agropolis International, an association for agricultural research, is mainly assigned to create linkages between researchers but also with communities and stakeholders. This initiative organises groups of discussions and produces reports on the environment, biodiversity, and agriculture, publicly available for everybody. One of their latest report addresses agroecology (FRA-KI-19). To strengthen the link between research and farmers as well as other stakeholders, participative research is now more and more employed by all scientific structures interviewed for this study.

Table 3: List of research units and their related research topics – adapted from (Wezel et al., 2018a).

RESEARCH UNIT	RESEARCH INSTITUTION	RESEARCH FOCUS
UMR Agroécologie (Agroecology Mixed Research Unit) https://www6.dijon.inrae.fr/umragroecologie_eng/	INRAE Agro Dijon Institute Université de Bourgogne CNRS	• Microorganisms and plant interaction • Innovative cropping system and genetic and environmental determinants of plant adaptation • Biological and ecological functions of soil • Sustainable management of weeds
UMR AGIR: AGroécologie – innovations – TeRritoires (Agroecology, innovation and Territory mixed research unit) https://www6.toulouse.inrae.fr/agir	INRAE ENSAT PURPAN	• Agroecology • Innovation • Territory
UMR SAVE: santé et agroécologie du vignoble (Health and agroecology of vineyards mixed research init). https://www6.bordeaux-aquitaine.inrae.fr/sante-agroecologie-vignoble/	INRAE Bordeaux Sciences Agro (Ecole Nationale Supérieure des Sciences Agronomiques de Bordeaux-Aquitaine)	• Biological regulation • Plant immunity • Health of vineyard and environment • Performance of agroecological vineyards
Agroecology and Sustainable Intensification for Annual Crops – UPR (Internal Research Unit) AIDA. https://www.cirad.fr/en/about-us/research-units/agroecology-and-sustainable-intensification-of-annual-crops	CIRAD	• Ecological processes and services • Integrated, multi-scale assessment of cropping systems • Participatory agroecological transformation of systems
Agroecology and environment research unit – ISARA. https://isara.fr/en/research/research-units/agroecology-environment/	ISARA	• Agroecological practices and cropping system diversification • Agroecosystems management (biodiversity, pests, water) • Concepts, interpretation and development of agroecology
USC Legumes, Crop Ecophysiology and Agroecology (LEVA). https://www.groupe-esa.com/en/recherche/la-recherche-a-lesa__trashed/nos-unites-de-recherche/unite-de-recherche-legumineuses-ecophysiologie-vegetale-agroecologie-leva/	INRAE ESA	• Intercropping and plant-soil system interaction • Ecological function of legumes and ecosystem services, low-input • Design of innovative cropping system with legumes

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 3: An overview of initiatives, cases, and examples described and analysed in France.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**MSc Agroécologie** *MSc Agroecology*	National	University	Education	✓				
2	**MSc Agroecology**	Inter-national	University	Education	✓			✓	
3	**Architecte du Vivant** *Architect of The Living*	Local, National	Training centre	Reconnect farmers with their plants	✓			✓	
4	**Terre & Humanisme** *Earth and Humanism*	Local, National	Association	Increase social equity with agroecological principles	✓		✓	✓	
5	**M2 « De l'agronomie à l'éagroécologie » Université PARIS SACLAY et AGROPARISTECH"** *Second Year Master's Degree from Agronomy to Agroecology at Agroparistech School*	National	University	Education	✓				
6	**Biovallée** *BIOVALLÉE*	Local	Territory	Territory sustainable development		✓	✓	✓	
7	**OccitANum**	Local, Regional	Living lab	Technological innovation for agroecological transition		✓			✓
8	**VitiRev**	Local, Regional	Public structure	Assist agroecological transition of viticulture in the region		✓	✓	✓	
9	**Terres de Sources** *Lands of Waters*	Local	Living lab	Preserve water resources on the territory		✓	✓	✓	
10	**Laboratoire D'innovation Territorial en Auvergne** *Territorial Innovation Laboratoru in Auvergne*	Local	Living lab	Develop territorial cohesion around arable crops producers		✓		✓	
11	**VivAgrilab**	Local	Living lab	Preserve water resources on the territory		✓		✓	✓

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
12	**4pour1000** *4PER1000 Initiative*	Inter-national	Governmental program	Carbon storage and sustainable management of soil and associated resources					
13	**RÉseau des Agroecologiste sand FrontiÈre** *Agroecologists Without Borders Network*	Inter-national	Association	Humanism					
14	**RÉseau des AMAP Auvergne RhÔne-Alpes** *AMAP Network of the Auvergne RhÔne-Alpes Region*	Regional	Association	Create a farmers-consumers link					
15	**SOL**	National	Association	Promote peasant agroecology					
16	**Pour Une Agriculture du Vivant (PADV)** *For a Life-Based Agriculture*	National	Association	Assists actors of the food system in agroecological transition					
17	**Osez L'agroecologie" (Osaé - SolAgro)** *Dare Agroecology (SolAgro)*	Local, National	Association	Sustainable transition of food, agriculture, and energy					
18	**Groupe D'intérêt Economique Et Environnemental (GIEE)** *Environmental And Economic Interest Groups (GIEE)*	Regional, National	Governmental program	Create networks of farmers to develop agroecology practices					
19	**Office Français Pour Le Biodiversité (OFB)** *French Office Of Biodiversity (OFB)*	National	Governmental structure	Preservation of ecosystem and biodiversity					
20	**Agropolis International**	Inter-national	Research institute	Animating scientific network					
21	**Unité Mix de Recherche AGIR (UMR AGIR)** *Mixed Research Unit AGIR*	Local, National, Inter-national	Research unit	Transforming current system					
22	**Unité Mix De Recherche Innovation (UMR Innovation)** *Innovation Mixed Research Unit (UMR Innovation)*	Local, National, Inter-national	Research unit	Transforming systems					
23	**Unité Mix De Recherche Agroécologie (UMR Agroécologie)** *Agroecology Mixed Research Unit (UMR Agroecology)*	Local, National, Inter-national	Research unit	Developing microbiology and genetics for agroecosystems					

INITIATIVE N°1 – MSC "AGROÉCOLOGIE" DE L'INSTITUT AGRO DIJON

https://institut-agro-dijon.fr/formations/masters/agroecologie

MSC AGROÉCOLOGIE DE L'INSTITUT AGRO DIJON

MASTER OF SCIENCE IN AGROECOLOGY AT THE INSTITUTE AGRO DIJON

The Master Agroécologie was initiated in 2020 by the Agro Dijon institute. This new, 2-years education programme offers classes on different topics such as the functioning of ecosystems and agroecosystems, ecology with various focuses, and the way toward an agroecological transition. The master was originally created from a wish to expand the expertise of the institute. Along with INRAe and the University of Bourgogne Franche-Comté, the Agro Dijon Institute developed this master's programme. The goal of this master is to study agroecosystem with a general and systemic approach. Within the master, agroecology is seen as a discipline crossing with agronomy, ecology, and social sciences and aiming to design new production systems based on the functioning of ecosystems and answering to the social demand for a more sustainable agriculture.

KEY FEATURES

- **Founded in:** 2020
- **Main themes:** functioning of agroecosystems and ecosystems, ecology, and agroecological transition
- **Lead organisation:** Institute Agro Dijon
- **Stakeholders' profiles:** scientists, teachers-researchers, and professional from the agricultural sector.
- **Duration:** 2 years

The programme is divided into four semesters. The first semester focuses on agricultural and natural systems. The second semester is directed toward the comprehension of social systems and enhancing scientific communication. It is followed by a two to four months internship at a firm or research laboratory. The first year includes a case study with the objective to develop methodological skills and familiarise with participative research approach. The third semester analyses the concept of agroecology from the ecological aspect. It helps student understand how practices can be implemented and to what goal. The second year also involves a case study focused on data sampling and analysis. The master ends with a four to six months internship. The classes are exclusively in French except for some English-speaking guest lecturers. Fifty lecturers, 75 % of them researchers and the rest agricultural professionals, give the lectures.

The programme does not teach agroecology through the implementation of practices but rather by understanding animal and plant functioning, how to interact with farmer and how natural systems can be positively used to contribute to farm productivity. It also does not take one specific approach, such as agroforestry, permaculture, regenerative agriculture etc., as a translation of agroecological values in practice.

The master's degree had their first year of graduates after summer 2022. Therefore, they do not have yet a clear vision of the potential career path with this diploma. They expect students to pursue research through a thesis or a career in environmental or agronomical advisory working with farmers or consulting firms. They aim during the programme is to provide students with applied knowledge and skills for every type of production and to not limit their thinking to agricultural practices. The primary objective of the institute is for now to stabilize and wait to see the outcomes of the master before growing and reaching for potential collaborations and exchanges with other universities.

Picture 1: Campus AgroSup Dijon. Source: Campus agro dijon - Bing images.

WHAT CAN WE LEARN?

The newly developed MSc in agroecology of the Agro Dijon Institute offers to increase students' scientific and critical thinking at the system level. The high diversity of classes enables to obtain not only agronomists' skills but also ecologists' and sociologists' skills.

INITIATIVE N°2 – MSC "AGROECOLOGY" - ISARA

https://isara.fr/en/how-to-apply/international-msc/msc-in-agroeology/
https://www.agroecos.fr
https://www.agroecology.fr

MSC AGROECOLOGY AT ISARA

MASTER OF SCIENCE IN AGROECOLOGY COORDINATED BY ISARA

ISARA is a private higher education institution founded in 1968 and based in Lyon that offers higher education programmes in both French and English. The Agroecology master's programme started in 2007 and is aimed at international students with a strong interest in sustainable agriculture and agroecosystem management and implications for food systems. The programme is organised together with other partners: Wageningen University and Research (WUR) in The Netherlands and the Norwegian University of Life Sciences (NMBU) in Norway.

The programme is a two-year Double Degree Agroecology Programme including a practical thesis project. The programme consists of four semesters:
- The first and second semesters are at one of the partner universities
- The third semester is at ISARA
- The fourth semester (practical master thesis) is under the responsibility of one of the universities in the consortium and co-supervised by the other.

The programme highlights the concept of agroecology with a specialisation in knowledge of agroecosystems management, which covers agroecological management in various areas globally. It emphasises understanding the structure and function of complex agroecosystems, applying systems approaches in studying, designing and evaluating (agricultural) systems and food production chains, and developing creative solutions for sustainable farming and marketing of sustainably produced products.

The programme teaches a multidisciplinary approach in which natural sciences are combined with social sciences. Agroecology is embedded with a multilevel approach through case studies, field visits and cooperation with various stakeholders (farmers, food system professionals and consumers). The courses offer diverse perspectives from specific cropping systems to global agroecosystems.

KEY FEATURES

- **Type of education and training:** university education
- **Main topics:** agroecology, agriculture and landscape management, agroecological cropping systems, agroecosystems and agricultural use, management of agroecosystems, policies and nature conservation
- **Training duration:** 2 years
- **Type of legal entity:** non-benefit private university
- **Founded:** 2007
- **Accessible to:** anyone meeting the admission criteria

Picture 2: Students visited an agroecological territory in France. Source: https://www.agroecology.fr.

It also offers comprehensive topics from the management of agroecosystems to policy implications on various agroecological systems. This approach will shorten the distance between practice and theory and bridge the agroecological knowledge transfer.

WHAT CAN WE LEARN?

The programme offers a comprehensive approach on different agricultural levels that provides a holistic understanding of the complexity of agroecology application in agroecosystem management and linking to the food system. Students often describe the knowledge coverage from cropping systems to agroecosystems and food system levels as an enriching approach that strengthens their understanding of agroecological transformation.

MARCEAU BOURDARIAS architecte du vivant

https://marceaubourdarias.fr
https://www.youtube.com/channel/UCbsm-jMR3SWnXLhPRn3o2Jw/featured

INITIATIVE N°3 – ARCHITECTE DU VIVANT

ARCHITECTE DU VIVANT
ARCHITECT OF THE LIVING

The initiative "**Architecte du Vivant**" is a corporation created and lead by Marceau Bourdarias since 2010. The idea behind this training centre is to reconnect farmers with the crops they manage. Architecte du Vivant has a unique structural organisation: it is not a legally recognized organisation but a corporation managed around networking and collaborations. The coordinator wanted to emancipate from a large enterprise structure and spread knowledge through a small-scale entity to facilitate the contact and exchange with farmers. With an arborist background, they decided to give trainings to farmers on how to trim vines. The small training centre started in 2010 to teach trimming and preserving vine plants as well as fruit trees. After a couple of years, it developed an accurate agricultural itinerary that matched its vision of sustainable vineyard management.

The main goal of the initiative is to understand the functioning of the vine plant and fruit trees with and define itineraries based on physiological aspects of organisms. The organisation uses trimming methods as a starting point to understand how farmer's or practitioners work to then apply relevant practices. A holistic approach where the interactions of organisms and the flow of nutrients is placed at the centre of the agroecosystem represents the philosophy of the training centre.

One of the aims of "Architecte du Vivant" is to give farmers independency and a new way to look at their crop. Other practices developed are cover cropping, landscape management, soil fertilization, and agroforestry. This initiative explicitly promotes agroecology through a holistic approach contributing to increased biodiversity and nutrient availability through improved plant management to feed and strengthen the system.

KEY FEATURES

- **Lead organisation:** Architecte du Vivant
- **Founded in:** 2010
- **Agroecological practices:** vine trimming, agroforestry, and cover crops
- **Farming sectors:** viticulture
- **Stakeholders' profiles:** arborist
- **Training duration:** 1-2 days

Picture 3: Agroecological and permaculture garden at the agroecological centre "Le Battement d'Ailes". This garden was co-designed by 'Architecte du Vivant'. Source: Architecte du vivant.

The initiative offers training in person either on a farmer's own parcel or at the centre training site. The training lasts between one and two days. Three different trainings are offered: one on vine trimming, one on fruit tree trimming, and one on plant physiology. These training programmes are exclusive to professionals, for either individual farmers or technician teams that are part of farmer organisations, e.g., CIVAM, FNAB, cooperatives or agricultural chambers. The training usually attracts small producers and

also occasionally prestigious vineyard companies such as Cognac Martel. Since the pandemic, they also offer a training online with a massive success. In addition to training programmes, "Architecte du Vivant" also assists farmers in their practices management and offers advisory support. Therefore, the organisation goes back twice a year to farm members to advise and check on the evolution of the parcels. Now, the training centre counts 600 customers per year. In total, they have trained 3,000 farmers over the past 10 years.

In order to increase dissemination, the organisation decided to provide trainings for students that will spread their practice and develop collaborations. The initiative works with two large organisations, "La belle Vigne", and "Ver de Terre Production", which both help farmers to implement agroecological practices to increase environmental health and system resilience.

WHAT CAN WE LEARN?

Architecte du Vivant is a corporation that places natural mechanisms as the solution to resilient and balanced agroecosystems. They reconnect farmers with plant physiology and holistic approaches through practical training programmes.

INITIATIVE N°4 – TERRE & HUMANISME

Terre & Humanisme
l'agroécologie se cultive

http://terre-humanisme.org

TERRE & HUMANISME
EARTH & HUMANISM

Terre & Humanisme is a French association born from the activity and engagement of Pierre Rabhi. The goal of the initiative is to promote agroecology to foster social equity and nature conservation. Their gardening centre "Mas de Baulieu" is their main place of education. They apply permaculture principles on one hectare where they produce vegetables and fruits. The main objective of the association is to build solidarity with local population through the principles of agroecology. The association has twenty to thirty members, all having different backgrounds from gardeners to educators. Terre & Humanisme is involved in many humanitarians' missions in France and internationally. They especially support projects in West Africa and in the Mediterranean area. The organisation also coordinates and welcomes activities for all kinds of populations in France by hosting them in their garden in the Ardèche region for initiation and trainings and coordinating projects with other organisations in France to make gardening accessible to vulnerable populations.

KEY FEATURES

- **Founded in:** 1994
- **Main topics:** gardening, permaculture.
- **Training duration:** 1-5 days
- **Course's language:** french
- **Accessible to:** gardeners, activists, scientists, general public
- **Number of persons involved:** 20 employees and 10 volunteers.

One of the activities of Terre & Humanisme is the organisation of trainings at the "Mas de Baulieu": ten to fifteen trainings or internships per year between March and October. The sessions last for usually a week, but day trainings also exist. Urban populations who recently moved to rural areas and want to grow their own food in gardens constitute their main public for the trainings. They offer three categories of internships: gardening, cooking, and autonomy. An important training programme is a permaculture internship. In their teaching, educators share the principles of permaculture and agroecology by including a humanitarian approach. They promote a systemic approach as well as circular economy. They encourage crop diversity and value the use of traditional varieties more adapted to local climate conditions. Autonomy is a keyword in their philosophy. Specific trainings for farmers in collaboration with the EcoPhyto programme are also conducted. They also organise free weekly visits of their pedagological "solidarity garden".

The association possesses a research team currently doing experimentation on the concept of Fermented Forest Litter (LiFoFer). The aim of the study is to develop fertilising methods based on the decomposition of forest litter to develop microorganism activity in cultivated soils. Fifteen farmers are presently testing the practice and three hundred farmers are being trained on the concept.

The initiatives have a 1.3 million annual budget mostly directed to West African and Mediterranean projects. This fund is available through private donations, private foundation funds, projects, crowdfunding, and from the French Agency for Development (AFD). To develop further their knowledge, Terre & Humanisme acquired an additional farm to test and improve their practices on a larger scale and connect with territorial actors.

Picture 4: Agroecology centre of Terre & Humanisme in the Loire Atlantique region. Source: Terre & Humanisme.

WHAT CAN WE LEARN?

Terre & Humanisme is an association created by relatives of Pierre Rabhi to teach gardening and promote principles of agroecology to the public. In their garden, they organise internships and workshops about permaculture and autonomy. Beyond their garden, they coordinate several projects to make agroecology accessible to all.

AgroParisTech

université PARIS-SACLAY

http://www2.agroparistech.fr/-Mention-AETPF-Paris-Saclay-Agrosciences-Environnement-Territoires-Paysage-Foret-.html

INITIATIVE N°5 – M2 AETPF - AGROPARISTECH

M2 « DE L'AGRONOMIE À L'AGROÉCOLOGIE » UNIVERSITÉ PARIS SACLAY ET AGROPARISTECH

SECOND YEAR MASTER'S DEGREE FROM AGRONOMY TO AGROECOLOGY AT AGROPARISTECH SCHOOL

The engineer school in life sciences AgroParisTech coordinates a specialization in agroecology in collaboration with the university of Paris-Saclay. This specialization is part of the second year of the master in AgroSciences Environment, Territories, Landscapes and Forest (AETPF). The creation of the master goes back to 2012. It is a two-year programme with a first year centred around classes on agronomy, environmental sciences, and sociology, located at AgroParisTech.

KEY FEATURES

- **Type of legal entity:** engineer school
- **Founded in:** 2012
- **Type of education and training:** 2nd year master's degree
- **Main topic:** agroecological transition
- **Farming sectors:** all
- **Number of persons involved:** 50 lecturers, 20 students
- **Training duration:** 1 year

Upon completion of the first year, students have the choice to choose between five different specializations in the second year, one of them being "de l'agronomie à l'agroécologie" (From agronomy to agroecology). Each year, the master accepts around 15 to 20 students. In the first semester from September to January, the students follow classes on different topics of agroecology. Teachers and researchers from the institution mostly conduct the lectures, but the programme also involves guest speakers from the agricultural world such as technicians, farmers, and other experts. The first month is organised around an introduction on the concept of agroecology where students and teachers build a grid of questions that will be later used in multiple debates organised along the semester. This part aims to develop the reflexion skills of students. The next module is built to strengthen their knowledge on agronomy knowledge as well as on subjects such as climate change, land use, and biodiversity to familiarize themselves with the concept of agroecosystems. The following module is meant to conceptualize a system at the territory level. This period includes case study exercises and exchanges with stakeholders. The last module brings the students to understand levels of sustainability at the field scale. During that time, they learn about agroecological practices such as integrated pest management, crop associations, and soil conservation. For the second semester, students need to find an internship of their choice for a period of six months starting in February to carry out their master's thesis.

Students following this specialization come from the first year of the AETPF master's programme but also from other French and international universities. The master also offers a double degree option with the University of Liège in Belgium with a first year in Belgium and the second at AgroParisTech. As part of a public institution, the programme is fully funded by the French state but is looking for other public funding through various projects.

Upon graduation, most students continue in research and developments programmes, some of them go toward the agricultural sector to work at farmers organisations, while other are employed by environmental conservation or consulting agencies. The master trains future experts with a scientific approach and a holistic perspective on system functioning, making them highly versatile.

WHAT CAN WE LEARN?

The master specialization offers a systemic approach of agroecology, supporting in parallel the development of scientific notions and application in case studies. This higher education degree prepares students to solve problems by adapting their knowledge to particular contexts and environmental conditions.

Picture 5: University Paris-Saclay campus. Source: University Paris-Saclay.

INITIATIVE N°6 – BIOVALLÉE

https://www.valdedrome.com

BIOVALLÉE
ORGANIC VALLEY TERRITORY

The "**Biovallée**" is an association gathering stakeholders in the territory of the 'Val de Drôme' accounting for more than 95 towns and 56,000 inhabitants located in the Drôme department (Southeast of France). The territory developed in the 1970 with the arrival of a wave of newcomers to the region. This new population came with an interest to develop organic and sustainable agriculture methods. Slowly developing and sharing practices with people locally, the geographical location became a cohesive territory exchanging knowledge and developing sustainable agriculture. This resulted, fifty years later, in a territory with the highest percentage of organic producers in France: 35%. An association was created in 2012 to embody this evolution.

KEY FEATURES

- **Founded in:** 1970's
- **Lead organisation:** biovallée association
- **Main actions:** communication between actors, sustainable food systems and agroecological transition
- **Stakeholders' profiles:** people of the territory, farmers, enterprises, public institutions, civil society
- **Size of the territory:** 2,200 km^2

The association has 275 members from private companies to local administrations and fosters the agroecological transition through multiple actions. It is not defined as a living lab but works at the territorial level with farmers, scientists, consumers, and private companies. Having representatives in the regional council, they can fund different programmes. They work with local organisations for agricultural development and other networks of farmers such as CIVAMs and the Peasant confederation. With the help of those organisations, they directly support the transition of farmers in the field by helping them technically and administratively. The territory supports tools of valorisations of product such as labels to ensure that their farmers obtain fair revenues. By looking at the territory as a large ecosystem, the Biovallée influences the sustainable transition at every level of the food system. Besides production, they are also in partnership with some agroindustry and retailers of the region.The association promotes consumption of local food and raise awareness on environmental matters through campaigns.

The association promotes consumption of local food and raise awareness on environmental matters through campaigns. The initiative mainly sources its budget through local taxes from the municipalities, is eligible for European and regional financing, and partners with the regional French water agency (Agence de l'eau).

A territory should always stay dynamic, that is why the Biovallée has numerous projects that, they work on: the creation of a compost station, a slaughter-house, solar energy infrastructures, or the organisation of biodiversity workshops, among others. This dynamism attracts more farmers every year, and this new generation is seen crucial to the dynamism of the territory. The territory now attracts new farmers, embedded in a territory that produces healthy products for local consumption.

WHAT CAN WE LEARN?

Biovallée is a territory that was a pioneer in sustainable territorial cohesion. The organisation created a local community who shares the same values of agriculture and was able to turn different sectors of activity around the question of sustainable farming.

Picture 6: New pasture lands in the territory of the Biovallée. Source: Val de Drôme en Biovallée website.

POSITIVE IMPACTS

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The territory is able to promote the products of their farmers and sell them at the local scale. They deliver collective catering with local produce.

COOPERATION: The region of the Biovallée enables farmers to connect and facilitates knowledge exchanges among them.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: By promoting the consumption of local production, the territory conserves the food and cultural heritage of the region.

LIMITATIONS & CHALLENGES

GOVERNANCE: It is sometimes hard for the Biovallée to engage in a trustful relationship with some stakeholders.

INITIATIVE N°7 – OCCITANUM

OccitaNum
Le Living Lab Agroécologie Numérique en Occitanie

https://occitanum.fr

OCCITANUM

The living lab Occitanum is coordinated by INRAe and the UMR ITA, established in 2020. It is officially presented as a living lab. This project has been deployed over the Occitanie region to facilitate the development of agroecology through numerical and digital innovations. The living lab is organised in a set of ten "real-life" sites by the agricultural sector in seven Open Labs (OLs) and the CORE that is a resource centre set up to support the OL and the sites. A site animator manages communities (farmers, agritech companies, consumers, and local authorities) in each site and encourages the emergence of innovative projects through a participatory approach (including design thinking). The living lab aims to respond to farmers' needs with the use of technological tools in recognising agroecological principles.

KEY FEATURES

- **Founded in:** 2020
- **Lead organisation:** INRAe, UMR ITA
- **Type of organisation**: living lab
- **Practices concerned:** input reduction, decision-making tools, carbon storage, and livestock automation tools
- **Number of persons involved:** 5 coordinators & 20 projects
- **Type of actors:** scientists, farmers & civil society

The living lab lead by OccitANum is oriented towards farmers' needs. Farmers are consulted in advance and asked about their specific needs. To be approved, project solutions must be focused on agroecological principles and contain a technological approach. They approach the concept of agroecology as creating more relationship between consumers and producers, increasing farmers' standard of living, and reducing chemical inputs. If researchers and consultants find that this problem can be resolved through a technological innovation, then collaboration can start. However, the farmer must remain in control of the project decision. Field experiments are conducted directly on the farmers' fields.

The living lab obtained most funding through the national programmes "Banques des territoires" and "Territoire d'Innovation", both providing funding to innovative projects at the territorial scale. The COVID pandemic gave a hard start to the initiative, which was not able to organise communication and networking events to strengthen the farmers' network.

Beyond research, the sites included in the living lab also focus on production that correspond to agricultural and marketing systems such as apiculture, arboriculture, livestock, cereal, vegetables, viticulture, and short supply chains. The next step for this recent living lab is to create an association in order to keep the project alive in the long term.

WHAT CAN WE LEARN?

OccitANum gives the opportunity to develop the use of technology in the farming sector to simplify daily tasks and increase efficiency in farming. The living lab concept is used to equip farmers with these technology innovations that usually represent expensive investment.

POSITIVE IMPACTS

COOPERATION: OccitANum aims at organising participative research that can solve issues faced by farmers. It increases the connection of the territory by promoting cooperation and innovation.

ENERGY AND WASTE MANAGEMENT: The living lab develops innovative tools to manage waste and save energy. Remote sensing can optimise the application of inputs on farmers' fields.

SUSTAINABLE AND FAIR ECONOMICS: The initiative uses technology as a tool to stabilize farmers' remuneration and increas their own health by reducing working hours.

Picture 7: Experimental field of Gaillacois from the Viticulture living lab of OccitANum. Source: OccitANum.

INITIATIVE N°8 – VITIREV

https://entreprises.nouvelle-aquitaine.fr/actualites/vitirev-innovons-pour-des-territoires-viticoles-respectueux-de-lenvironnement

VITIREV

The province of Nouvelle Aquitaine decided to gather different stakeholders to work together towards a more sustainable wine production system. The initiative emerged from a need to link the actors of the territory and develop innovation in farming practices at the local scale. The region oriented its strategy towards the living lab concept. After 2 years of preparation, VitiRev was created in 2019. This project has the role of coordinating territorial actions and different supply chains with the objective of reducing phytosanitary products and developing agroecological practices in vineyards. It acts in nine areas of action and one of them is living labs. VitiRev helped the emergence of fourteen living labs in vineyard production areas. Each of them is independent and possesses its own structure and governance.

The originality of the VitiRev project is its dynamism on a large area with only a few actors working on the project fulltime. Only two people are in charge of this project and are employed by the region. However, the initiative is collaborating with and funding sixty different entities from farmers to private companies, each of them having one or few members interacting with the project.

KEY FEATURES

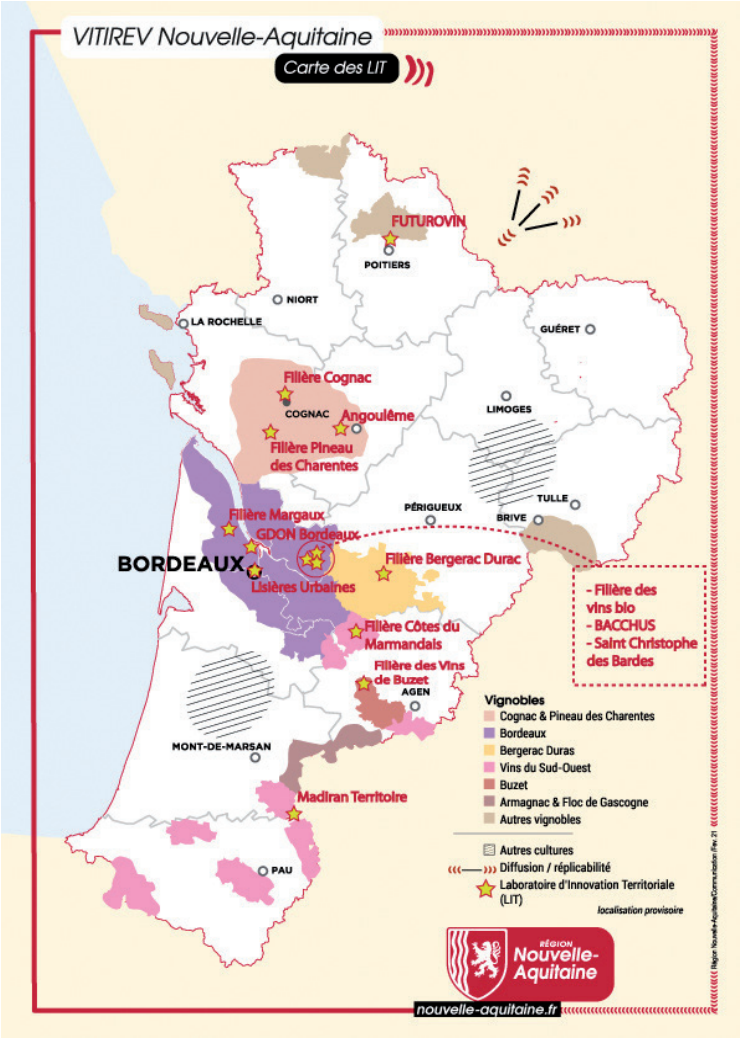
- **Founded in:** 2019
- **Type of organisation supporting the living lab:** Nouvelle-Aquitaine region
- **Main topic:** phytosanitary reduction, animal welfare, precision agriculture & integrated pest management
- **Farming sector:** viticulture, livestock, crops & apiculture
- **Type of actors involved:** scientists, farmers, agroindustry, civil society
- **Scale of the living lab:** regional

There are no specific criteria for farmer to participate in a living lab; they only need to be ready for change and innovative methods. However, the living labs do not consist of experimental plots for companies to assess their product over a few years and leave. The projects that are validated need to answer socio-economic and climatic problems of the territory respond to the problems of farmers and implement agroecological practices. Practices that are put in place in the territory include, integrated pest management, the use of digital tools, development of new more resilient varieties, agroecological infrastructure design, or communication innovations.

VitiRev collaborates with many partners such as INRAe, the universities of Pau and Poitiers or the French association for agroforestry (AGROOF). One third of their budget comes from the public funding programme "Banques des territoires". The rest is provided by the region through the label "Innovation Alimentation Plan" (PIA) or by being remunerated for project completion.

WHAT CAN WE LEARN?

VitiRev contributes to the sustainable development of the Nouvelle-Aquitaine region. The living lab creates the opportunity for different actors to collaborate and improve the image of wine farmers in the territory.



Picture 8: Map of the territory and the different existing initiatives. Source: VitiRev.

POSITIVE IMPACTS

GOVERNANCE: VitiRev is unique in that there is not a specific organisation in charge of the initiative. It is based on volunteer involvement of actors of the region and stakeholders working on projects temporarily.

SOCIETY AND EQUITY: One of the objectives of the initiative is to improve the image of farmers that society can give them or that they can give to themselves. This territory project aims to connect the population and farmers in projects.

SUSTAINABLE AND FAIR ECONOMICS: The project aims to ensure a fair remuneration for farmers of the region through collaborative projects.

LIMITATIONS & CHALLENGES

COOPERATION: Increasing communication and diffusion of knowledge will be their priority in the future.

INITIATIVE N°9 – TERRES DE SOURCES

TERRES DE SOURCES
LES PRODUCTEURS D'ICI PROTÈGENT L'EAU
https://terresdesources.fr

TERRES DE SOURCES
LANDS OF WATER

Terres de Sources is an initiative coordinated by the syndicate "Eau du bassin Rennais". It consists of a territorial project with the objective of reducing the impact of agricultural activities on water resources. The territory is located in the Bretagne region in Western France and includes 75 towns that represent 540,000 inhabitants. The project was created in 2015 and already includes 140 farmers and twenty agroindustry companies. Terres de Sources aims at transforming the current agricultural system at the territorial scale to preserve water and air quality through the implementation of agroecological practices and principles. The initiative is part of the "Territoire d'innovation" (Territory of Innovation) programme, that provides funds for the development of a territory. A company, SCIC Terres de Sources, was created to support the project and acts as a structure of governance to collaborate with partners.

Terres de Sources aims to involve all food system actors in the transition. By creating a new black wheat supply chain from producers to consumers, they aim to connect all levels of the food system in the agroecological transformation of the territory. Black wheat is a cereal that does not need significant inputs to grow. The initiative allowed producers and agroindustry companies to agree on a long-term contract with fair prices for the producers.

KEY FEATURES

- **Founded in:** 2015
- **Type of organisation supporting the living lab:** Eau de bassin Rennais
- **Main topics:** reduction of phytosanitary products, crop rotation, ancestral varieties, developme
- **Farming sectors:** cereals, livestock breeding, vegetables, permaculture, fruits
- **Type of actors involved:** civil society, farmers, agroindustry, scientists
- **Number of persons involved:** 8 employees.

To facilitate the transition at the food system level, the initiative created the label "Terres de Sources". Based on agroecological principles, the label promotes practices such as increasing soil cover, implementing longer rotations, and expanding agroecological infrastructures on farms. The label also promotes the use of local varieties and excludes GMOs in animal feed. An objective is to reduce the amount of imported feed and increase the quality of locally produced animal feed. All the different initiatives, and especially the label, allow consumers to identify local products and increase water preservation at the territory level.

The association possesses its own research unit conducting water sampling across the territory. Among other parameters, farmers monitor nitrogen levels in leachate from fields as well as the use of phytosanitary products. To assist them in their task, the diagnostic tool "IDEA[17]" was created to provide indicators responding to the label criteria. This tool can evaluate the evolution of farm management and their impact on water quality of the territory. Following the Afterres2050 recommendation (an agroecological scenario created by Solagro[18]) they aim to promote the development of territorial food systems. One important aspect is the education of sustainable food behaviour to the territory's consumers. Following that approach, the initiative is strongly involved in the design of the "Plan alimentaire Territorial" (Territorial food system plan, PAT) with other stakeholders. This plan aims to increase food production in the territory and involves different public institutions of the region such as "Agence de l'eau", the "Eau potable" syndicate, or the regional government itself.

[17] https://terresdesources.fr/le-diagnostic-idea/ [18] https://afterres2050.solagro.org

"Eau du Bassin Rennais" association manages the initiative budget. Terres de Sources believes that agroecological transitions will happen gradually and will need support from national policies. Farmers are interested in this kind of initiative because they can acquire certain notoriety and a valorisation of their products.

WHAT CAN WE LEARN?

Terres de Sources works towards a healthy and sustainable food system at the territorial level. Its actions are simultaneously effective on multiple dimensions. It promotes economically viable practices that have minimum harm on natural resources while sustaining food security and public health and developing the local economy.

Picture 9: The lake of Cheze-canut, main source of water of the "Terres de Sources" territory (Left). A product with the "Terres de Sources" labelling (Right). Source: Terres de Sources.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The main goal of the initiative is to preserve water resources qualitatively and quantitatively. Controlling inputs is important to preserve natural resources such as water, air, and biodiversity.

SUSTAINABLE AND FAIR ECONOMICS: Terres de Sources ensures a fair remuneration of farmers through its label. It sees this as the main driver of agroecological transition as farmers need to be supported in order to take risks.

HEALTH: As an actor of the territory, the initiative is concerned about the quality of products and the health of the population. By choosing to follow the scenario Afterres 2050, it will organise a campaign to advocate for a shift toward local food supply chains.

LIMITATIONS & CHALLENGES

COOPERATION: Terres de Sources is willing to collaborate with other living labs to have an impact at the national scale. The initiative is concerned about the access of healthy food to low-income families as well. They wish to develop their label and encourage prices that can be affordable for everybody.

INITIATIVE N°10 – LABORATOIRE D'INNOVATION TERRITORIAL EN AUVERGNE

https://www.lit-gca.com

LABORATOIRE D'INNOVATION TERRITORIAL EN AUVERGNE

TERRITORIAL INNOVATION LABORATORY IN AUVERGNE

The "**Territorial Innovation Laboratory**" (LIT) is one of the examples of living labs emerging in France. Located in the Auvergne region since 2017, it concerns a specific territory of 200,000 ha on the plateau of Limagne-Val d'Allier. Initiated by Limagrain (an agricultural cooperative and world leader in seed production) to create an area of exchange and innovation for cereal production, the living lab was co-created with INRAe, the Clermont-Ferrand metropolitan, and chambers of agriculture in the region. The term living lab is explicitly used to describe the programme. In 2019, an association was founded to oversee the governance of the territorial experimentation. Within the territory, multiple projects came to life to establish links between companies and farmers to accelerate innovation. To proceed, enterprises need to submit their project to the administration of the LIT association. To select projects, the association follows a plan based on environmental, economic, and social criteria. Projects should be participative and include farmers as much as possible.

KEY FEATURES

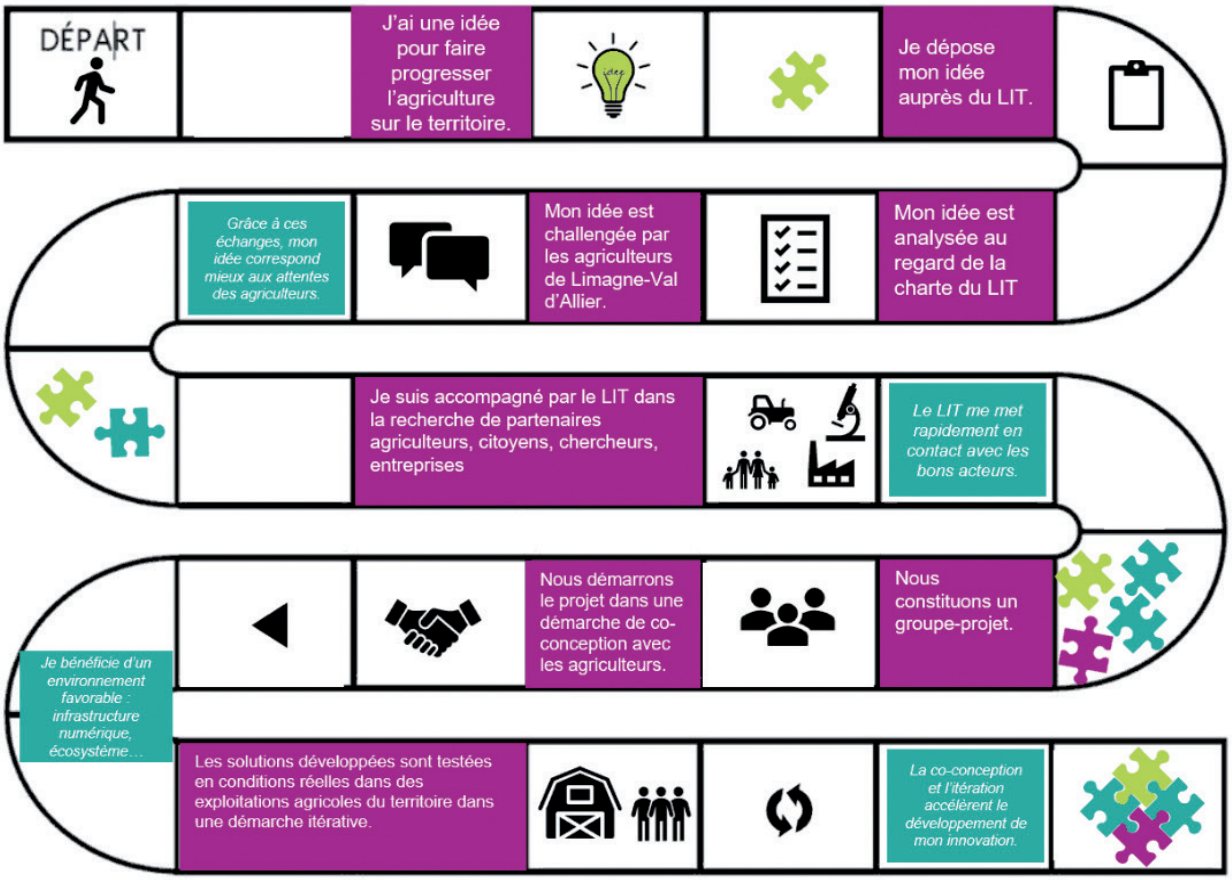
- **Founded in:** 2017
- **Lead organisation:** Laboratoire d'Innovation Territorial
- **Farming sectors:** Crop-livestock, arable crops
- **Research thematic:** Transitioning towards agroecology, implementing agroecological practices
- **Type of actors involved:** Farmers, scientists, citizens, agroindustries
- **Number of stakeholders involved:** 2

Over two years, the association developed multiple actions towards innovative farming practices in the region. The "Invers" programme promotes the diversification of farm production by breeding flour worms to create insect production units at the farm level. The successful initiative allowed farmers to diversify their production and incomes with no additional costs. Flour worms are fed with crop residues of cereal production. The worms are sold to other farmers as feed for pets. The project "Scin'auvergne" is a participative research programme to develop innovative production systems. Researchers are collaborating with farmers and co-planning the transformation of their agroecosystem management based on a multi-criteria evaluation. Practices included in this study were crop rotation, intercropping, crop diversification, mechanical weeding, or selection of new crop varieties. Lastly, the "Helicora" programme brings diversification to arable crop farms by including crop-livestock systems. Crop-livestock systems promote circularity and diversification of agroecosystems. Waste from crops and livestock are valorised in those systems, as crop residues can be used as feed, and livestock manure can be applied as fertilizer. This system drastically reduces the requirement of external inputs and increases the resilience of agroecosystems by diversifying crop rotations.

The association has been recently struggling with receiving projects less in relation to the agroecological transition. In addition, due to a lack of funding, no new projects are currently starting.

WHAT CAN WE LEARN?

LIT is a territorial living lab project initiated by the cooperative Limagrain that encourages the innovation of practices focused on farmers' cohesion and economic diversification in arable cultivation of the territory.



Picture 10: Strategy of project implementation for the LIT living labs. Source: Laboratoire d'Innovation Territorial en Auvergne.

POSITIVE IMPACTS

COOPERATION: The primary goal of the association at the beginning of the project was to promote the cohesion of actors to improve innovations. The association calls for many entrepreneurs to propose projects and co-develop their ideas directly with farmers to meet their needs.

ENERGY AND WASTE MANAGEMENT: The association has accepted numerous projects on sustainable energy collaborating with farms, for example to develop solar panels.

COMMERCIALISATION IS LOCAL, FAIR, AND/OR COLLECTIVE: The association worked on the relationship with consumers and distributors to promote the local economy. They also aim to ensure economical viability of farmers when launching new initiatives.

LIMITATIONS & CHALLENGES

GOVERNANCE: Initiatives in the region were quickly attracted by the opportunity to develop their projects with the living lab. Unfortunately, the decrease of funding received by the living lab gradually led to the diminution of entrepreneurs' interest in the territory. The management plan of the project was too large and led to a loss of sense for the territory initiative. The participatory approach and farmer inclusion do not always attract investment.

INITIATIVE N°11 – VIVAGRILAB

VivAgriLab
RELIER VILLE ET VIVANT DANS LE SUD-OUEST FRANCILIEN

https://bit.ly/VivAgriLab_CBASC
https://bit.ly/VivAgriLab_Terreetcite

VIVAGRILAB

VivAgriLab, "linking city and living things in the south-west of the Paris region" (relier ville et vivant dans le sud-ouest francilien), is a platform of dialogue to foster the emergence of applied research projects on a territory of 62,000 ha, including 20,000 ha of actively farmed land, around the University Paris-Saclay. Based in the agri-urban territories of the south-west of the Paris region (also known as "Ile-de-France"), it aims to promote agroecological transitions to support sustainable agriculture, food systems, and nature through the emergence and implementation of co-designed research projects. VivAgriLab is facilitated by one of its members, the NGO Terre et Cité, with the help of the interdisciplinary research consortium C-BASC.

Its approach is based on sharing knowledge between researchers, farmers, local authorities, associations, and other non-academic actors. Through meetings and dialogue, researchers and non-academic partners share their needs, visions, and knowledge to help identify research topics of common interests. The vision is that researchers accompany local stakeholders who lead the (agro)ecological transition of the territory. By encouraging dialogue, stakeholders involved in the living lab anchor research and synergies of a diversity of stakeholders into the region's development.

KEY FEATURES

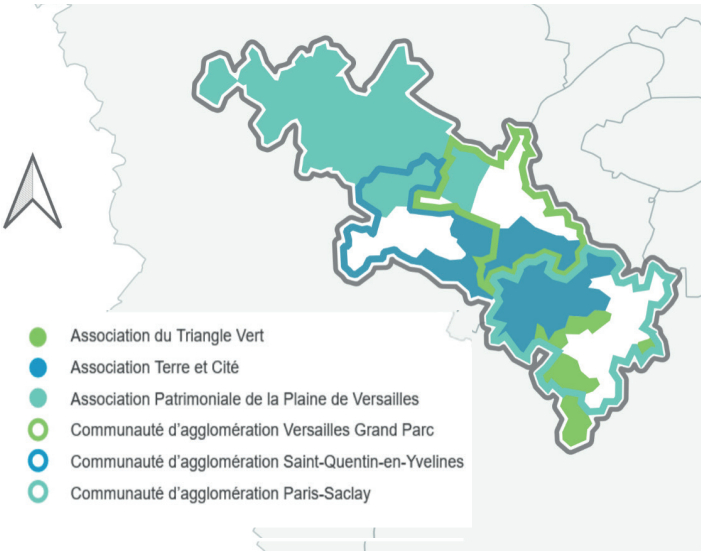
- **Main topics:** agricultural, natural, and urban areas, agroecological approaches, food systems, recycling, interdisciplinarity.
- **Founded in:** 2013
- **Type of governing organisation or legal entity:** Living Lab partnership agreement signed in 2023
- **Type of actors involved:** Farmers, Local citizens, Researchers, local NGOs, local authorities
- **Leading organisations:** Terre et Cité, and C-BASC (Université Paris-Saclay)

Key moments of the living lab development:

- 2013: Terre et Cité and the research consortium C-BASC organized the first meeting between farmers and researchers in the Saclay Plateau to foster the co-design of research projects.
- 2016: Territorial ecology through a four-day workshop: analysis of the Saclay Plateau's resource flows (goods, organic matter, nitrogen, water, etc.) and launch of several research projects.
- 2018-2019: the living lab grew in terms of local partners, territory, and topics. It now consists of three farmers NGOs, three local planning authorities (800 000 inhabitants), the Chamber of Agriculture of Ile-de-France, the Etablissement Public d'Aménagement Paris-Saclay, the newly created Université Paris-Saclay, INRAE, AgroParisTech, and C-BASC (ex LabEx BASC)—the latter three are part of Université Paris-Saclay. The VivAgriLab territory include almost 200 farms. In addition to agriculture, topics also cover transformation, distribution, and consumption for sustainable food systems. Local stakeholders work together to develop a common ground to support research action. Several new projects such as Urinagri (local recycling of urine for use as fertilizer) and CLIMALEG (Adapting vegetable crops to climate change) have established strong ties between researchers, farmers and other actors.
- 2021: VivAgriLab acquired its first grant as an enlarged living lab for the Flux Local project aimed at implementing agroecological approaches to a circular economy for food and organic matter, focusing on recycling of nutrients at the local level to contribute to territorial sustainability.

VivAgriLab enables a systemic approach by adopting the extensive definition of agroecology as per the FAO, including consideration for natural areas, and by benefitting from researchers from a wide array of disciplines. The living lab organizes annual meetings between researchers and local actors, open to all local actors and partners, in order to encourage exchange and foster collaborations. The discussions focus on developing new research on the territory and presentation of projects results. These discussions happen through workshops on a variety of themes (biodiversity, energy, water resources adaptation to climate change, organic matter flows,

etc.). Any stakeholder can propose themes and lead a workshop, enabling evolving and dynamic research questions. Those meetings are an opportunity for every stakeholder to build new relationships with each other, gain a better understanding of everyone's needs and constraints, and identify topics of interest for future projects.



The territory of the VivAgriLab living lab, bringing together three farmer NGOs and three local planning authorities. Source: Mazarine Girardin/Terre et Cité.

Fundings

VivAgriLab has been funded by several donors:

Terre et Cité is the coordinator of the Saclay Plateau Local Action Group (GAL) in the context of the LEADER program. The Saclay Plateau GAL has been financed twice by the EU with LEADER funds (more than €2 million) for rural development, which corresponds to fourteen years (2016-2029) of support and actions for projects linked to the agricultural development of the territory. Research projects have been and will be financed by Leader funds. C-BASC, and previously the LabEx BASC, also financially support research projects in relation with agricultural partners on the VivAgriLab territory. Researchers also regularly answer to calls for proposals individually.

The Flux Local project was funded by the Fondation de France from 2021 to 2023. This has made it possible to finance research on several themes (valorising organic matter from urban waste, supporting farm diversification, matching food supply and demand), as well as the facilitation of the VivAgriLab by Terre et Cité.

Diagonale Paris-Saclay, an organization of the Université Paris-Saclay whose aim is to create links between research and society, provides occasional financial support for events such as annual meetings between researchers and local actors.

WHAT CAN WE LEARN?

The multistakeholder approach is a powerful approach to build a sustainable food system, protect and restore biodiversity, and mitigate and adapt to climate change. The territorial scale approach is a key asset of VivAgriLab without neglecting impact on larger scales. Focusing on research application in a real life setting could be challenging; however, VivAgriLab tackles this with constant dialogue and discussion among different perspectives of various stakeholders. The inclusion of all local stakeholders in VivAgriLab annual meetings increases the living lab's legitimacy. VivAgriLab also includes researchers specialized in co-design. Dynamic of relations between stakeholders incentivise farmers to reconsider their practices and develop better relations with citizen demands in peri-urban areas on the trajectory for a local and organic food system.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The research and application of research on the territory will enrich knowledge on nature management and help integrate topics such as organic matter, water, and energy flows into the agroecological transition. The ecological territory approach, applied since 2016, give a useful cognitive model to evaluate the flow of goods and elements, such as carbon balance or nitrogen flows, on the territory.

LIMITATIONS & CHALLENGES

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Members Funding for organisation and facilitation: Despite their key roles in a living lab, organisation and facilitation tend to be the hardest activities to find funding for. Managing various stakeholders needs specific technical and financial support. VivAgriLab has been operational so far but still lacks long-term secured funding to sustain its development. The mobilization of farmers, at the heart of the Living Lab and these projects, can be a key challenge. Care must be taken not to solicit the same farmers over and over again. To ensure the continued involvement of farmers and local actors, disseminating the results of research projects co-constructed within VivAgriLab and popularizing them for non-academic players remains critical.

INITIATIVE N°12 – INITIATIVE 4 POUR 1000

INITIATIVE 4 POUR 1000

4PER1000 INITIATIVE

https://4p1000.org

The "**4 per 1000**" Initiative was created in September 2015 during COP 21 of the Climate Change Convention in Paris. Stephane Le Foll, former minister of Agriculture, launched this initiative to show that agriculture is not only a sector contributing to climate change but could also be part of the solution. The initiative supports the idea that by increasing carbon storage of soils around the world by 0.4% per year, we would be able to balance the carbon dioxide emissions by human activities and generate a diversity of positive environmental impacts. For that purpose, "4 per 1000" places farmers and foresters as the main stakeholders capable of mitigating the impact of climate change. The initiative led to the creation of an international partnership between farmers' organisations, scientific institutions, NGOs, private organisations, and countries with 780 partners. Among those only non-profit organisations can be members of the initiative and be part of the decision-making body, which consists of 350 members (as of the end of 2023).

KEY FEATURES

- **Founded in:** 2015
- **Lead organisation:** hosted by the Alliance CIAT-Biodiversity International
- **Farming sectors concerned:** all
- **Practices concerned:** Integrated soil fertility management, water management, cover crop & grassland management
- **Types of stakeholders involved:** Farmers, scientists, countries, NGOs, production organisations, private enterprise
- **Number of stakeholders involved:** 6 employees, 780 partnerships

The decision-making entity consults a gender-balanced scientific and technical committee composed of fourteen scientists from five continents. The initiative believes that the development of agroecology is the best solution to increase carbon sequestration in agricultural and forest soils. They value systemic changes without neglecting practices. Scientific research shows that increasing carbon sequestration can improve soil health, prevent erosion, increase soil fertility and biodiversity, build more resilient systems, and all the while improve productivity. Based on this, the "4 per 1000" initiative promotes every sustainable agricultural method that will increase soil carbon storage. They published a book called "Les agriculteurs ont la Terre entre leurs mains" (farmers have the Earth in their hands) that explores history and virtue of practices contributing to soil life.

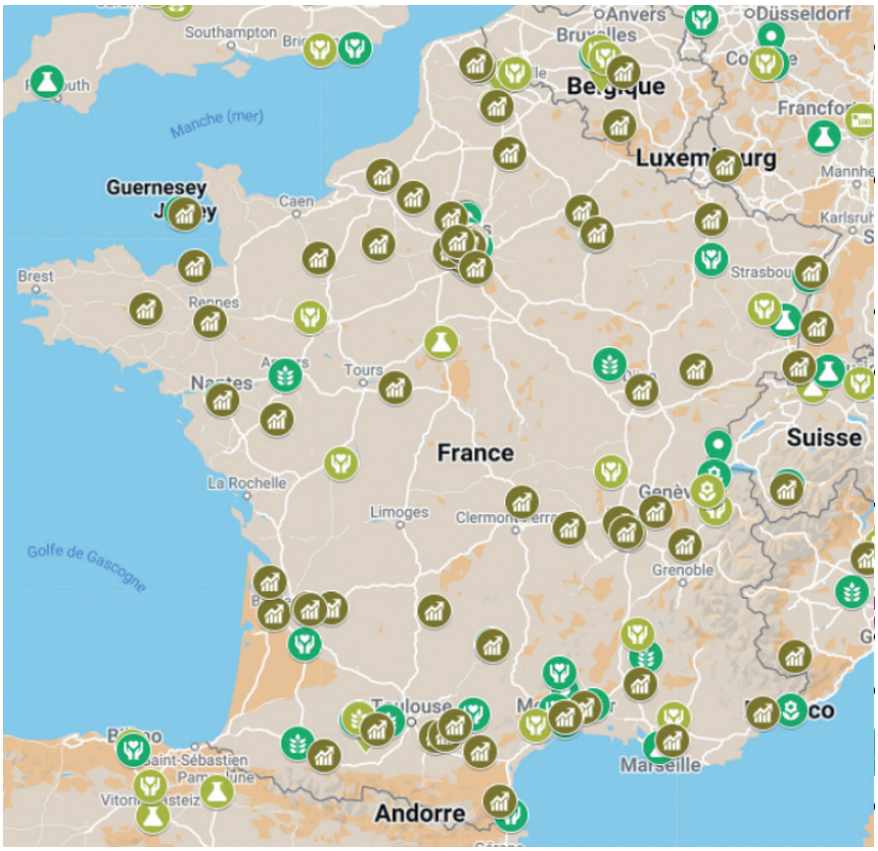
Another important goal of the programme is to protect carbon-rich soils, such as peatland and permafrost, and conserve biodiversity hotspots. Where protecting is not sufficient, they aim at restoring 15% of degraded lands, which would mean avoiding 60% of species extinctions and potentially stocking 300GT of CO2eq.

The annual budget of the Initiative is 400,000 €, which they obtain mainly through the ministries of agriculture of France, Germany, and Spain and through research institutions, such as IRD or CIRAD, and private companies, such as McDonald's or Danone. The "4 per 1000" Initiative wants to make sure that the voice of farmers is heard and that they collaborate with farmer organisations to involve them as much as possible in their transition. This is organised via conferences or interactions with partners.

In the coming years, the initiative aims to create an international database to give access to a guide of practices adapted to the specific environmental conditions of the geographic localisation of farmers. They also encourage result-oriented methods from the CAP and promote a monitoring tool to measure soil carbon storage capacity through remote sensing. This would greatly help following the evolution of soil storage and contribute to better consulting services for the implementation of practices on the field.

WHAT CAN WE LEARN?

The main achievement of "4 per 1000" is to promote carbon storage to counter human greenhouse gas emissions through different agricultural practices and farm redesign. The international initiative engages with governments and companies to tackle climate change.



Picture 11: Members and Partners of the "4 per 1000" initiative in France. Members and partners are of different origins: commercial companies, research institutes, civil societies, farmers' organisations, countries and international organisations. Source: 4 per 1000 initiative.

POSITIVE IMPACTS

EDUCATION: The role of "4 per 1000" is to communicate scientific results to develop performing carbon storage practices. Participating in conferences at different scales, they disseminate knowledge to stakeholders and train farmer advisors.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The Initiative believes that activities like forestry and agriculture have the power to contribute highly to compensate for the emitted carbon dioxide in the atmosphere from other human activities. They trust that rehabilitating soils to increase their carbon content is a large part of the solution to tackle climate change.

LIMITATIONS & CHALLENGES

COOPERATION: The initiative could be closer to farmers despite their goal to foster the implementation of some practices. The initiative, currently, has more influence on public policies than on farmers' behaviour.

MOVEMENT EDUCATION PRACTICE LIVING LAB SCIENCE

INITIATIVE N°13 – RÉSEAU DES AGROECOLOGISTE SANS FRONTIÈRE

https://agroecologistesf.org

RÉSEAU DES AGROECOLOGISTE SANS FRONTIÈRE

AGROECOLOGISTS WITHOUT BORDERS NETWORK

The "**Réseau des agroécologistes sans frontières**" (Agroecologist without borders network), RAESF is a French association that promotes the development of agroecology internationally by leading humanitarian projects in France and other countries. The network was developed under the influence of Pierre Rabhi, an emblematic actor for agroecology and humanism in France. The association is composed of nine members with different skills but all practicing agroecology in their professional life. RAESF responds to demands for assistance and sends members to sites to answer communities' needs. They aim to assist local populations to transition to agroecology and reach food sovereignty.

KEY FEATURES

- **Founded in:** 1961
- **Farming sectors:** all
- **Lead organisation:** RAESF
- **Stakeholders' profiles**: Experts in seeding, harvests, breeding, crop and livestock farming.
- **Number of members:** 9

The majority of their missions are conducted internationally. To send adequate experts on site to assist communities, the association first identifies the needs of the community through a questionnaire and an exchange. After this, RAESF usually sends two members to assist the community in person. The association respects cultural and traditional values of indigenous people in their approach and rely on a systemic approach. The team usually spends the first week following the stakeholders in the territory and learning about the local context before giving any advice. Then, they produce a written summary of the situation and a list of propositions. Communities are followed for two to three years after initial contact to monitor progress. Tasks completed on site involve trainings on water management and understanding of principles of living soils, and ecosystems. These follow principles of agroecology, as it promotes an agroecosystem management based on natural ecosystems functionalities. Examples of agroecological practices applied are planting idges, precision irrigation, cover crops, and crop residues to cover soil.

In France, the association focuses more on trainings and the collaboration with other associations sharing the same view of agroecology. The association "Et Pourquoi Pas?" (Why not?), part of the network RAESF, created an Ecoplace in the Auvergne Rhône-Alpes region. That offers a location where RAESF can organise events and conduct gardening trainings or offer internships.
Multiple foundations support RAESF so that they can conduct their actions, for instance the Pierre Rabhi fund or the 1% for the planet association. They also ask communities to participate to the maximum of their capacity. In the future, the association is working on the core project aiming at organisation and assisting foreseeable migration due to climate change. This will require missions in France and abroad. They wish to guide populations towards food sovereignty.

Picture 12: Project of a pedagogical farm in Madagascar. Source: https://agroecologistesf.org/category/tous-les-articles/afrique/madagascar/.

WHAT CAN WE LEARN?

RAESF is a French association engaging in humanitarian missions internationally. They follow the guidelines of Pierre Rabhi and assist communities to improve food sovereignty. They wish to share their knowledge of agroecological systems while preserving local heritage.

POSITIVE IMPACTS

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Members of the initiative believe local people's knowledge is the most valuable regarding local agroecosystems management and always listen to their experience before providing any advice.

SOCIETY AND EQUITY: The association gives importance to the social aspect of agroecology. They highlight the needs of our society to reconnect to the natural world and see themselves as part of it instead of considering it as an externality.

EDUCATION: Internationally and on the French territory, RAESF tries to develop education on agroecological practices and philosophy. They believe that sharing knowledge is the most efficient way to drive people towards their own sustainability.

LIMITATIONS & CHALLENGES

COOPERATION: RAESF is not in close relationship with public organisations. They feel like the link between actions on the field and policies is missing and therefore needs more advocates.

INITIATIVE N°14 – RÉSEAU DES AMAP AUVERGNE RHÔNE-ALPES

https://amap-aura.org

RÉSEAU DES AMAP AUVERGNE RHÔNE-ALPES

AMAP NETWORK OF THE AUVERGNE RHÔNE-ALPES REGION

The network "Association pour le Maintien d'une Agriculture Paysanne" (Association to maintain a peaseant agriculture, AMAP) Auvergne Rhône-Alpes was created in 2014 and represents one of the regional networks of the national French AMAP network. The organisation is a type of (CSA) Community Supported Agriculture aiming to maintain and promote peasant agriculture by strengthening the link between producers and consumers. It takes the form of short food systems where consumers can directly pay for products coming from the farm in advance, generally on a yearly basis. This ensures farmers with a fair funding and grants the consumers with fresh and healthy products.

KEY FEATURES

- **Founded in:** 2004
- **Lead organisation:** AMAP network
- **Type of organisation:** french association
- **Practices concerned:** producer-consumer interaction, short food chain, food sovereignty

Number of stakeholders involved: 5

Stakeholders' profiles: public workers

The AMAP networks are organised at different scales. MIRAMAP is a network ensuring a coordination at the national level while every region has its own AMAP network such as the AMAP Auvergne Rhône-Alpes, which is composed of 5 employees. Each of these networks operates as an animator of the different AMAP initiatives within the region. The region Auvergne Rhône-Alpes have 320 AMAPs, including 890 farmers and an estimated 52,000 consumers. Some AMAPs can be independent and therefore not be represented in the network. One AMAP is usually composed of two to twenty farmers, and each possess their own governance. The registration fees to be part of the network is €25-200 per year for farmers, depending on the size of the farm. In general, consumers involved in an AMAP engage for a specific period and buy farm products, ensuring financial perspective for farmers.

In general, the AMAPs attract small farms with diversified production. However, some larger farms are also part of the movement. They promote diverse agriculture models from organic to sustainable but are also recognised to be defenders of peasant agroecology. They refer to principles of agroecology through the creation of short supply chains and their work around producer-consumer relationship. The AMAP is built on a contract between the farmer and the consumer. There are no conditions to fulfil for farms to be part of the network, operations do not need to be certified organic. However, once part of the network, the AMAP requests efforts towards sustainable practices such as minimizing the use of phytosanitary products.

The consumer pays a fee in advance to the farmer to ensure financial stability. In exchange, the farmer promises to deliver one box of product a week during 40 weeks of the year. The key role of the network is to mobilise at the regional level through the organisation of events where farmers and consumers can meet each other, learn, and interact. They also lead other actions such as public awareness raising about peasant seeds or farm visits organised by farmers once a year for their customers through the AMAP. The initiative also organises trainings all year long for animators of the AMAPs. They get their funding from members hip fees and the MIRAMAP at the national level.

The network collaborates with many agricultural organisations such as CIVAMs or ADEAR. They are part of an organisation called the inPACT network, composed of Terre de Liens, AMAP, FADEAR, Confédération Paysanne, and the CIVAM network. The role of this organisation is to communicate to farmers about sustainable practices, assist them with implementation, valorise the farming work environment, and help new entrants.

Picture 13: Example of a weekly AMAP basket. Source: Newsletter AMAP aura network, January 2022.

WHAT CAN WE LEARN?

The AMAP network aims to link producers and consumers with a unique network in France. It promotes the consumption of local food and raises awareness about consumption behaviours. This allows for shortening the value chain giving access to better quality products, resulting in higher income for the producer and lower GHG emissions related to food processing.

POSITIVE IMPACTS

TRADITIONAL FOOD AND HERITAGE CONSERVATION: The AMAP network conducts multiple campaigns on peasant seeds to valorise these varieties that are less frequent nowadays due to standardization of seeds. Through this action, the AMAP fights for the right of farmers for seed sovereignty.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The main goal of the AMAP initiative is to promote local products while ensuring viable living conditions for farmers on a yearly basis.

SOCIETY AND EQUITY: The AMAP network wants to promote equal access to qualitative food products. They invite their members to reflect on their consumption choices that is for them a political action.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The demand of the population for AMAP contracts increased by 30% during the COVID crisis. However, the numbers are now coming back to their 2019 level. The AMAP successfully attracts consumers, but only involves a limited fraction of the population.

INITIATIVE N°15 – SOL

https://www.sol-asso.fr
https://passerellespaysannes.fr

SOL

SOL is a French association aiming at the revalorisation of farmers in society. The initiative was founded in 1980 under the name of "Solidarité" (Solidarity). A radical shift in their internal policy in 2016 lead to the name SOL and the objective of transitioning to peasant agroecology. The governance is composed of six co-presidents who are farmers, lawyers or private sector employees. As of the workforce, ten employees work on different tasks ranging from assisting farmers to collaborating with scientists on traditional varieties, developing academic tools or contributing to public policy elaboration. SOL is also involved and active in various groups of NGOs that reinforce the cooperation towards better agro-food systems in France and internationally. SOL conducts most of their projects internationally, notably in India and, West-Africa (mostly Senegal). In France, their main aim is to develop pedagogical tools and assist farmers to move toward a peasant agroecology paradigm. As an educative purpose, the association leads the "tandems solidaires" (Solidarity tandem) project where association members present specific topics every year in agricultural high schools. They recently published a comic book on the stakes of peasant agroecology called "Tous paysans, tous paysannes" (Everybody is peasant) and designed multiple serious pedagogical games and posters on the subject. The association also contributed to the creation of a "Maison des semences paysannes" (Farmer seed house) in Southern France that contributes to the preservation and diffusion of ancestral and local-adapted seeds in the region.

KEY FEATURES

- **Research thematic:** transitioning towards agroecology and implementing agroecological practices.
- **Founded in:** 1980
- **Farming sectors:** crop-livestock, arable crops, livestock breeding
- **Lead organisation:** SOL
- **Type of actors involved:** farmers, lawyers, private sector employees
- **Number of stakeholders:** 10 employees and 3-5 volunteers

The main activities of SOL on French territory are carried out through the "Passerelles paysannes" (Peasant bridges) initiative. This project aims at promoting and facilitating the development of peasant agroecology in France and collaborates with five other organisations: Reneta[19], Terre de Liens[20], FADEAR[21], CIVAM[22], and the CREFAD network[23]. A collective platform informs future farmers about farming activities with a map of local organizations that can help them build their project. The main objective is to give future farmers access to basic information they need to develop their activities. As the number of farmers in France is decreasing and a great part of new farmers are not from a farming family, new entrants face strong difficulties in developing their activities and access to land as well as practical training. The platform contains resources on peasant agroecology and on existing practical training, especially through mentoring programmes with experienced peasants. It also includes testimonies of new farmers on their path towards creating their farms

In addition, SOL develops a companionship program, giving the opportunity to future farmers to attend several two months practical training sessions where experienced farmers lead activities. These farmers commit to dedicating part of their time to help the future farmer build their own project. All along the training sessions, SOL and local organizations (ADEAR) focused on the administrative and technical parts of project development also support the future farmer. The idea of this program is to offer future farmers the opportunity to test different ways of doing agriculture in order to determine which one is most suitable to their own aspirations, develop new practical skills, and benefit from the knowledge of

[19] https://reneta.fr [20] https://terredeliens.org [21] https://www.agriculturepaysanne.org [22] https://www.civam.org [23] https://reseaucrefad.org

experienced farmers and of local organizations. These field-based actions are associated with a strong commitment to sensitisation on agricultural development issues and contributing to the elaboration of adapted public policies in France. The association is also mobilized on European public policy issues on trade agreements in connection with West African projects.

SOL promotes autonomy of farmers as well as a restriction or even non-use use of chemical inputs. However, no set of practices are asked from farmers as a condition to participate in the programme. The organisation is there to guide farmers by offering a diversity of practices, but they try to ensure their clients have positive results in the end corresponding to their own views.

SOL is founded through private funds, projects, and different foundations supporting them. The organisation recently received public funding for their actions in France. SOL belongs to the "pole INpact"[24] (gathering ten organisations - one of them the AMAP) promoting agriculture linked with population and territories. They wish to increase political support in their actions and develop trainings and education tools.

Picture 14: (Left) Activities at the Maison des Semences paysannes maralpines. (Right) Testimony from "Passerelles paysannes" guided farmer. Source: SOL.

WHAT CAN WE LEARN?

SOL is an association advocating for peasant agroecology. They centre their actions on the valorisation of traditional practices and crop varieties to help farmers to achieve autonomy. They assist new farmers to facilitate access to land and aim to connect farmers and society by education and awareness building.

POSITIVE IMPACTS

COOPERATION: SOL is an association developing and connecting networks of farmers with other similar organisations. SOL advocates together with other organisations for peasant agriculture.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: The association values the use of traditional varieties adapted to the local context.

SOCIETY AND EQUITY: The association advocates and participates in actions to claim for a fair remuneration of farmers and a better support to facilitate their transition.

LIMITATIONS & CHALLENGES

GOVERNANCE: The association is actively conducting lobbying to convince public policy makers to act in support of peasant farming. SOL believes that farmers are far from the consideration they deserve from society and more effort should be delivered to improve their quality of life.

[24] https://www.agriculturepaysanne.org/InPACT

INITIATIVE N°16 – PAVD

https://agricultureduvivant.org

POUR UNE AGRICULTURE DU VIVANT
FOR A LIFE-BASED AGRICULTURE

Pour une Agriculture du Vivant (PADV) is a French association created in 2018 resulting from exchange between the Michelin star chef Arnaud Daguin and supply chains actors, agronomists, and farmers already working in soil preservation practices. Today, PADV consist of a team of seventeen employees collaborating with 750 members including 680 farmers over the entire French territory. Seventy corporations, from upstream to downstream of food supply chains, are part of this national network. PADV considers that up-scaling agroecology and transforming the entire food system will only be possible if the agro-industrial sector is involved in the valorisation of agroecological products. PADV is composed of four divisions:

(i) the scientific & technical pillar develops agronomic tools (such as the Regeneration Index) and guaranties the pertinence of the actions carried out on the field;
(ii) the supply chains pillar works in tight interaction with the member-corporations to develop agroecology in their supply chain;
(iii) the communication team publicises agroecology and helps members to talk about their actions and
(iv) the digital team is in charge of the digital platform agroecologie.org.

KEY FEATURES

- **Lead organisation:** Pour une Agriculture du Vivant
- **Founded in:** 2018
- **Agroecological practices:** minimum tillage, cover crops, phytosanitary product reduction, agroecological infrastructures
- **Farming sectors:** all
- **Stakeholders' profiles:** technicians, farmers, agricultural and food companies
- **Number of stakeholders:** 17 employees, 750 members

The ambition of PADV is to bring together actors of supply chains around a common understanding and support for agroecology. In the vision of PADV, agroecology is a progressive path towards a system where cultivated ecosystems that ensure their own soil fertility, plant nutrition, and crop protection. To materialize this agroecological vision, PADV developed a tool: the Regeneration Index. This tool assesses soil conditions and ecosystem regeneration on a farm. However, with this performance evaluation, PADV wants to emphasise fundamental role of soils in agroecology. The farm is graded on a scale of 100; the score is divided into 8 categories each having their own grading. The categories and their max scores are soil tillage (18), soil cover (18), carbon cycle (18), nitrogen fertilization (6), phytosanitary management (15), biodiversity (15), agroforestry (5), and training (5). The tool is freely available on the internet platform agroecologie.org. PADV also trains technicians from cooperatives and producer organisations to use this tool, to empower them in the transition of their own supply chain. When performed by a trained technician, the Regeneration Index allows validating production recognized by PADV with an independent certification procedure. To this day approximately 2,200 Regeneration Index, and about 100 became certified. This tool is important for PADV as it bridges agronomy and economy, providing a better valorisation for farmers engaged in agroecology.

One unique aspect of PADV is its close relationship with companies from all sectors of the food system. Before collaborating, PADV ensures that their communication reflects the reality of their actions, to prevent any risk of greenwashing. The entering company must pay a membership fee ranging from €1,000 - 50,000 depending on its size. In addition, the association also receives funds from the Public Bank of Investment (BPI) and subventions raising their budget to €1.7 million Euro annually. PADV states that food processing industries and retailers are full of good will. The initiative works with them by training their technicians and reinventing their position and way of operations to valorise farmers and products.

WHAT CAN WE LEARN?

PADV is a unique organisation operating toward the agroecological transition at all levels of the food value chain. It is one of the few initiatives working with agro-industry companies and working with them on solutions to adapt their methods of production to help farmers transitioning to agroecological practices.

Picture 15: PADV trained technicians are intervening on a farm on the subject of agroforestry. Source: https://agricultureduvivant.org/qui-sommes-nous/.

POSITIVE IMPACTS

COOPERATION: The initiative counts 750 members including 680 farmers, the others are to transformation and distribution companies.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: PADV created an indicator to assess the extent of soil and ecosystem regeneration on a farm. The organisation especially puts an emphasis on soils that support production, carbon storage, and biodiversity.

SUSTAINABLE AND FAIR ECONOMICS: Fair remuneration of farmers is a key aspect in PADV actions. They work with food supply chains to valorise farmers engaged in agroecology and to give access to healthy and sustainable products for the whole population.

LIMITATIONS & CHALLENGES

COOPERATION: PADV is concerned by the lack of political support for the agroecology movement. The initiative is also limited by the poor flexibility of agro-industries to change their methodologies and business plan. This implies the needs to create long term plan to notice results at the supply chain scale.

INITIATIVE N°17 – SOLAGRO (Osaé)

https://osez-agroecologie.org
Osez l'Agroécologie - YouTube

"OSEZ L'AGROECOLOGIE" (OSAÉ)
"DARE AGROECOLOGY"

Solagro is a French association created in 1982 that aims to contribute to a transition of sustainable agriculture, food, and energy production. They have thirty-six permanent employees and an administration council consisting of fifteen people including two of their employees, the rest their partners. The stakeholders involved in the association range from scientists to engineers, teachers, farmers and technicians. The actions are divided into six main activities: agroecology, methanisation, territorial strategy, biogas, and forest and biomass energy.

KEY FEATURES
- **Lead organisation:** SolAgro
- **Founded in:** 2008
- **Agroecological practices:** cultivar mixture, Integrated Pest Management, legume rotation, cover crops, peasant seeds, no tillage, silvo-pastoral systems & rotation pasture
- **Farming sectors:** farmers, scientists, engineers, teachers, technicians
- **Size of the organisation:** 36 employees, 11 partners involved

Solagro developed multiple decision support tools for farmers. Calculators such as "CANARI"[25], "AgriAdapt or Dialecte" determine a farm's climatic impacts on a scenario leading up to 2100, advise farmers on the best agricultural system to face climate change based on geographic location, and estimate farm environmental impact, respectively. Other platforms such as "Herbea" helps farmers to implement agroecological practices, and maintain and increase biodiversity. It is an interactive tool to facilitate the installation of agroecological infrastructures in order to implement integrated pest management. They engage with farmers and civil society through webinars and interventions in agricultural schools. SolAgro, in their role as using agroecology as a solution to promote healthy food consumption, and environmentally sustainable agriculture, developed the project and scenario Afterres 2050. Afterres is a scenario trying to analyse the possible impact and feasibility of changing our diet and production system towards agroecology. This scenario aims to communicate on the need to change our current food systems and places agroecology as the main tool for this transition[26].

Launched by Solagro, the Osaé[27] initiative started in 2008 with the aim of linking and favouring exchange between farmers for an agroecological transition and innovating in new agroecological practices. In this initiative, SolAgro follows farmers who are engaged in an agroecological transition including organic and non-organic farmers as long as they implement agroecological practices on their farms. With the help of the tools, SolAgro measures and evaluates the positive and negative impacts of agroecological practices put in place at a systemic level every two to three years based on agroecological flower[28]. In this expertise, SolAgro values indicators such as soil health to analyse the potential of agroecology to regenerate soils and model the impact of the production on climate change.

Solagro understands that farmers are part of a collective and ensures that they are not isolated and remunerated fairly. In 2015, the initiative developed an online platform where various stakeholders

[25] https://canari-europe.com [6] https://afterres2050.solagro.org/wp-content/uploads/2015/11/solagro_afterres2050_version2016.pdf
[27] https://osez-agroecologie.org/le-projet-osae [28] https://osez-agroecologie.org/l-agroecologie

(farmers, technicians, scientists, communities, teachers, and students) can connect and learn about agroecological practices. Solagro monitors the evolution of farmers' practices. To date, they have almost fifty illustrations of experience from farmers, all visible on the platform to inspire other farmers. To communicate to a larger public about the importance of agroecology and the necessity of a food system transition, they developed a newsletter as well as a YouTube channel with training videos, which has now reached more than 10,000 subscribers.

Solagro funds the Osaé project with the help of different institutions and foundations. For instance, the "Agence de l'eau" (water agency) were the first and main funders, but other public bodies such as regional councils and private enterprises like 'Agronutrition and Ecotone joined the project.

Picture 16: Return on experience at one of the farms engaged in agroecological transition followed by Osaé. Source: https://osez-agroecologie.org/presentation-projet-osez-agroecologie.

WHAT CAN WE LEARN?

Solagro uses its large diversity of experts to create efficient tools to encourage and assist farmers in their agroecological transition without being present with them on the field. They also try to promote knowledge sharing through different formats (reports, online tools etc.).

POSITIVE IMPACTS

COOPERATION: The project Osaé employs a systemic approach and is particularly oriented to favour exchange of experiences among farmers to inspire others and engage in an agroecological transition.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The initiative's main goal is to preserve natural resources through the implementation of agroecology.

ENERGY AND WASTE MANAGEMENT: The main activities of SolAgro aside agroecology relates to innovation in green energy especially methanisation biogas and biomass.

LIMITATIONS & CHALLENGES

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The initiative concerns the implementation of sustainable practices regarding issues related to climate change, biodiversity impacts and energy but does not yet take into account issues related to product commercialisation.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Solagro considers farms closed environments. Osaé does not put a specific focus on considering traditional knowledge.

INITIATIVE N°18 – GIEE

https://collectifs-agroecologie.fr

GROUPE D'INTÉRÊT ECONOMIQUE ET ENVIRONNEMENTAL (GIEE)

ENVIRONMENTAL AND ECONOMIC INTEREST GROUPS (GIEE)

Following the institutionalisation of agroecology in France, the government initiated a programme to encourage farmers to develop agroecological practices in 2014. The action consisted in creating groups of farmers that would develop strategies to answer socio-economic and environmental challenges in agricultural production and marketing. These groups are called "Environmental and Economic Interest Groups" (GIEE). They are recognised as an official organisation by the state. To come to life, farmers must come together and propose a topic and project with a set of objectives that they will try to achieve. The proposition must be submitted and validated by the public authority at the regional level (called DRAAF). Once created, the group is self-managed and must submit an annual report of results. The GIEE presents on the whole French territory. Groups are animated within their own region by the chambers of agriculture and the DRAAF. The chamber of agriculture of Centre Val de Loire for example reported that twenty-eight groups of this nature exist in their region.

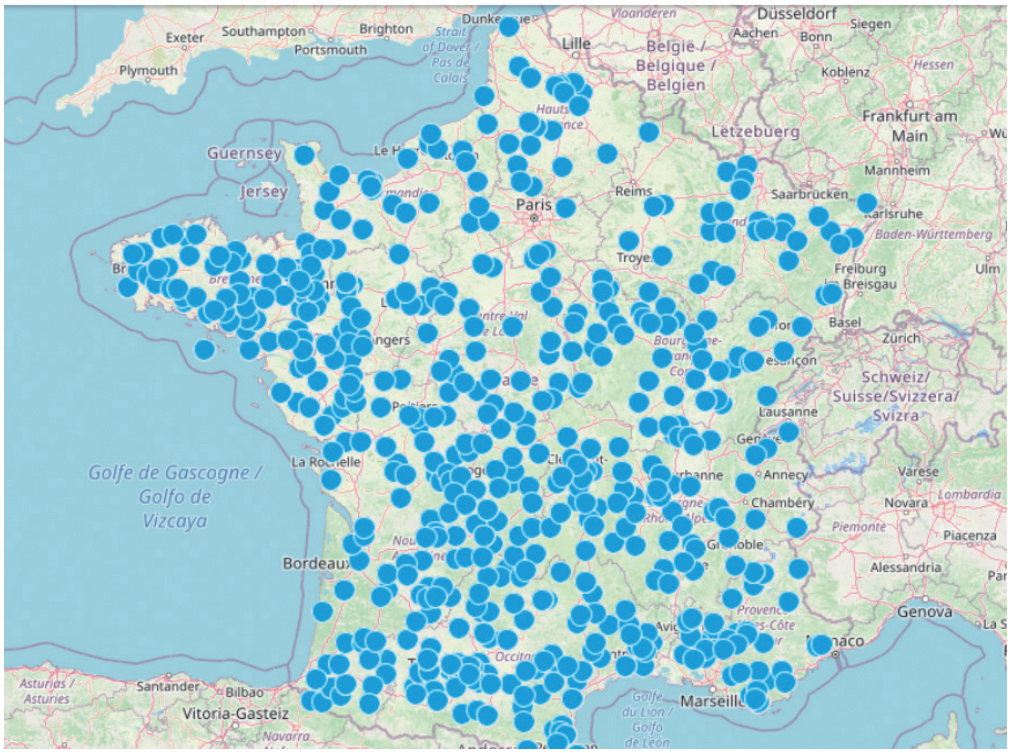
KEY FEATURES

- **Lead organisation:** Collectifs agroécologiques
- **Founded in:** 2016
- **Agroecological practices:** transitioning towards agroecology, implementing agroecological practices
- **Farming sectors:** farmers
- **Size of the organisation:** 1,300 farmers

Already existing groups such as CUMAs (group of farmers that share agricultural material and machinery) or cooperatives often support GIEE. These groups are registered and committed to a mission statement. All objectives must focus on a triple performance with environmental, social and economic criteria. Projects funded in the Centre-Val de Loire region dealt for example with autonomous feeding of livestock, soil conservation, cultivar diversification, methanisation, or soil fertility. Multidimensional goals must be achieved by implementing agroecological practices and principles to farm management. To monitor the evolution of practices among farm members, the group defines their own indicators of evaluation and carries out a self-evaluation every year, also based on the triple performance.

The GIEEs are animated at the regional level. An animator is in charge of following the groups and reporting at the national level through a synthesis of activities and applied technical methods. The animator creates also events or organises trainings for technicians.

Every region caries different type of projects. The Centre Val de Loire region sees mostly topics on crop-livestock and the creation of new supply chains (e.g., for nuts production). The initiative is entirely funded by the ministry of agriculture through the DRAAF.



Picture 17: Location of all GIEE groups in France. Source: https://geoprod.nosterritoires.fr/adws/app/bdca7a3f-2b0b-11eb-949f-55c9e95bd3b7/index.html.

WHAT CAN WE LEARN?

The GIEE groups were created to promote cooperation between farmers to exchange and compare experiences regarding one defined topic. The French government funds them to support sustainable innovation of farmers. The groups self-evaluate their practices on three main dimensions (social, environmental and economic).

POSITIVE IMPACTS

COOPERATION: The GIEE initiative aims to bring together a group of farmers to exchange and share experiences and knowledge on common challenges. Their cooperation enables the development of practices and sharing common tools not accessible alone.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The GIEE possess a mandatory dimension to answer to environmental challenges through farm management. They must implement practices and show proof of the improvement of natural resources management as a result of their practices.

SUSTAINABLE AND FAIR ECONOMICS: The groups have a responsibility to prove that the change implemented improve their economic conditions.

LIMITATIONS & CHALLENGES

GOVERNANCE: The current GIEE initiatives are limited by a lack of ambition in certain projects and also the difficulty to upscale their initiatives. Objectives can sometimes be seen insufficiently ambitions regarding the agroecological transition.

INITIATIVE N°19 – OFB

https://www.ofb.gouv.fr

OFFICE FRANÇAIS POUR LE BIODIVERSITÉ (OFB)

FRENCH OFFICE OF BIODIVERSITY (OFB)

The French Biodiversity Agency (OFB) is a public institution dedicated to the protection and restoration of biodiversity in France. The OFB leads missions at the national level from its headquarters but also through twelve regional offices and an office in the French Overseas Territories to answer questions at a smaller scale. Those missions are carried out by multidisciplinary teams. The main goal of the OFB is to protect and restore biodiversity in France through the support of public policy implementation. The structure is under the authority of the French Ministry of Agriculture and the Ministry of Ecological Transition. The OFB is responsible for 5 complementary missions:

(i) Sharing knowledge, research, and expertise on species, habitats, and their uses;
(ii) Environmental policing and wildlife health;
(iii) Supporting the implementation of public policies;
(iv) Accompanying managers of natural protected areas,
(v) Accompanying stakeholders and mobilising civil society.

KEY FEATURES

- **Lead organisation:** OFB
- **Founded in:** 2020
- **Agroecological practices:** semi-natural habitats, buffer zone, bird nesting areas, intercropping, reduction of phytosanitary products, reduced tillage
- **Number of stakeholders:** 2,800 employees
- **Stakeholders' profiles:** environmental inspectors, engineers, veterinarians, technicians, administrative staff

To preserve biodiversity, the OFB promotes and supports the agroecological transition of agricultural systems. In its missions of promoting the development of agroecology and sustainable practices, the OFB has taken a close interest in semi-natural landscape elements, which harbour biodiversity around the fields. The mission of the office is to raise awareness and help the implementation of projects linked to biodiversity in a diversity of ecosystems. To support the transition and investment of farmers, OFB provides compensatory measures and developed labels from public funds. For example, the OFB works with natural parks and valorises farmers' products within the park through the label "Esprit parc national".

In PNRs (Natural Regional Parks (PNRs) the OFB supports the "Prairie et parcours" ('meadows and path') competition managed by the chambers of agriculture. The competition concerns all livestock breeders who value their pastures and hayfields, not sown and rich in species, known as "flowering meadows". Other programmes, such as the Agrifaune program were developed in partnership with different agricultural organisations aiming to promote, exchange, and experiment on the best agricultural practices to favour biodiversity together with stakeholders from the agricultural and hunting sectors.

The OFB, as a public state institution, has a large network of stakeholders in various territories. They create forums for enterprises engaged in natural conservation and work with political representative on their legislation on the territory. A large part of the agency's role remains in education by raising public awareness through workshops and interventions directly in classrooms. The OFB also works with farmer organisations such as the DEPHY farms (group of farmers funded by the state aiming at reducing the use of phytosanitary products) and is responsible for the management of the EcoPhyto programme's budget to reduce the use of phytosanitary products. In that sense, the OFB interacts directly with national policies in developing agroecology. Last the OFB also contributes to the development of indicators for environmental monitoring and the development of participative research to innovate in new conservation methods.

Picture 18: (Left) OFB employees conducting natural ecosystem monitoring on the field and (Right) breeding goat farm. Source: https://www.ofb.gouv.fr/.

WHAT CAN WE LEARN?

OFB plays a key role in biodiversity conservation and restoration, including agricultural landscape areas. They promote the use of agroecological practices to preserve natural ecosystems and advise farmers and technicians about the relationship between biodiversity and agriculture.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The main goal of OFB is to promote and encourage the implementation of sustainable practices in the field to preserve and restore biodiversity.

EDUCATION: As a public institution, OFB plays a role in education and public awareness regarding biodiversity conservation and restoration of habitats.

LIMITATIONS & CHALLENGES

EDUCATION: The OFB has a primary role of expertise in biodiversity and natural ecosystem conservation and restoration. It suffers from a lack of legitimacy advising farmers, as it lacks direct expertise in agronomy. Nevertheless, it tries to increase engagement through its role in education and knowledge sharing.

INITIATIVE N°20 – AGROPOLIS INTERNATIONAL

AGROPOLIS INTERNATIONAL
MÉDIATION SCIENCES-SOCIÉTÉS
https://www.agropolis.fr

AGROPOLIS INTERNATIONAL

Agropolis International is a French association existing for almost 40 years. The role of this initiative is to create exchange between research and other stakeholders on the territory. The association, located in Montpellier, possesses large rooms and one amphitheatre hosting numerous events every year.

The association has three main national and international goals:

(i) Facilitate communication between research institutes,
(ii) stimulate dialogue between science and society,
(iii) Influence public policies.

In this regard, Agropolis International creates a safe space for territorial stakeholders to exchange and build together. Today, it gathers forty-one members from diverse sectors such as academic institutions, public, civil society and farmers' organisations, and research infrastructures. Regular exchange and events allow stakeholders to discuss urgent issues without the pressure to take immediate action. The association is funded by members hip fees and territorial collectivities subventions.

KEY FEATURES

- **Lead organisation:** Agropolis International
- **Founded in:** 1986
- **Agroecological practices:** agriculture, biodiversity, environment, and alimentation.
- **Stakeholders' profiles:** scientists, farmers, public organisations, decision-makers & civil society
- **Size of the organisation:** 40 institutional members

Agropolis International connects actors in the Occitanie region, working on agroecology, e.g., the GIEE, DRAAF and CIVAMs as part of agricultural and public organisations. The association is also recognised internationally. It assures the visibility of French research for agricultural development internationally and ensures international collaborations of its members. Five international structures located in Montpellier and members of the association are actively participating to Agropolis International activities. Among them are the "Consultative Group on International Agricultural Research" (CGIAR), the "US Agriculture Department" (USDA), CSIRO (Commonwealth Scientific and Industrial Research Organisation) and EMBRAPA (Empresa Brasileira des Pesquisa Agropecuaria).

Agropolis International relies on the work of research units, which, that have contributed to the development of knowledge in their domains but also common methodologies (e.g. evaluation tools, platforms) in its different research institute members. In addition, the association collaborates with other academic institutions in France and abroad. Therefore, they today offer stakeholders 160 different trainings and education degrees such as Masters, Bachelors, non-certified trainings, and workshops. Agropolis International acts as a hub for reports written by scientists on key topics concerning agriculture, biodiversity, food, and the environment. To this day, they wrote twenty six reports accessible on their website and widely used by policy makers.

The last report "Agroecological transformations for sustainable food systems" published in 2021 was dedicated to agroecology. This report, written in collaboration by CGIAR, CIRAD, INRAe, and IRD, is structured in three parts inspired by the transition of food systems by Gliessman in 2007. The report is illustrated with multiple case studies in Southern and Western countries. The key factor to succeed in the agroecological transition for the authors is to implement collective actions and mobilize stakeholders. They promote agroecological transition at the territorial level by creating cohesion of actors. Some obstacles along the way exists such as the capacity of politics to continuously reformulate priorities.

Picture 19: Last report from Agropolis International experts on agroecology. Source: https://www.agropolis.org/publications/thematic-files-agropolis.php.

WHAT CAN WE LEARN?

Agropolis International's main role is to foster exchange among stakeholders and to facilitate studies in collaboration with research institutes. Agropolis provides a specific space to scientists, farmers organisations, and decision-makers to debate and exchange on contemporary challenges.

POSITIVE IMPACTS

HEALTH: Based on the One Health model, environmental, human, and animal health are a priority in studies conducted by Agropolis International. The organisation is interdisciplinary and invests efforts in food/nutrition and agriculture topics.

COOPERATION: The association's main goal is to provide a space where territorial actors can exchange without any economical incentives. This structure allows stakeholders to exchange and share their knowledge.

EDUCATION: Agropolis International provides yearly reports on various topics going beyond agriculture subjects. The reports target experts but are also open access for the population to learn about many (agro) ecological topics. Moreover, Agropolis members present a wide corpus of trainings.

LIMITATIONS & CHALLENGES

COOPERATION: An obstacle to the development of its actions is the weak links existing between some stakeholders within the food systems. The current challenges faced by agricultural systems require collective action.

INITIATIVE N°21 – UMR AGIR

https://agir.toulouse.hub.inrae.fr

UNITÉ MIX DE RECHERCHE AGIR
MIXED RESEARCH UNIT AGIR

The Mixed Research Unit (UMR) AGIR is located in Toulouse and gather scientists from INRAe, the National Polytechnic Institute of Toulouse, the Higher School for Agriculture Education (ENSFEA), and the National Centre of Scientific Research (CNRS). This interdisciplinary unit focuses on agroecology, innovations, and territories and is organised in three research teams (agronomy, transformative science, and social sciences). In total 102 researchers from various science backgrounds work at the UMR. The goal of the research unit is to create tools and innovations with an evolutionary approach to unlock sociotechnical barriers and assist the transition towards new production and consumption systems. The UMR prioritizes participative research to develop knowledge and innovation co-creation with actors involved in this transition. They collaborate with networks of stakeholders such as the chambers of agriculture, cooperatives, CIVAMs (Initiative Centre to Value Agriculture and Rural areas) or technical institutes. The Mixed Research Unit (UMR) AGIR is located in Toulouse and gather scientists from INRAe, the National Polytechnic Institute of Toulouse, the Higher School for Agriculture Education (ENSFEA), and the National Centre of Scientific Research (CNRS).

KEY FEATURES

- **Lead organisation:** INRAe, ENSAT & Purpan Engineer School
- **Founded in:** 2007
- **Research thematic:** transitioning towards agroecology and implementing agroecological practices
- **Farming sectors:** crop-livestock, arable crops & livestock
- **Stakeholders' profiles:** scientists & teacher-researchers
- **Size of the organisation:** 102 employees, 80 projects & 3 research teams

Picture 20: Members of the UMR AGIR, working on methods for agroecology and local management of agricultural and natural resources. Source: Laurent Hazard.

The unit develops various projects on different topics that explicitly use the concept of agroecology. The UMR is well invested in research on crop-livestock systems and their potential benefits for the agroecological transition. It is in charge of the "OccitANum" initiative (see above), a living lab gathering actors of the region and promoting technological innovations. To promote agroecology, the unit engages in research on alternative production systems: one of them is crop-livestock systems where they monitor environmental and societal impacts with tools they developed.

WHAT CAN WE LEARN?

The UMR AGIR consist of a diverse group of scientists representing a wide range of disciplines to tackle the main obstacles to the transformation of food systems. This research unit strongly focuses on the development of agroecology.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The UMR acts in accordance with the preservation and restauration of natural resources. The objective of research projects consist in innovating in sustainable practices to reduce environmental impacts.

SUSTAINABLE AND FAIR ECONOMICS: Fair remuneration of farmers is a strong aspect of the collaboration of famers and scientists in the UMR.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The UMR faces limits of research funding systems, impacting the type of research and goals that it can tackle.

INITIATIVE N°22 – UMR INNOVATION

https://umr-innovation.cirad.fr

UMR INNOVATION
INNOVATION MIXED RESEARCH UNIT

The **UMR Innovation** is a mixed unit of research created in 2007 in Montpellier. It gathers scientists from different research organisations (INRAe, CIRAD, IRD) to focus on of innovations to transform agricultural systems. They participate in scientific and social debate by supporting stakeholders in their transition at different scales and geopolitical contexts. The 130 scientists of the unit are divided into six research teams. The ACTINA team puts in place actions to innovate the transformation of agricultural systems. For example, they design crop-livestock systems to improve autonomy of agroecosystems and promote soil regeneration. The SIRA team works on innovations developed simultaneously by scientists, farmers, NGOs, international organisations, and civil society. Collaboration with stakeholders is considered as important for the UMR Innovation as all those actors contribute to the evolution of food systems together. ANIMAL is a research team focusing on innovation concerning animal production but also biodiversity in agroecosystems. The other teams AGRICITES, EQUILATER and DAM research the transition of the agri-food system and all socio-economic contexts towards agroecology. These teams also investigate the role of cities, food accessibility, and market dynamics.

KEY FEATURES

- **Lead organisation:** CIRAD, INRAe, IRD
- **Founded in:** 2007
- **Type of organisation:** research unit
- **Main research topic:** reduce inputs, irrigation management, cover crops, technologies, short supply chain & crop diversification
- **Size of the organisation:** 130 employees
- **Stakeholders' profiles:** scientists, research-teachers

The UMR Innovation prefers to investigate solutions prior to implementation in the field. They develop diagnostics and design models as tools that consulting companies and farmers can directly apply to manage their agroecosystems. For instance, they favour agroecological consulting for family farms in Sub-Saharian Africa in the ACOTAF[29] project. They also create evaluation tools to allow the monitoring of practices impacts. For example, the project "Be-creative[30] engages scientist in the co-design of pesticide free agroecosystem's with farmers and has follow-up evaluation of practices implemented until project's end. Monitoring and evaluation tools are necessary to estimate the impact of agroecological practices on agroecosystems. For certain projects, the UMR also relies on participative research to follow up on innovation implementation on the field with farmers.

In parallel of working at the local level, the UMR Innovation also participates in projects abroad. They support organic agriculture supply chains and practices in Africa. In Vietnam, they try to implement agroecology in food systems, and in Brazil, a team is developing biocontrol methodology for pest regulation.

[29] ACOTAF / Projets - UMR Innovation - Innovation et développement dans l'agriculture et l'alimentation (cirad.fr)
[30] BE-CREATIVE / Projets - UMR Innovation - Innovation et développement dans l'agriculture et l'alimentation (cirad.fr)

Picture 21: Experimental area of the Be-creative project of the ACTINA team. Source: https://umr-innovation.cirad.fr/var/umr_innovat/storage/images/innovation/recherche/projets/be-creative/783912-2-fre-FR/be-creative_medium.jpg.

WHAT CAN WE LEARN?

The UMR Innovation focuses on transforming agricultural systems at the field and food system levels by using agroecology as one of its drivers.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The research unit is applying innovations to develop agroecosystems that will be acting more as natural ecosystems.

HEALTH: In their social science approach, researchers attribute importance to food quality and healthy food accessibility for the population, but also investigate innovations for animal health.

SOCIETY AND EQUITY: The UMR has a specific focus especially on equal food accessibility for the population and fair remuneration for farmers.

INITIATIVE N°23 – UMR AGROÉCOLOGIE

https://www6.dijon.inrae.fr/umragroecologie/

UMR AGROÉCOLOGIE
AGROECOLOGY MIXED RESEARCH UNIT

The **UMR (Mixt Research Unit) "Agroécologie"** is located in Dijon and gathers scientists from INRAe, the University of Bourgogne-Franche Comté and the CNRS. Many of the researchers of the UMR at an ecology master's degree of the "Institut Agro"[31] (see the initiative presented above). The research unit is divided into four research departments. The first one consists of microbiologists working on microbiology diversity as chemical fertilizer substitution. The second is constituted of ecophysiologists studying legumes genetics to increase their use in agriculture. The third one concerns natural weed management techniques, and the last one interactions between plants and microorganisms. The main objective of the UMR is to regenerate agricultural soils using ecosystem biodiversity. They stress the fact that agroecology relies on soil activity to obtain resilient agroecosystems to work with.

KEY FEATURES

- **Lead organisation:** INRAe, CNRS, University of Bourgogne Franche-Comté
- **Founded in:** 2012
- **Main research topics:** microbiology, genetics, weed management, bio interactions
- **Farming sectors:** crop-livestock, arable framing, livestck breeding
- **Stakeholders' profiles:** scientists, teacher-researchers
- **Size of the organisation:** 350 employees.

The research unit is recognised internationally for its microbiology and genetics research. It develops multiple analytical platforms used nationally. Among them, 4PMI allows a high-quality phenotype classification. They use it to analyse root development and plant-weed competitions. The GENESOL tool characterises soil microbial communities and can be an indicator of soil quality. The laboratories are equipped with electronic microscope and possess a rare collection of genetic resources, among them the characterisation of 40,000 fungal microorganisms. These resources allow the research unit to place itself as a leader in soil analysis. The knowledge acquired through different soil studies allow the UMR to engage in participative research with farmers of the region to test and implement agroecological practices on their fields. One of the outcomes of the research achieved is the publication in 2018 of the "Atlas de la biodiversity des sols" 'Atlas of soil biodiversity' in France.

The UMR developed experimental plots three years ago near Dijon to research agroecological practices. The project, called CA-SYS[32], includes 130 ha of arable land and relies on principles: no use of any chemical pesticides, soil tillage is minimised, agroecological infrastructures are present, 10% of the fields is covered, and bird nesting platforms are established.

The UMR receives support from local public authorities, linked to an involvement in territorial food transition. The UMR collaborates with the Bird Protection League (LPO) and private enterprises such as Syngenta within European research projects.

[31] https://www.institut-agro.fr/fr
[32] https://revue-sesame-inrae.fr/ca-sys-construire-3/

Picture 22: Soil sample conservatory in the laboratory of the project GENOSOL. Source: https://www6.dijon.inrae.fr/var/internet_dijon_umragroecologie/storage/images/media/images/plateformes/genosol/frigo/63797- 1-fre-FR/Frigo_reference.jpg.

WHAT CAN WE LEARN?

The UMR Agroécologie is a research unit specialised in genetics and microbiology studies. They try to increase knowledge on soil biodiversity to build stronger and more resilient agroecosystems, that constitute the backbone of an agroecology transition. Researchers engage with farmers in participative research.

POSITIVE IMPACTS

ENERGY AND WASTE MANAGEMENT: UMR Agroécologie invests in resources to design resilient agroecosystems based on ecological principles. The research unit specifically focuses on improving nutrient cycling.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The research unit studies microorganisms' interactions with ecosystems to promote living soils and enhance diversity on the field.

5. CONCLUSION AND FUTURE PERSPECTIVE

The institutionalisation of agroecology in 2014 by the French government has allowed the emergence of many initiatives and increased French farmers' awareness about agroecology. This context facilitated the development of agricultural projects with a sustainable approach from diverse sectors of activity by creating funds and supporting tools. Despite this dynamic, barriers remain to move forward with the transition. A better structure of support and guidance is needed to facilitate the engagement of farmers. Global crises such as climate change and geopolitical conflicts will play an important role in the future of governmental decisions, introducing novel challenges and opportunities. According to key informants, external events will determine the will of decision-makers to invest further into agroecology.

However, there are elements that France can actively act on to further develop agroecology and anticipate future changes. Education at the earliest age was established as a top priority to familiarize future stakeholders with the challenges faced by food systems (FRA-KI-2; FRA-KI-7; FRA-KI-14). Agroecology-oriented programmes in France continue to increase today (Initiative 3). However, agroecology tends to be less present in earlier programmes such as professional degrees and agricultural high schools. Key informants stated that the government should focus their efforts on introducing knowledge on agroecology at a young age and as a basis of agricultural knowledge (FRA-KI-3). Another opportunity to be further developed in France is the rise of the living labs approach to tackle problems at the territorial level. The cohesion of local actors enables more communication between parties as well as material support and comprehension of stakeholders' position. New generations of agroecology-minded farmers are making their appearance in France. From farming families to urban citizens, the agroecological movement is expanding. More tools, susceptible to reach a larger public, should be introduced and applied wherever possible. Development of tools and knowledge are an asset to assist farmers in their transition (Blesh and Barrett, 2008).

To engage in an agroecological transition, the transformation of supply chains is required. Informants revealed that agro-industrial companies still have poor flexibility and will to change their way of operations. Regardless, they would be key to enable change in supply chains, acting as a bridge between producers and markets. Establishing stronger collaboration with the food industry will be important in the future for an agroecological transition at larger scale. For now, CSA systems link producers and consumers through short supply chains. This process is efficient in promoting the advantages of organic products through health and environmental concerns of customers (Volz et al., 2016). Short supply chains answer to multiple principles of agroecology as fairness and connectivity. Another way to influence the supply chain would be to better identify agroecology with labelling and indicators, which may supporting agroecological transitions. Agroecology presents complex challenges and risks for farmers who must engage in a progressive transformation of their agroecosystem management. The question of labelling was mentioned numerous times by key informants as a solution to guide, exchange, and mitigate economic risks for farmers.

Despite the creation of cohesive groups, governmental actions show too low ambitions compared to the transformative goals of agroecology (Gliessman, 2018). The discontinuity in politics between previous and current governments has slowed down the process put in place with these initiatives (FRA-KI-6; FRA-KI-7; FRA-KI-13). France was the first country to take the step of institutionalising agroecology in Europe. Continuing on this path by developing the right levers and strengthening cohesion of actors will set an example for other European countries. France has the capacity to be a pioneer in the European agroecological sphere with leading policies and innovative stakeholders. Applying these measures to the global context is an opportunity to change the fundamental way of seeing food production.

ABBREVIATION

AFD – Agence Française du Développement
AMAP – Association de Maintien de l'Agriculture Paysanne
ANR – Agence National de Recherche
CETA – Centre d'Etudes et Techniques Agricoles
CGIAR – Consultative Group on International Agriculture Research
CIRAD – Centre International de Recherche pour l'Agriculture et le Développement
CIVAM – Centre d'Initiatives pour Valoriser l'Agriculture et le Milieu rural
CNRS – Centre National de Recherche Scientifique
CUMA – Coopérative d'Utilisation de Matériel Agricole
DRAAF – Directions Régionales pour l'Agriculture, l'Alimentation et le Forêt
ENSAT – Ecole Nationale Supérieur Agronomique de Toulouse
FAO – Food and Alimentation Organisation
FNSEA – Fédération Nationale des Syndicats d'Exploitants Agricoles d'une Agriculture Durable
GIEE – Groupes à Intérêt Economique et Environnemental
IFV – Institut Français de la Vigne
INRAe – Institut National de Recherche pour l'Agriculture et l'environnement
IRD – Institut de Recherche et Développement
LIT – Territoire d'Innovation Territorial
LPO – Ligue Protectrice des Oiseaux
OFB – Office Français pour la Biodiversité
PADV – Pour une Agriculture du Vivant
PAT – Territorial Alimentation Plan
PNR – Natural Regional Park Transition
RAESF – Réseaux des Agroécologistes Sans Frontière
T&H – Terre&Humanisme
UMR – Mixed Research Unit

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MAPPING AGROECOLOGY IN HUNGARY

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HUNGARY

EXECUTIVE SUMMARY

This report analyses the current state of agroecology in Hungary. The information and data provided here are the results from interviews conducted with 6 experts (named key informants), 3 initiative representatives and desktop research held between January and April 2023. This study collected information on the development and existing initiatives according to five activity categories: Education and Training, Living Labs, Movements, Practice, and Science.

A first mapping work of agroecology in Hungary was carried out by the Védegylet Association and the Environmental Social Sciences Research Group (ESSRG), with the support of Agroecology Europe in 2020, which found that although agroecology is not a central concept in the country, actors are present and active, although their activities are fragmented. Recently, the Hungarian Agroecology Network Association (HANA) was formed which aimed to connect and strengthen individuals and organisations working in agroecology and provide a meeting point for the community to exchange knowledge while supporting the movement of agroecological transition and food sovereignty. However, agroecology remains a marginal topic in the discourse of food system-level transformation, as opposed to technocratic solutions, for example. Nevertheless, as the need for an agricultural transformation gains more and more interest, movements related to agroecology such as permaculture and regenerative agriculture are gaining more recognition and mention with the new EU Common Agricultural Policy.

After a recent restructuring of higher education and scientific infrastructure, the Department of Agroecology and Organic Agriculture[1] was established in 2021, becoming the first place for formal education on agroecology. The mapping identified two living lab initiatives related to agroecology: The ÖMKi on-farm research network and the Leg-Hung initiative by Agri Kulti. While there are several local and national initiatives related to agroecology in Hungary, the agroecological movement is not yet widespread. Yet, a convergence of social and environmental movements around the themes of solidarity and food sovereignty can be observed. Agroecological farming practices can be identified in organic farming, biodynamic farming, permaculture, agroforestry and extensive grazing systems. Agroecological practices are supported by NGOs for organic certification, small producer advocacy and through communities where farmers and consumers have interaction through systems such as CSA's.. Some regions in Hungary, such as Nógrád, Somogy, Vas, and Tolna counties have more widespread use of agroecological practices on-farm, with some towns and municipalities serving as good examples for providing locally grown organic food.

[1] Agroökológia és Ökológiai Gazdálkodás Tanszék

HUNGARY

EXECUTIVE SUMMARY (IN HUNGARIAN)

Ez a tanulmány az agroökológia jelenlegi magyarországi helyzetét elemzi a H2020 Agroecology for Europe (AE4EU) projekt részeként. Az itt közölt információk és adatok 6 szakértővel és 3 kezdeményezés képviselőjével készült interjúk (kulcs informátorok) és a 2023 januárja és áprilisa között végzett forráselemzés eredményei. Ebben a tanulmányban öt pillér szerint gyűjtöttük össze az agroökológia fejlődésével és a meglévő kezdeményezésekkel kapcsolatos információkat: Oktatás és képzés, élő laboratóriumok, mozgalom, gyakorlat és tudomány.

A Védegylet Egyesület és a Környezeti Társadalomkutatók Kutatócsoportja (ESSRG) az Agroecology Europe támogatásával 2020-ban készített egy feltérképező tanulmányt a magyarországi agroökológia helyzetéről és szereplőiről. Ennek eredményei azt mutatták, hogy bár az agroökológia nem központi fogalom az országban, bizonyos szereplők - széttagoltan ugyan - de aktívan hozzájárulnak az agroökológia előremozdításához. A közelmúltban megalakult Magyarországi Agroökológia Hálózat Egyesület (HANA) célja, hogy összekapcsolja és megerősítse az agroökológiával foglalkozó egyéneket és szervezeteket, és találkozási pontot biztosítson a közösség számára a tudásmegosztáshoz, miközben támogatja az agroökológiai átmenet és az élelem-önrendelkezés mozgalmát Magyarországon. Szemben a technokrata megoldásokkal, az agroökológia azonban továbbra is marginális téma az élelmiszerrendszer szintű átalakulás diskurzusában. Mindazonáltal a mezőgazdasági átalakulás iránti igény egyre nagyobb érdeklődésre tart számot. Az agroökológiával fogalmilag is kapcsolatba hozható mozgalmak, mint például a permakultúra és a regeneratív mezőgazdaság, az EU új Közös Agrárpolitikájával és ahhoz kapcsolódó stratégiáival (pl. Termőföldtől az asztalig, Biodiverzitási, stb.) egyre nagyobb elismerést és említést nyernek.

A tanulmány számos fontos kezdeményezés és hálózat azonosításával összefoglalja az agroökológia helyzetét az öt pillér szerint. A magyar felsőoktatási és tudományos infrastruktúra 2019 és 2021 közötti átalakítása után a legtöbb agráregyetem beolvadt a Magyar Agrár és Élettudományi Egyetem új intézményébe. A térképezés két, az agroökológiával kapcsolatos élő labororatórium kezdeményezést azonosított: az ÖMKi on-farm kutatóhálózatot és az Agri Kulti Leg-Hung hálózatát. Míg Magyarországon számos agroökológiával kapcsolatos helyi és országos kezdeményezés létezik, a mozgalom még nem terjedt el széleskörűen, de megfigyelhető a társadalmi és környezetvédelmi mozgalmak konvergenciája a szolidaritás és az élelem-önrendelkezés témakörében. Az agroökológiai gazdálkodási gyakorlatok Magyarországon az ökológiai gazdálkodásban, a permakultúrában, az agrárerdészetben, a biodinamikus gazdálkodásban, a minimális talajbolygatásban és az extenzív legeltetési rendszerekben azonosíthatóak. Az agroökológiai gyakorlatokat, mint a biominősítést, a kistermelői érdekképviseletet és a bevásárlóközösségeket, civil szervezetek támogatják. Hazánk egyes régióiban, így Nógrád, Somogy, Vas és Tolna megyében elterjedtebbek az agroökológiai gyakorlatok a gazdálkodásban, néhány város és település jó példát mutat a helyben termesztett bioélelmiszer biztosítására.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Hungary are summarised in Table 1.

Table 1: List of Key informants in Hungary.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED	
1	National research institute	Ecology, extensive grazing systems, traditional ecological knowledge		
2	Farmer	Agroecology network, regenerative farming		
3	NGO	Agroecology		
4	Private research institute	Organic agriculture, living lab		
5	University	Agroecology, social farming, organic agriculture		
6	Private research group	Social sciences, environmental sciences		
7	University	Agroecology, organic agriculture		
8	NGO	Short food supply chains, local food systems, living lab		

2. CONTEXT

Hungary has an agricultural area of 4.8 million hectares, which covers 52% of the total land area. 80% of agricultural land is arable land (40% of the domestic agricultural economy), 15% is grassland, and the remaining areas are under horticulture and vine cultivation (KSH, 2020). There are currently, in 2023, around 230.000 farms in the country, which is a drastic reduction compared to 350.000 in 2010 (KSH, 2020). With the reduction in the number of farms, mostly caused by consolidation encouraged by national policy and land-based CAP payments, the average farm size is growing, with currently more than half of the farms being medium-sized (between 5 and 300 hectares) (KSH, 2020). The proportion of animal farmers has declined by 72% between 2010 and 2020, mostly due to the disappearance of small-scale peasant farming systems (KSH, 2020). Meanwhile, the number of animals per farm is rising. The most frequently farmed armed crops are intensive cultures of maize, wheat, soybean, sunflower and rapeseed. It is important to note that Hungary ranks 15th amongst the countries that exported the highest dollar value worth of wheat in 2021 (KSH, 2020). In a report on the EU biofuels sector, the United States Department of Agriculture estimated Hungary's fuel ethanol production in 2021 at 640 million litres, putting it third behind France and Germany among European producers (IEA, 2021). According to the same report, in Hungary, processing plants have increased their capacities to focus more on starch and non-fuel ethanol products, mostly for chemical use - supporting corn-based ethanol production in the region. With the rapid decline of small-scale farms, production became more concentrated and average farm size increased (IEA, 2021). The largest group of farms, accounting for about 1% of all farms, produce 45% of the Standard Production Value (KSH, 2020). Traditional vegetable crops, such as onions, garlic, green peas, beans and paprika growing areas have been declining since the 1989 system change, while the cultivated areas of fruits, such as apples, pears, cherries and apricots are mostly stagnating (KSH, 2020).

While between 2005 and 2014, the area devoted to organic farming remained unchanged, with around 1,500 organic farmers and 130.000 hectares of certified land (KSH 2019), the National Action Plan for Organic Agriculture[2] provided support for transitioning and maintaining organic certification, more than doubling the number of organic farmers to 5,100 in 2021. However, the number of organic farmers is still less than 1% of all producers. In 2021, 293.000 hectares, which corresponds to 5.7% of agricultural land, was certified organic (KSH 2021). In recent years, Hungary has been among the top 10 countries in the world with the most dynamically developing areas under organic agriculture, and has the 12th largest area of organically certified orchards. The most prevalent fruits in organic production are elderberries, hawthorn, walnuts, apples and cherries. Organic animal production, on the other hand, remains insignificant, and represents below 1% of all farm animals in Hungary. There is little economic data available on the domestic sales value of organic products, but Hungarian produce is primarily being exported for Western European and global markets as raw materials[3].

In 2023, a new land-based support initiative is being implemented for farmers in the Agro-ecological Programme (AÖP)[4], with the objective of protecting natural and environmental resources. The support provides a selection of actions supported by the CAP Strategic Plan. Practices supported in the AÖP include the use of cover crops, diversification, maintaining ecological areas, restrictions in chemical use, no-tillage in arable fields; pastoral and extensive grazing and the use of environmentally beneficial cutting methods in grasslands; and the use of microbial products, mulching, perennial cultures and the reduction of chemical use in orchards (NAK, 2023). The legal status and operation of small-scale producers (őstermelő) has been restructured in 2022, creating a favourable tax environment and support for family farms by the Small Producers Act[5].

[2] Nemzeti Cselekvési Terv az Ökológiai Gazdálkodás Fejlesztéséért (2022-2027) [3] Ökológiai gazdálkodás: Magyarország a világ legdinamikusabban fejlődő országai között.
[4] Az agro-ökológiai program a 2023- 2027 időszakban [5] 52/2010. (IV. 30.) FVM rendelet - a kistermelői élelmiszer-termelés, -előállítás és -értékesítés feltételeiről

Agri-environmental measures to support organic farming have been implemented since 2002 in the National Agri-environmental Management Programme (NAKP)[6]. Currently, the Hungarian government is implementing support for transitioning to and maintaining organic farming areas in the Rural Development Plan of 2021[7]. The National Food Chain Safety Office (NÉBIH)[8] is the authority for food chain supervision, which controls organic certification through two private certification bodies, Biokontroll Hungária Kft and Bio Garancia Magyarország Kft. Biokontroll Hungária Kft is affiliated with the 'Hungarian Bioculture Association'[9], an umbrella organisation for regional and professional associations in organic farming.

From 2019 to 2020, the Védegylet Association and the Environmental Social Sciences Group (ESSRG) carried out a large-scale mapping of the state of agroecology and its actors with the support of Agroecology Europe (Balázs et. al., 2020). Besides mapping actors, the report also contributed to understanding the state of the art of agroecology in the Hungarian context, providing a theoretical background to future research.

Its results show that the term agroecology ('agroökológia' or 'agrárökológia') is rooted in scientific principles of agronomy and landscape sciences. The term is rarely applied to agroecology as the triad of science, movement and practice (Wezel et al. 2009), which leads to confusion among professionals, often being equated to organic agriculture or to the scientific discipline of studying the ecology of an agroecosystem (Balázs et. al., 2020). "Agroecological potential" was mentioned regarding land use scenarios in the work of Ángyán in the context of agro-environmental management that utilizes landscape ecology, cultural heritage, ecological adaptation in land use, traditional land use for environmental protection, mosaic landscapes and flood basin management for water retention (Ángyán and Podmaniczky, 1997). The agroecology definitions that expand agroecology to the food system level, while implying a social angle, started to surface after 2016. Definitions of agroecology is similar to those in the international literature, highlighting its sectors and more elaborately connecting it to the themes of food system-level transformation, social justice, food, seed and land sovereignty (Balázs et. al., 2020). According to key informants, agroecology is not a central concept although related terms such as organic agriculture, permaculture, nature-based solutions and traditional agriculture are more widely used. The term agroecology itself is being applied more as an umbrella term for overlapping practices (HUN-KI-1 and KI-2). The vocabulary of agroecology is present in policy and land-based subsidies, such as the AÖP programme, but these definitions lack social aspects (HUN-KI-4).

The advancement of agroecology in Hungary is facing several barriers according to key informants. As the term agroökológia is rooted in the scientific disciplines of ecology and agronomy, it is hard for professionals to distinguish it from agronomic concepts, as well as from organic agriculture. As agroecology spreads in European policies, it is also endangered by co-optation and greenwashing by industrial actors, and dilution in government policies (HUN-KI-5 and KI-6). The system-level transformation that agroecology requires is primarily hindered by the dominating vision of governments that directs education, research and development of food systems towards large-scale, digitalized, robotized and precision agriculture, and export markets (HUN-KI-1 and KI-3). In the "polycrisis" of climate change, war and unstable global supply chains, agroecological transformation would require deeper adaptation and system-level cooperation. These radical changes are against political will, which needs to support small-scale farmers and markets. Policies, educational and research strategies are missing, and highly centralized systems hinder the advancement of alternative concepts (HUN-KI-3 and KI-6). The AÖP, for example, only affects a few farmers, as it is not strategically integrated into national policies (HUN-KI-6). Another barrier is the mentality

[6] AKG Kézikönyv a támogatási kérelem benyújtásához
[7] VP4-11.1.1-11.2.1-21 „Ökológiai gazdálkodásra történő áttérés, ökológiai gazdálkodás fenntartása" elnevezésű intézkedés elektronikus támogatási kérelmének benyújtásához
[8] Nemzeti Élelmiszerlánc-biztonsági Hivatal [9] Magyar Biokultúra Szövetség

of farmers: political pressure has conditioned them in the last 100 years to avoid cooperation and possible exploitation. Further, agricultural subsidies are such a large percentage of a farmers income that they are forced to adapt to them. A general distrust towards NGOs, fuelled often by government narratives, is isolating grassroots organisations from political discourse (HUN-KI-6). This imbalance of power is further aggravated by the lack of financial support to civil society (HUN-KI-3).

Participation in EU research projects related to agroecology, within the Horizon 2020 and Erasmus programmes, have mostly only been available to a few actors that are already part of European networks and have optimized infrastructures. Grassroots agroecological initiatives are rarely directly or indirectly involved, and therefore these projects have little impact on the ground and are not able to strengthen the agroecology movement to the desired levels (HUN-KI-3).

Recent years have shown some expansion for the recognition of agroecology as a holistic concept. During 2018 and 2019, Védegylet and the Central European University organised a 4 part event series titled Agroecology Nights[10], showcasing the environmental, social and economic aspects of agroecology which included panel discussions between actors in all 3 areas. This event series was the precursor to the Hungarian Agroecology Conferences held in 2019, 2020 and 2022, in cooperation with the French Institute in Budapest. In 2019 a workshop called "From Vision to Action: Laying the foundation for a Hungarian Agroecology Network" was the first step towards a network-level organisation, which was initiated by Védegylet and ESSRG. During the pandemic, online working groups, workshops and discussions were organised, eventually leading to the formation of the Hungarian Agroecology Network Association[11] (HANA) in 2022, which took over the management tasks of the Network. HANA is a national-level, decentralized network with actors from the civil sector, research and practice. Currently, the association has 15 core members participating in management tasks, with a wider network of around 70 more individuals. The network's objective is to connect and strengthen individuals and organisations working in agroecology and provide a meeting point for the community for knowledge exchange, while supporting the movement of agroecological transition and food sovereignty in Hungary.

Several informants mentioned the newly formed Hungarian Agroecology Network as an important milestone, although a more conscious cooperation of independent actors is developing beyond the network as well. The last 5 years have shown the spread of initiatives related to permaculture and regenerative farming, CSAs, conscious shopping communities, and no- or minimum-till farming (HUN-KI-3). The COVID crisis, war in Ukraine, rising energy prices and droughts have made farmers and consumers more open to alternatives (HUN-KI-2). There are strong agroecological aspirations of other non-formal networks which aim for system level transformation, bringing together actors from science, practice and movement. Balázs et. al (2020) identified networks, such as "Alternative food systems'' integrating networks of producers, consumers and professionals; "Plant diversity" recovering, maintaining and improving crop genetic diversity and "Agroforestry-permaculture" for landscape level transformation and community development.

[10] Agroecology Nights [11] Magyar Agroökológia Hálózat Egyesület

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

A large-scale restructuring of Hungarian higher-education between 2019 and 2021 resulted in merging most agricultural universities under the new institution of University of Agriculture and Life sciences (MATE)[12]. The restructuring also affected university departments, and in 2021 the Department of Agroecology and Organic Agriculture[13] was established with its headquarters located at the Campus of Gödöllő, but also working in Budapest. One key informant (HUN-KI-7) pointed out that the holistic concept of agroecology plays a key role in their educational activities in this department. Although there are currently no BSc or MSc programmes in agroecology or organic agriculture, the department participates in courses offered in agronomy, rural development and environmental studies. Specialisations in organic agriculture and biodiversity are offered for students in horticulture and as postgraduate trainings. A new Organic Agriculture MSc Programme is planned to be launched in 2024, which will focus strongly on interdisciplinarity, with several courses being offered on agroecology as well. Courses in organic agriculture, landscape management and sustainable resource management are offered at MATE, University of Debrecen and University of Sopron, but results from the 2020 mapping indicate that they lack the interdisciplinary approach of agroecology (Balázs et. al., 2020). Eötvös Lóránd Science University has been running a successful MA programme in Human Ecology[14], with a transdisciplinary approach to food systems, local economic development and ecological ethics.

Diverzitás Alapítvány, as a partner in the Erasmus+ project trAEce[15], has developed training materials for farmers and farmer-instructors in agroecology with a pilot training held in 2020. The course is the first of its kind, specifically designed for farmers in arable, grassland or market gardening production, but also discusses the social aspects of agroecology, as well as how to access local markets. The training will be offered through the MATE Adult Education Centre. Trainings and courses for farmers related to specific agroecological practices are shown in Table 2. Permaculture, regenerative agriculture, bio-intensive market gardening, community-supported agriculture (CSA) and agrotourism are some topics which appear in stand-alone one to several day-long courses or webinars implemented by consultants or NGO actors. In recent years, more and more events and meetings related to agroecology are taking place in different parts of the country, such as the annual organic producers' meeting with a transdisciplinary and trans sectoral agroecological approach in knowledge sharing.

There is a huge variety of informal education bodies that complement formal education in regards to agroecology which have developed throughout the years. This varies from the establishment of the biodynamic agriculture training centre 'Kraaybeekerhof Academie' in 1975, to 'Boerenvuren' (i.e. farmer fires: meetings where mainly first generation farmers exchange experiences and learn from each other in an informal way) which wasinitiated in 2015 by the agroecological farmers association 'Toekomstboeren'.

[12] Magyar Agrár -és Élettudományi Egyetem [13] Agroökológia és Ökológiai Gazdálkodás Tanszék [14] Humánökológia Mesterképzési Szak [15] trAEce project

Table 2: Education and trainings related to agroecological food systems.

Course/ Training	Offered by	Organiser	Target group	Length
Permaculture Design Certificate	MAPER Életfa Permakultúra	NGO	Home gardeners, farmers	Variable length
Regenerative farming	ÖMKi and HANA	Research Institute and NGO	Arable farmers	2 days
Agrotourism	National Association of Interest Representations for Small-scale producers and service providers *Kiléptek*	NGO	Small-scale farmers, processors	1 day
Local product market and short food supply chain management	National Association of Interest Representations for Small-scale producers and service providers *Kiléptek*	NGO	Food system actors	6 days
Community Supported Agriculture	Association of Conscious Consumers *Tudatos Vásárlók Egyesülete*	NGO	Farmers	variable length
Cover crops	Déméter Biosystems Kft.	SME	Arable farmers	variable length seminars
Organic Farming specialised training	MATE	University	University graduates in agricultural fields	2 years
Biointensive market gardening	The 3 hour garden *A 3 órás Kert*	SME	Market gardeners	days

3.2. LIVING LAB

The term 'living lab' has only been in use for the last few years, and is not yet widespread among research stakeholders. The identified living labs use the term because it is embedded in Horizon 2020 projects. Two initiatives were identified that directly connected to agroecology. The Research Institute of Organic Farming (ÖMKi) established its on-farm research network in 2012 that involves farmers in research goal determination and research activities for the development and promotion of innovative practices. Since 2020 the on-farm network is a member of the European Network of Living Laboratories (ENoLL). The Living Lab carries out research in tomato, potato, wheat and soybean variety testing, and inter-row cover cropping in viticulture.

Leg-Hung (Legume Hungary) is a Living Lab introduced by Agri Kulti[16] in the DIVINFOOD H2020 project[17]. Since 2016, the Living Lab continues research and a network of farmers dedicated to growing legumes from a previous project. Leg-Hung aims to develop a value chain of locally produced legumes by introducing new legume species prone to adapt to local weather and soil conditions. Their aim is to give these legumes to farmers, to connect producers to actors in gastronomy, to conduct research in variety of trials and to develop recipes. Other living lab initiatives loosely related to agroecology were identified in the project portfolio of ESSRG, FoodCLIC[18] (who tackles the issues of integrated urban food policies) and PLAN'EAT[19] (who is carrying out research in food systems for healthy eating habits).

[16] Agri Kulti Kft [17] https://divinfood.eu [18] FooCLIC [19] Plan'EAT

3.3. MOVEMENT

Grassroots environmental and peasant movements were not present during the socialist times in Hungary, so the environmental movement started to evolve in the 1980s. In the early 21st century, topics of agroecology started to appear in the environmental movements as advocacy for local food systems, small-scale food producers, organic farming, and environmental protection. The ecovillage movement was an early example of environmental protection, low ecological footprint living and self-sufficient organic farming. Organic farming as a movement has been present in Hungary since the 1980s. Biokultúra Egyesület (Bioculture Association) was the first Eastern-European member of IFOAM (trAEce, 2020). Farmer movements have seen some periods of more intense collective action since 1989, but especially around the years when Hungary joined the EU in 2004. Yet this action was not associated with the environmental movement, therefore advocacy groups or functioning networks of small-scale, organic, or agroecological farmers did not develop.

Several local and national initiatives directly related to the topics and goals of agroecology were mapped by Balázs et. al (2020). For example, professional and stakeholder networks which are composed of individual professionals or stakeholder groups in a scientific discipline or practice – such as agroforestry, soil science, CSA farmers or ecovillages. Larger organisations, such as Greenpeace or WWF are raising awareness about the threats of agricultural chemical use, GMOs and land grabbing, while carrying out agroecological projects, such as habitat restoration with the integration of traditional farming methods, advocating for floodplain agriculture, greening public procurement with a special focus on school canteens and supporting agroecological events. Friends of the Earth Hungary[20] and the National Society of Environmentalists were the first to publish about agroecology in its multidisciplinary understanding (MTVSZ, 2015). Other professional organisations also carry out research and advocacy closely associated with agroecology, such as Diverzitás Alapítvány[21] (social farming), Védegylet[22] (agroecology, food sovereignty), KISLÉPTÉK[23] (small-scale farmers advocacy) and MAPER[24] (permaculture).

Environmental and farmer movements were not using the term agroecology until the formation of the Hungarian Agroecology Network (HANA). Widened definitions of agroecology as a system, social movement and holistic scientific discipline is not widespread in Hungarian publications or the general discourse, as it is often equated with the organic farming movement (Bálint et. al 2021). Fordulat, a Journal in Social Sciences dedicated an issue to food sovereignty in 2021 to move forward the dialogue between social and green movements and raise attention to the system level problems that both rural and urban Hungary are facing in the food system, and their embeddedness in social conflicts and gender issues. As the leftist social movements converge with green movements for social change and solidarity, questions of food and land sovereignty, farmers rights, and access to land are put into focus. The Solidarity Action Group (SzACs)[25] was formed in 2020 as a movement to integrate civil actors based on the principles of environmentalism, feminism, food-sovereignty and social solidarity (Fordulat 29.). Two important recent initiatives mentioned by key informants were the formation of the HerStory collective[26] and the Hungarian Female Shepherds group, both empowering women in farming and rural areas.

[20] Magyar Természetvédők Szövetsége [21] Diverzitás Alapítvány [22] Védegylet Egyesület [23] Kisléptékű Termékelőállítók és Szolgáltatók Országos Érdekképviseletének Egyesülete
[24] Magyar Permakultúra Egyesület [25] Szolidáris Akciócsoport: Szolidaritás a válságban [26] HerStory Kollektíva

3.4. PRACTICE

The term "agroecological" is not commonly used for farming, processing or marketing practices, but its practices are present in organic farming, permaculture, agroforestry, biodynamic and regenerative farming, and extensive grazing systems. Agroecology aims for climate change mitigation and resilience, use of local breeds and varieties, landscape and environmental management, diversification of activities (e.g. through agrotourism), education and workshops, social farming, wellness, spiritual activities and participatory research (Balázs et. al. 2020). Agroecological farming is present on several social farms, farms where activities and income benefit a disadvantaged group, such as people living with disabilities or minority groups. The Agroecological Garden "SZIA"[27], initiated by Diverzitás Alapítvány, is a market garden maintained by a resident gardener and students of MATE, providing employment to local citizens. Agroecological practices are slightly expanded in arable production; on this level, simple landscape practices are applied that are incorporated into the agri-environmental management programme. Planting tree lines (HUN-KI-1 and KI-4), leguminous crop production incorporated into crop rotations, the use of heritage cereals and cover crops are becoming more popular, as well as the growing interest for other regenerative practices. Supply chains organised on the basis of agroecology are trades among communities and CSAs, but these channels reach only a few thousand consumers annually (Agrikulti, 2021). In one exemplary case, traditional mills and bakeries have formed an integrated system with domestic cereal farmers. These bakeries work in close relationship with mills for the testing of varieties and providing good quality flour (Gazda-Molnár-Pék /Farmer-Miller-Baker network[28]). The transition to agroecological practices are further supported by NGOs for organic certification (Biokultúra Egyesület), small producer advocacy (Kislépték) and shopping communities (Kosár Közösség)[29].

There are various regions in the country where agroecological practices are more widespread, as mentioned by informants. First, the Nógrád region in the north of Hungary, which was historically unfavourable to large-scale conventional farming, is becoming a hotspot for innovative newcomers (with the income stability to be able to experiment without reliance on EU funds) (KI-HUN-4). The counties of Somogy, Vas, and Tolna show a more widespread use of traditional varieties and the maintenance of agrobiodiversity, with a hotspot in the town of Nagyszékely, where several seed savers and permaculture farmers are active. The municipality of Hajdúnánás was mentioned as a good example for providing locally grown organic food in public catering (KI-HUN-5).

3.5. SCIENCE

Agroecology is rooted as an agronomic principle in science in Hungary, which makes it difficult for professionals in food system level and transdisciplinary research. According to informants, agroecology is sufficiently supported in the EU research framework (e.g. Horizon 2020 projects), but there are not enough Hungarian partners, as the institutional structures of universities are too rigid, causing more innovative researchers to work for private national firms or to move to research institutions abroad (KI-HUN-4 and KI-6). With the reorganisation of research institutions, the dismantling of the Hungarian Academy of Sciences (MTA) and the - National Agricultural Research and Innovation Centre (NAIK) in 2020, the agricultural research at the national-level was merged into the university MATE and the Eötvös Lóránd Science Network (ELKH)[30]. Most institutes and research groups within these institutions are focused on digitalisation, precision farming and industrial farming. The

[27] SZIA Ökológiai Kert [28] Gazda- Molnár- Pék Adatbázis [29] Kosár Közösség [30] Eötvös Lóránd Kutatási Hálózat

Institute of Rural Development and Sustainable Economies at MATE hosts the Department of Agroecology and Organic Agriculture, and some other institutes are carrying out research and participating in projects closely related to agroecology. The Institute of Ecology and Botanics[31] at the ELKH hosts the Traditional Ecological Knowledge research group carrying out research in extensive agricultural systems and their conservation, landscape use of pastoral systems, farmers, and ecological knowledge and traditions. Other national research actors with themes connected to agroecology are shown in Table 3.

Transdisciplinary, food system level agroecological research, mostly funded by EU projects, is carried out by some private research firms. The Environmental Social Sciences Group (ESSRG Kft.) focuses on topics such as biodiversity, food system level transformation and food policy; Agri Kulti Kft. is active in research in rural development and local food systems; while AKUT is applying action research methodology for sustainability research. The Research Institute of Organic Agriculture (ÖMKi), founded in 2011, is also active on these topics as a private firm and affiliate of FiBL. They carry out a wide range of research in the field of organic farming and maintain an expert advisory network as well.

Table 3: National research actors with research themes connected to agroecology.

Research Institute	Host organisation	Agroecology related research themes
Institute of Plant Production (NTTI)	MATE	Climate adaptation, environmentally sustainable farming inputs
Institute of Agricultural and Food Economics	MATE	Sustainable and local food markets
Institute of Environmental Studies	MATE	Climate adaptation, water retention
Institute of Rural Development and Sustainable Economies	MATE	Social farming, organic farming
Institute of Horticulture	MATE	Organic fruit and vegetable production
Institute of Ecology and Botanics	ELKH	Plant pollinators, ecosystem services, natural habitats in agricultural landscapes, traditional ecological knowledge
Agricultural Institute	ELKH	Organic cereal breeding
Institute of Soil Science (ATK- TAKI)	ELKH	Soil protection, soil biology, water management

[31] Ökológiai Kutatóközpont

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 4: An overview about initiatives, cases and examples mentioned by key informants and highlighted in the report.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Magyar Permakultúra Egyesület** *Hungarian Permaculture Association (MAPER)*	National	Association	Promote permaculture through education, network building and research					
2	**Agri Kulti Kft.** *Legume Hungary Project (Leg-Hung)*	National	SME	Short food supply chain, local food system and sustainable rural development research and pilot projects. Explore the possibilities of small-scale legume production and marketing					
3	**Ökológiai Mezőgazdasági Kutatóintézet** *Research Institute of Organic Agriculture (ÖMKI) On-farm Living Lab*	National	SME	Co-design and co-implement organic and agroecological field trials with farmers					
4	**Magyarországi Agroökológia Hálózat** *Hungarian Agroecology Network (HANA)*	National	Association	Connect and represent actors working towards an agroecological transformation					
5	**Magház Közösségi Hálózat a Mezőgazdasági Sokféleségért** *Community Network for the Diversity of Agriculture*	International	Association	Support the conservation of agrobiodiversity in the Carpathian basin					
6	**Élő Tisza Védjegy** *Living Tisza Trademark*	Regional	Association	Provide a trademark and marketing opportunities for small-scale producers from the Tisza-basin					
7	**Zsámboki - Biokert** *Zsámbok Organic Garden*	Regional	Farm and Cooperative	Break down borders between sustainability advocacy in the city and countryside through organic vegetable production and bicycle deliveries					
8	**Eötvös Lóránd Research Network** *Centre for Ecological Research Traditional Ecological Research Group*	National	Governmental Research Institution	Conduct high-quality research on biodiversity and ecosystems, including aquatic and terrestrial life in Hungary					

Table 5: Examples of additional initiatives in Hungary - not included in this report.

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Environmental Social Sciences Group (ESSRG)	National	SME	Research and development on the boundaries of social and environmental sciences				✓	✓
Biokultúra Egyesület *Hungarian Bioculture Association*	National	Association	Representation and network of organic farmers in Hungary				✓	
MATE Department of Agroecology and Organic Agriculture	National	University Department	Education on organic agriculture and agroecology in the agricultural university	✓			✓	✓
ELTE Human Ecology MA.	National	Masters programme	Transdisciplinary education in food systems, local economic development and ecological ethics	✓				✓
'SZIA' Agroecology garden	Local	Community Garden	Education of students and employment for local citizens in the MATE campus at Gödöllő	✓		✓	✓	
Diverzitás Alapítvány	National	Association	Represent and spread social farming as an agroecological solution	✓		✓	✓	
KISLÉPTÉK Egyesület	National	Association	Represent the interests and educate small-scale producers	✓			✓	
Kosár Közösség	National	Association	Support the formation and organisation of shopping communities	✓			✓	
Herstory Collective	National	Non- Formal community	Support women in their food sovereignty and care crisis			✓		✓

EDUCATION MOVEMENT PRACTICE SCIENCE LIVING LAB

A permakultúra magyarországi ernyőszervezete

MAGYAR PERMAKULTÚRA EGYESÜLET

INITIATIVE N°1 – MAGYAR PERMAKULTÚRA EGYESÜLET

https://permakultura.hu/
https://www.facebook.com/permakultura.hu/

MAGYAR PERMAKULTÚRA EGYESÜLET
HUNGARIAN PERMACULTURE ASSOCIATION (MAPER)

The Hungarian Permaculture Association is a founding member of the Hungarian Agroecology network and deeply embedded in the Hungarian agroecology movement through their networking and educational activities. Through their cooperation with the Agroecology Department at MATE they succeed in linking the concepts of permaculture, organic farming and agroecology at an academic level. MAPER was formed officially in 2016, after a longer period of informal status since 2006 to represent the permaculture movement in Hungary and to link it with the international permaculture network. Today the association has 183 members (gardeners, farmers and urban citizens) and their activities are increasing year-by-year. The Association has a broad range of activities, such as research, translation, online communication through its social media platform, and design and advisory services. Their main mission is to promote permaculture through education and several different courses are offered throughout the year, including introductory, full design and diploma courses, which have increasing interest. MAPER offers communication and collaboration platform for farmers, teachers, academics and civil society members. The association organises events and convergences, gives lectures and presentations in schools, universities (including recently developed 4-days course for small eco-oriented communities), and holds a yearly symposium for connecting practitioners and academics. The Hungarian Agroforestry Network (AFINET), the Network of Traditional Fruit Growers in the Carpathian Basin (KmGYH), TMG Association, and the Hungarian Agroecology Network Association have been their partners in events, networking, and research. After the success of their first jointly organised events, the partners now collaborate in a yearly event at one of the demonstration farms. Another important academic partner is the Hungarian University of Agriculture and Life Sciences (MATE), Institute of Rural Development and Sustainable Economy, Buda Campus, Department of Agroecology and Organic Farming (Agroecology Department).

KEY FEATURES

- **Main topics:** permaculture, education
- **Founded in:** 2006
- **Type of organisation/legal entity:** association
- **Type of actors involved:** gardeners, citizens, scientists

The Department of Agroecology and Organic Agriculture at MATE was always interested in spreading the approach of permaculture and have now integrated it into the general curriculum. The connection of MAPER and the Agroecology and Organic Agriculture Department formed before the foundation of the association, so these bonds became stronger in 2018, when joint conferences and meetings were organised. To reach a broader range of people, a so-called Permaculture Club was started 4 years ago at the Agroecology Department of the Buda Campus, with regular monthly meetings where current or popular topics are addressed. Participants are invited through social media. During the Covid-19 period, these events were held online, reaching even more participants across the country.Conferences and meetings are open to a wider public for free since they have a very low cost to host.

The balance between practice oriented presentations and scientific lectures ensures that practitioners, academics and novices all find something to enjoy in the programmes. The summer convergence is organised in a demonstration farm fitting to the thematic scope of the event. Participatory approaches (workshops, open space) are favoured to discuss the topic of the conference. Mixing practical and theoretical aspects in events help the long-term commitment of participants.

Picture 1: A permaculture market garden and education venue in Kóspallag. Source: Katalin Réthy.

WHAT CAN WE LEARN?

MAPER is a good example of how a grassroots, non- formal network can become a major driving force and a social movement if its members are dedicated and actively participating. Permaculture offers a good opportunity to bring together actors from various stakeholder groups and disciplines. Due to its developed methodology for training and education, it is a great tool to advance self-sufficient family farming and agroforestry, but also to sensitise participants from a wider, non- farming background to the issues of the food system. The cooperation between academia and the Association shows a possibility for research and education to go beyond the walls of universities, thus realising a transdisciplinary approach. By applying a viewpoint of permaculture in its courses, the department helps validate non-academic knowledge and the permaculture movement itself.

POSITIVE IMPACTS

COOPERATION: Connecting academia and the movement results in better visibility and access to interested individuals for both partners. An increasing number of students are getting acquainted with the idea of permaculture, meaning they can build these practices into their future work and spread permaculture.

EDUCATION: Permaculture is a good basis to spread ideas of ecologically sustainable and socially just farming systems. It is well integrated into the practices of agroforestry and landscape management, offering a holistic viewpoint. By offering possibilities for online connection to events, more people can be reached. Through the Agroecology Department at MATE, university students can be introduced to the concepts of permaculture in an integrative way to their agronomic studies.

LIMITATIONS & CHALLENGES

GOVERNANCE: The conferences are organised by volunteers from the Association and the range of participants are very broad from interested newcomers to professionals. This can increase the difficulties of finding a good balance at the level of professionalism.

INITIATIVE N°2 – LIVING LAB LEGUME HUNGARY

https://agrikulti.hu/divinfood/
https://agrikulti.hu/true/

LIVING LAB LEGUME HUNGARY (LEG-HUNG)

The Legume Hungary Living Lab (Leg-Hung LL) is an initiative aimed at developing the legume value chain in Hungary through a cross-sectoral participatory approach. The LL is coordinated by Agrikulti Kft., an independent SME focused on sustainable rural development and local food systems. The LL plans and executes on-farm trials with selected legume species and varieties with small-scale farmers and gardeners. The goal of the research is to explore the characteristics such as the productivity, susceptibility and resilience of underutilised legumes under different growing conditions throughout the country. The most promising varieties are selected for scaling up, including through cooking trials and recipe development at restaurants, with the aim to be eventually integrated into public catering. In 2023, small parcel trials will be scaled-up for the first time in cooperation with organic farmers, enabling substantial market scale production after 7 years of variety testing.

KEY FEATURES

- **Main topics:** legumes, value chain integration
- **Founded in:** 2016
- **Type of organisation/legal entity:** non-profit SME
- **Type of actors involved:** farmers, restaurants, researchers, associations, gene bank, and municipality

Agroecological principles are present both in the farming practices developed and the participatory approach of the research in the following ways: 1) Local and international heirloom varieties are tested to find the best suited varieties for various conditions in a changing climate, strengthening the resilience of production systems, 2) Agroecological practices in farming, such as intercropping, organic growing methods and soil building are encouraged, 3) Intensive knowledge sharing between farmers and other stakeholders, such as researchers and market actors is enabled through yearly meetings and conferences, and 4) The LL acknowledges and supports local food systems through developing solutions for different small scale actors, such as CSA, market gardeners and short food supply chain actors.

Within this LL, Agri Kulti is carrying out a "snowball method" research in hopes of identifying and contacting farmers and stakeholders who are still producing or could begin growing legumes. The starting concept of the LL was to access heirloom legume varieties from the National Gene Bank (NBGK) and introduce them to growers with the professional supervision of the Research Institute of Organic Agriculture (ÖMKI). During the first five years of the project (from 2018 to 2022), 15 farmers tested around 60 legume varieties, Hungarian and European heirlooms alike. Most of the heirloom Phaseolus and Vicia bean crops failed due to hot and dry summers. The novel crops, such as cowpeas and chickpeas, were unknown to farmers so it took some years to develop growing methods.

The Municipality of Budapest, the Association of Conscious Consumers, the Restauranteurs of the Hungarian Countryside, and the Farm2Fork retailer are organisational partners, contributing to channelling the produced legumes to the consumers. Throughout the last few years, Agri Kulti has developed a mediator role, building a network of farmers, researchers, retailers and consumers involved with legumes to exchange knowledge and seeds.

The LL started out as a research project in 2016 within the H2020 project TRUE[32] (Transition Paths to Sustainable Legume Based Systems in Europe) and is currently funded through the H2020 Project Divinfood.[33]

[32] https://cordis.europa.eu/project/id/727973/fr [33] https://divinfood.eu

Picture 2: Hand sowing chickpeas in Páty. Source: Juli Horváth, Agri Kulti Kft.

WHAT CAN WE LEARN?

Legume consumption should be improved across Europe, however, locally produced legumes are often not available. Farmers stop growing legumes because of ther lack of popularity and because they are harder to grow in a changing climate challenges. Both supply and demand need to be strengthened, and connections among stakeholders need to be established. Traditional varieties and outdated growing methods fail in the light of climate change - so both growing methods and the diversity of crops need to be improved. When new species are introduced, cultivation techniques in small-scale settings have to be developed together with farmers. The know-how of scaling up gene-bank material to marketable produce is developed together with farmers and agronomists. At the heart of the cooperation is the hope to introduce legumes into the food chain - through mapping needs of consumers (suppliers and restaurants), and providing knowledge and seeds for farmers.

POSITIVE IMPACTS

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: Participating farmers have a direct market link to restaurants and restaurant suppliers, and are advised on product development and marketing channels through the network. This way, demand and supply can be harmonised in short supply chains. Farmers working in a CSA model benefit from introducing new and drought resistant crops to their fields.

COOPERATION: Small scale farmers, scientists, and professional coordination have enabled the testing of around 60 gene-bank varieties from 8 different legume species in the last 7 years. 2-3 varieties of cowpeas, chickpeas, lentils and Phaseolus were each selected for multiplication and scaled-up for market production.

LIMITATIONS & CHALLENGES

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Traditional Phaseolus and Vicia beans are getting harder to grow in summers with increasingly stronger droughts, while drought tolerant species, such as cowpeas and chickpeas, remain outside of traditional food culture and are harder to introduce to farmers and consumers. Agronomic knowledge and sufficient quantities of heirloom variety seeds are not accessible and need to be developed within the network.

https://www.biokutatas.hu/hu/page/show/omki-on-farm-elo-laboratorium

INITIATIVE N°3 – ÖMKI ON- FARM LIVING LAB

ÖMKI
ON-FARM LIVING LAB

ÖMKi On-farm Living Lab (LL) is an organic farming and agroecology focused nationwide participatory experimentation network which includes a variety of field trials, co-designed and co-implemented products and technology tests primarily conducted with farmers, but also other stakeholders of the value chain in Hungary. The main objectives are to improve the adoption of organic and agroecological practices among Hungarian farmers, to bring together diverse range of agri-food stakeholders to participate in research, innovation and market development, to improve the opinion about and trust towards organic farming and products, and to create strong foundations for scientific research for organic and agroecology research in Hungary. As a research SME, the Research Institute of Organic Agriculture (ÖMKI) is the manager of the LL, where approximately 20 people (researchers, technicians, etc.) are engaged in daily operations. They work closely with more than 100 farmers, 10 advisors and around 20-30 other stakeholders yearly.

KEY FEATURES

- **Main topics:** legumes, value chain integration
- **Founded in:** 2012
- **Type of organisation/legal entity:** non-profit SME
- **Type of actors involved:** farmers, researchers, advisors, agricultural companies, SMEs, retail, universities, and consumers

The "on-farm method" of ÖMKI is a good example of participatory research and innovation with horizontal cooperation across the value chain and has the following steps:

1. Practical problem definition with farmers, advisors, and other stakeholders through personal discussions and workshops to identify challenges, goals, and expected benefits.
2. Set up of field trials and experiments adjusted to the real-life production scenarios of commercially active farms. Setting up the same trials at different farms simultaneously creates a well-established on-farm research network that allows the LL to see how different contexts influence the results.
3. Data collection often achieved together with the farmers.
4. Data evaluation with the stakeholders involved, through individual and group discussions. The on-farm research system is part of a larger product and service co-development process that starts from ideation, market analysis and situation assessment through the on-farm trials and evaluation of results, which eventually leads to product piloting and launching. At this stage, the LL decides how to proceed, following a circular process that is repeated in iterations after some calibration.
5. Communication of the results to a broader audience through field visits, on-farm demonstrations, conferences, other knowledge sharing events and publications.

ÖMKi On-farm LL is built on the principles of organic farming and agroecology. In the on-farm method different sub-networks test how new products, practices and technological innovations perform under the diversity of everyday farming. This open innovation practice supports the enabling environment for co-creation of knowledge and common value among farmers, researchers and other stakeholders.

The LL deals with the following in terms of adoption of AE practices: (1) crop diversification for food system stability with ancient cereal, soy bean and landrace tomato varieties (2) adaptation of precision farming tools for organic agriculture by testing remote sensing technologies for plant protection and sensors for developing customized feed and disease prevention systems; and (3) soil-building cultivation technologies: developing a species-rich cover crop mixture for vineyards and orchards, experimentation with herbicide-free, reduced and no-till tillage cultivation methods, and agroecological nutrient management techniques. The LL is mainly supported through a national fund provided by the Ministry of Agriculture via the National Rural Network and through European projects. It also receives a small amount of support from the Swiss Pancivis Foundation and from the profits of ÖMKi LL products.

Picture 3: On-farm demonstration of soil science for farmers. Source: ÖMKi.

WHAT CAN WE LEARN?

This inclusive methodology allows research to be performed under everyday farming conditions, creating space for open innovation, dynamic knowledge co-creation and sharing of experiences between the value chain actors. The participating farmers gain feedback directly from their own production experiences, land and technology. This makes the results more adaptable since it is based on the needs of the end users. At the same time, the results broaden the picture of Hungarian organic and agroecological production practices and locally applicable solutions.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Through the LL, innovative products and services are developed that benefit agrobiodiversity in small-scale gardens and farms. Landrace tomato varieties were selected through the LL network and commercialised to home gardeners as seedlings. Another product developed was the "Living interrow seed mix" for vineyards with the aim to replace mechanical row cultivation.

EDUCATION: From 2012 the LL accumulated vast knowledge on organic production practices and technology. The Lab researchers, farmers and independent advisors, in partnership with public institutions such as the National Chamber of Agriculture and relevant authorities, launched advisory and extension services to help farmers improve their agroecological and organic practices, as well as to support farming newcomer to convert to organic production.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: Due to the cooperation between farmers, millers, bakers, researchers and consumers, emmer and einkorn flour become available in 2022 in one of the biggest supermarket chains in Hungary. On-farm tested and selected landrace tomato seedlings are also available every spring at a supermarket chain.

INITIATIVE N°4 – MAGYARORSZÁGI AGROÖKOLÓGIA HÁLÓZAT

www.agrooko.hu
https://www.facebook.com/agrookologiamagyarorszag

HUNGARIAN AGROECOLOGY NETWORK

MAGYARORSZÁGI AGROÖKOLÓGIA HÁLÓZAT

The Hungarian Agroecology Network Association (HANA) is a multistakeholder, transdisciplinary and intergenerational network with the aim to connect and strengthen those working with agroecology in Hungary. The network is meant to be a meeting point, a knowledge-producing and -sharing community, and an advocacy organisation. The long-term goal is to promote national and international agroecological transformation through practices, policies and the implementation of food sovereignty through collaboration and movement building, as well as to work together to create a socially, economically and naturally sustainable agricultural production, processing, and distribution system in Hungary and beyond.

KEY FEATURES

- **Main topics:** agroecology, transdisciplinarity, and participation
- **Founded in:** 2019
- **Type of organisation/legal entity:** association
- **Type of actors involved:** farmers, civil society organisations, researchers, and individuals working in the public sector

The necessity of the network was realised after the Civil Society Organisations' Regional Consultation, prior to the FAO 31st Regional Conference for Europe and the side event for the United Nations Declaration on the Rights of Peasants and other People working in rural areas held in Budapest in April 2018, which was co-organised by Védegylet. Védegylet association, a Hungarian eco-political NGO which has been advocating for food sovereignty for the past decade, were also involved in the European H2020 project called 'BOND – Bringing organisations and network development to higher levels in the farming sector in Europe', where they were inspired by the many organisations and good examples of collective action throughout Europe. In 2019 the report "Mapping Agroecology in Hungary", the result of a 10-month-long mapping project from 2019 to2020, commissioned by Agroecology Europe and carried out by Védegylet with the help of the Environmental Social Science Research Group (ESSRG) Hungary, helped to understand the state of the art of agroecology and its actors in Hungary. The primary results of this mapping activity were presented at the 1st Hungarian Agroecology Conference in November 2019, which was followed by a workshop that aimed to connect actors from agroecological initiatives in Hungary and form a basis for future cooperation of stakeholders, such as farmers, researchers, members of civil society organisations, consumer associations, NGOs and decision-makers. The event proved to be useful on many levels: different stakeholders got to know each other and collaborations have been born; a common and agreed upon context for agroecology in Hungary was discussed with its constraints, realities, and opportunities; and last but not least, the participants created long-term visions, which were then translated into short term goals and actions. Starting in autumn 2020, Védegylet invited almost 100 identified actors to get involved in the bottom-up co-creation of the Hungarian Agroecology Network throughout an interactive workshop series. Several very active working groups have been created since, which have written a common joint position on the new CAP and organised the 2nd Hungarian

Agroecology Conference in person meetings and a remarkably successful international online conference on the 'Importance of agroecology in research and education' - attended by more than 400 participants from all over the world.

Picture 4: Farmers field visit in a training organised by HANA. Source: Lili Balogh.

The network intends to:

- organise events to promote knowledge sharing and networking
- facilitate working relationships and the development of processes between the actors of the Hungarian agroecological transition
- carry out agroecological awareness-raising, knowledge sharing and the dissemination of good practices
- embed agroecology in the formal and informal education system
- formulate and represent policy recommendations
- advocate for agroecology
- promote practice-oriented, stakeholder-involved and cross-disciplinary research.

WHAT CAN WE LEARN?

HANA is showcasing the importance of having transdisciplinary networks to scale out and up agroecology on a national and international level. They build and coordinate networks with a bottom-up approach and facilitate collaboration between actors involved in agroecology who are usually siloed and not communicating. The network used a very limited budget for its different activities, with a surprisingly good result and far reach. They managed to achieve this through different collaborations, highly skilled coordinators and plenty of voluntary work.

POSITIVE IMPACTS

EDUCATION: Members of HANA have created several easy to understand publications on agroecology, organised several events (conferences, workshops, trainings) to raise awareness and empower the Hungarian Agroecology movement.

COOPERATION: The initiative showcases positive examples of cross sectoral and interdisciplinary cooperations between farmers, civil society members, NGOs, decision makers and research actors.

GOVERNANCE: The foundations of the structure and the way the network works have been co-designed in a participatory democratic approach. As most of the meetings take place online, actors who are usually not involved in such processes due to geographical or time limitations can also take part.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Very limited funding is making the work harder and longer, as most often it is based on voluntary work. National grants are almost non-existent.

GOVERNANCE: There is a risk of burn-out for the coordinators since there is little proactivity from members who are still used to the top-down approach instead of acting collectively. The coordinators of the network and association have been doing most of the activities and administrative work on a voluntary basis, as there are no funds available to hire someone for that purpose, which highly endangers the viability of the initiative.

INITIATIVE N°5 – MAGHÁZ

https://www.maghaz.hu
https://www.facebook.com/MaghazHalozat/

MAGHÁZ
COMMUNITY NETWORK FOR THE DIVERSITY OF AGRICULTURE

Magház, the Community Network for the Diversity of Agriculture, was founded in 2012 with the aim to support the conservation of agrobiodiversity in Hungary and the Carpathian Basin. The organisation is an association and connects people who use, maintain and share seeds and knowledge about landraces and exotic varieties of a wide range of edible crops, such as cereals, vegetables, legumes, ornamentals, herbs and fruits. The network consists of a core team of 15 farmers and gardeners, a supporting membership of around 200 individuals and a group of 30 volunteers. The association is funded through supporting members fees, a cooperation with the national gene bank (NBGK-NÖDIK), an H2020 project (Coevolvers) and a multiple year grant from the Swiss foundation Salvia.

KEY FEATURES

- **Main topics:** seed saving, agrobiodiversity
- **Founded in:** 2012
- **Type of organisation/legal entity:** association
- **Type of actors involved:** farmers, gardeners and citizens

Magház plays an important role in the advocacy of agricultural diversity and agroecology at the national and European level. They are a founding member of the Hungarian Agroecology Network and a member of the European Coordination - Lets Liberate Diversity (EC-LLD). Magház is in close cooperation with the Hungarian National Gene-Bank (NBGK), the Hungarian Research Institute of Organic Agriculture (ÖMKi) and the Hungarian Permaculture Association (MAPER). They have co-organised the 11th EC-LLD forum in Budapest in 2022, providing a platform for knowledge-exchange of the international seed saving community. Agroecology as a term does not play a central role in the associations communication, however the associations work with seed sovereignty, the maintenance of diversity through small scale agroecological practices, and supporting locally adapted farming systems and varieties, connect their activities to the agroecological elements 'diversity' and 'resilience'.

One of the main objectives of the network is to collect, test, maintain and share landrace varieties, varieties from the gene bank, and adaptable varieties, from international sources, European landraces and exotic species alike. At the core of this objective are the 8 seed hubs of Magház, which are individual farms and gardens across Hungary. Hubs are community seedbanks, providing educational activities and represent Magház in their geographical regions. The decentralised seed bank system makes it possible to maintain a grassroots network, in which individuals are personally invested in their own varieties and seeds. Across the network, more than 1000 varieties of vegetables and herbs are maintained.

Another objective of the organisation is to collect and share best practices about the sustainable cultivation of plants, specifically related to seed sovereignty. Members of the network have co-authored a popular gardening book about seed saving with the National Gene Bank (NBGK- NÖDIK) and publish articles on their blog. Each season, they map and advertise the seed swaps across Hungary and organise and participate in seed swaps across the country by providing seeds and hosting presentations. Members organise workshops, educational activities and presentations at local libraries, civil communities and their farms where knowledge is shared regarding seed saving and small-scale subsistence farming. Supporting members of the association also benefit from a monthly online meeting, where core members share their knowledge in an informal setting.

Testing and maintaining open-pollinated varieties is performed through different projects, such as an on-farm cooperation with the National Gene Bank (NBGK) and several H2020 projects. Core members can participate in these projects and have a key role in driving small- scale, multidisciplinary on-farm research and cooperation, tackling the issues of climate change and multiplying gene bank material to the scales of market gardening. The best performing varieties are described in an online database, which is a citizen science-based platform that is currently under development to include the larger network in variety testing. As some members are CSA and market gardeners, the landrace vegetables and exotic novelties are also introduced to consumers for raising the awareness about the importance of agricultural diversity and small-scale agroecological farming. In the future they aim to further develop hubs to be regional centres for seed saving and knowledge sharing related to agricultural diversity.

Picture 5: Bread tasting from heirloom cereals at the LLD Forum in Budapest, 2022. Source: Katalin Rethy.

WHAT CAN WE LEARN?

Magház has become the reference organisation when it comes to seed saving in Hungary. They combine traditional and modern seeds and knowledge, aiming to actively participate in the process of change. Maintaining a decentralised national network of hubs, seed banks and regional groups enables several points of entry for gardeners and volunteers. The professional and trusted background of the association enables members to access research and gene conservation projects, providing funding and support for their activities regarding agrobiodiversity.

POSITIVE IMPACTS

TRADITIONAL FOOD AND HERITAGE CONSERVATION: The initiative plays an outstanding role in revitalising heirloom varieties by reintroducing them into the circulation of gardens and farms. This allows traditional ingredients to be introduced into the mainstream food culture again.

COOPERATION: The initiative showcases a positive example of cross-sectoral cooperation between seed savers, farmers, national-level gene conservation and research actors.

EDUCATION: Through semi-professional trainings and workshops, educational books, blog articles and shorter presentations across the country, Magház offers learning opportunities for gardeners and farmers with different backgrounds.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Currently, selling on-farm saved seed from heirloom varieties is hindered by capacities for packaging, logistics and the lack of a legal background to do so.

INITIATIVE N°6 – ÉLŐ TISZA VÉDJEGY

www.elotisza.hu
www.facebook.com/elotiszapiac

ÉLŐ TISZA VÉDJEGY
LIVING TISZA TRADEMARK

The Association for the Living Tisza (ALT) was founded in 2006 by members of 7 LEADER action groups in the Tisza region. ALT aims to improve the livelihoods of people living in the Tisza River Basin and surrounding areas, increase flood and environmental safety and preserve and enhance the ecological values of the Tisza. The Alliance is a network of private persons, non-governmental organisations, municipalities, researchers and farmers, and currently has 120 members. ALT aims to implement the sustainable floodplain management system in the Tisza Basin. Its experts perform research and compile studies on the theory and practice of floodplain management, publicising their results to the scientific community, decision-makers, farmers and the public. They lobby for sustainable river and landscape management, and rural development. ALT helps small and medium scale farmers to reach markets and to introduce environmentally friendly farming systems. The Alliance registered the Living Tisza trademark in Hungary, in 2008. ALT and trademark licensees will sign a contract, the licensee will receive the right to use the trademark on their products or services for a symbolic amount. ALT may control the quality of products and services which bear the trademark to ensure that they meet the commitments given by the licensee. The licensees, their products or services are presented on their homepage.

KEY FEATURES

- **Main topics:** trademark, local food systems
- **Founded in:** 2006
- **Type of organisation/legal entity:** association
- **Type of actors involved:** farmers, processors, scientists

Agroecological principles are encouraged both at the farm and the food system level by ALT, namely: 1) Small- scale, locally adapted farming systems are supported to enhance resilience and strengthen local food cultures, 2) A cooperative marketing strategy enables even the smallest actors to access urban markets, and 3) A cross- sectoral approach combines scientific results, environmental aspects and farmers interests to lobby for sustainable floodplain and landscape management.

The aim of the trademark system is to help farmers, rural accommodation providers, local processors and service providers of the Hungarian part of the Tisza Basin to access markets. The trademark offers a special quality for customers. The product and service bearing the trademark have to meet the following criteria:

1. made or offered in the Hungarian part of the Tisza Basin (local);
2. Hungarian;
3. the method of production should be:
   a) conventional farming in transition to environmentally friendly farming,
   b) environmentally friendly farming,
   c) certified organic farming,
   d) embedded in a system of landscape management;
4. the product was grown on natural soil;
5. the product was not treated by ionizing or radioactive radiation.

More than 80 producers can sell their fresh and processed products at 7 'Living Tisza' farmers' markets, 6 in the capital of Hungary, Budapest, and 1 in Szolnok (centre of Hungary). A partnership with Vedd Együtt, a community shopping initiative, enables the producers to reach a larger consumer base around the capital. The trademark system offers marketing services and sales opportunities which are affordable for small- and medium-sized local producers and service providers. The 'Living Tisza' trademark has gained considerable recognition among consumers seeking local produce. The six Budapest markets serve thousands of customers every year with high-quality, environmentally friendly products, many of which are landraces. 'Living Tisza' products are presented at festivals, local product fairs and other events, and in TV shows and magazines. The trademark owner, the Alliance for the Living Tisza, is a non-profit organisation, that gives the trademark license for a symbolic fee whose income does not cover the costs of running a system for controlling the quality of products and services, as well as the commitments of licensees. Effective marketing activities are very costly and the income from fees is not enough to carry out such activities. ALT covers its costs mostly by government and EU grants in the LEADER project.

Picture 6: Smoked goose ham at Élő Tisza (ALT) market in Budapest. Source: Péter Kajner, ALT.

WHAT CAN WE LEARN?

The trademark can be a tool for building short supply chains. It could represent quality, place of origin, environmental and social responsibility, or positive effects on health. A reliable trademark can be a link between producers and consumers, even if the two do not meet personally. Small- and medium-sized producers lack the capital for development, so the trademark license fee will not cover costs of an effective and growing system. A non-profit organisation with a mission to help small and medium sized producers and service providers will need external funding to run the system. The potential for growth of such a system is very limited. Forming a network of producers and the goodwill of an organisation working for environmental, social goals may be useful in partly replacing lacking financial resources for marketing.

POSITIVE IMPACTS

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: By the trademark system and collective marketing, small-scale actors gain access to markets and generate a higher income.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Entering the system of the trademark is fairly easy for farmers, but requires compliance with certain environmental criteria, that makes farming more agroecological in the floodbasin of the Tisza-river.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Small-scale producers can access markets with landrace varieties and traditional food products, even in very limited quantities.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The membership fees for the trademark do not cover the costs of the association as the business model itself is not self-sustaining. Although market access is ensured, products can only be marketed with a low profit margin. Small producers lack capital for investments and most of them have difficulties accessing agricultural subsidies, which means their businesses are unable to grow and produce larger quantities for bigger markets or consumers. The lack of capital is a barrier for the development of logistics as well.

INITIATIVE N°7 – ZSÁMBOKI BIOKERT AND CARGONOMIA

www.zsambokibiokert.hu
www.cargonomia.hu
www.facebook.com/zsambokibiokert

ZSÁMBOKI BIOKERT AND CARGONOMIA

ZSÁMBOKI ORGANIC GARDEN AND CARGONOMIA

Zsámboki Biokert is a 3.5 hectare organically certified and practicing biodynamic farm in the village Zsámbok (East of Budapest), Hungary which has been in operation since 2010. The farm includes a one-hectare outdoor vegetable production area, a 3000 m² orchard of about 100 heirloom fruit trees planted in the farm's first year, 2000 m² of unheated polytunnels, integrated biodiversity supporting strips, and three hectares of pastureland used for rotational grazing of a small flock of sheep and one horse.

KEY FEATURES

- **Main topics:** market gardening, collaboration, local food systems
- **Founded in:** 2010
- **Type of organisation/legal entity:** farm, foundation
- **Type of actors involved:** farmers, activists, consumers, students

The farm was founded by Matthew Hayes who has been practicing and teaching organic gardening in Hungary for over 30 years. The size of the garden can be considered "human-scale" meaning that management of the majority of farm activities is accomplished through the work of human and horse power with minimised mechanisation, and that the farm team complete tasks in close contact with each other and the production environment in a group of 5 garden team members and 5 part-time supplementary staff for food boxes preparation, market sales and logistics. The garden is oriented to produce vegetables year round, and does not rely on supplementary heat for its polytunnels while growing hearty winter greens following cold weather production models. The model is labour intensive, with most of the sowing, harvesting, weeding and field preparation done by hand and with the help of a draft horse. Throughout its existence the farm has served as a pioneer example of social outreach through on-farm learning opportunities, sustainable agriculture and agroecology advocacy. Since 2010 the farm has been striving to sustain itself by directly marketing healthy organic food to local families, while also playing a role in the Hungarian conscious food movement.

Cargonomia is a cooperative of cargo bike messenger services and a bicycle working cooperative, whose volunteers maintain a community space and donate time regularly on the farm in Zsámbok and at various urban gardening sites in Budapest. They work as a partner in cooperation with Zsámboki Biokert (collectively as part of The Open Garden Foundation) in organic food distribution and community outreach programming. Its volunteer members manage a cargo bicycle logistics centre and local food distribution points in Budapest.

The collaboration between Zsámboki Biokert and Cargonimia helps to implement advocacy, educational outreach and DIY (Do It Yourself) workshops focusing on urban sustainability, organic gardening and agroecology education, bicycle mobility, degrowth in practice, community activism for more liveable cities and self-sufficient living. They regularly host university students as part of a traineeship programme which introduces participants to agroecology in practice, self-organised community sustainability outreach and principles of degrowth in research and practice. Collaboration allows both organisations to extend the reach of their activities and break down borders between sustainability advocacy in the city and countryside. Cargonomia provides assistance in mobilising and reaching out to urban residents, while also experimenting in helping citizens and students gain a greater appreciation of more self-sufficient lifestyles traditionally

embedded in rural areas. In 2021, Cargonomia team members acquired a more than 100 year old adobe "peasant" house in close proximity to the farm which they are renovating using traditional building methods in hopes of establishing a community centre in the village.

Picture 7: Cargo bike for urban vegetable deliveries at the Cargonomia headquarters. Source: Cargonomia.

Zsámboki Biokert is a founding member of the Hungarian Agroecology Network, and has been a hotspot for agroecological and organic farming education and research for over a decade. The cooperation between the farm and Cargonomia enables participatory development of urban-rural partnerships, strengthening local food systems. Cargonomia provides assistance in mobilising and reaching out to urban residents, while also experimenting in helping citizens and students gain a greater appreciation of the embedded self-sufficiency principles found historically in rural areas. Cargonomia regularly hosts bachelor's and master's level students as trainees, giving them the opportunity to learn more about grassroots activism, organic agriculture in practice and community organising. The team also works to increase understanding of solidarity economic systems, degrowth, and community organised sustainability movements and social gardening projects.

The farm team is currently undertaking a process of exploring the benefits and application of "lean" management principles in human scale market gardens in an attempt to make production practices and business management more efficient.

WHAT CAN WE LEARN?

A main lesson learned from this partnership is that ecologically conscious, agroecology inspired, short food supply chains can be facilitated by cross-disciplinary collaborations between unique partners. The meshing of traditional farming methods and human-powered logistics helps to demonstrate that resource efficiency in food systems is not linked solely to advanced technology or growth-reliant economies of scale. Prioritising building relationships, direct interaction and the development of social capital can enable substantial emissions reductions, preservation and regeneration of landscapes, while delivering important positive social impacts. Moreover, the circular nature of this model extends far beyond the prudent use of production resources to highlight reciprocal exchanges between producers and consumers, and the establishment of a participatory, interactive relationship. Cargonomia and Zsámboki Biokert's collaborative educational and outreach activities bring attention to the potential when socially minded businesses and civic groups unite their efforts. The extended impacts of this localised food network are maximized within the community through regular activities offering participants open spaces for learning and exchange, thereby creating conditions for meaningful dialogue between neighbors, producers, craftspeople and active volunteers.

POSITIVE IMPACTS

HEALTH: Providing healthy organic food to hundreds of families in their region, and over 3000 weekly organic food box orders per year.

SUSTAINABLE AND FAIR ECONOMICS: Providing stable employment to 8-10 residents of the village and city, and a healthy and comfortable working environment.

COOPERATION: Extending the impacts of both organisations beyond food production through co-collaboration of outreach events in the city and on site in the countryside, reaching a wide range of stakeholders of varying age, educational and social background.

EDUCATION: Zsámboki Biokert serves as a study and training farm for young agricultural students aiming to learn more about agroecological market gardening in practice. The team also participates in the development of the Hungarian Agroecology, Permaculture, Marketing Gardening and Organic Agriculture movements. It maintains working relationships with similar actors in Central and Western Europe.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The limitations for the two partners are similar, for Cargonomia, maintaining a non-profit partnership while surrounded by traditional profit-oriented market structures is difficult, while for Zsamboki Biokert maintaining financial viability within a food sector still dominated by industrial agri-business and large food retailers also presents its challenges. In the farm's more than a decade of operation, it has sustained itself but has not reached a level of financial stability which secures its future, nor has it allowed the further development of a more comprehensive social-care farming project on site, a goal which is highly valued. Cargonomia's status as an independent, self-organised collective allows the organisation to maintain autonomy, but difficulty arises in maintaining their community space without a traditional income. To date their activities and maintenance of their community space have been made possible through donations, self-contributions and sporadic participation in funded civil projects.

ÖKOLÓGIAI KUTATÓKÖZPONT
www.ecolres.hu

INITIATIVE N°8 – EÖTVÖS LÓRÁND RESEARCH NETWORK

EÖTVÖS LÓRÁND RESEARCH NETWORK

CENTRE FOR ECOLOGICAL RESEARCH TRADITIONAL ECOLOGICAL RESEARCH GROUP

After the reorganisation of the network of research institutes of the Hungarian Academy of Sciences (MTA), the MTA Centre for Ecological Research was established in 2012. During the transformation, the MTA Institute of Ecology and Botany and the MTA Danube Research Institute were integrated into the MTA Balaton Limnological Research Institute. Currently, the institution is called ELKH (Eötvös Lóránd Kutatási Hálózat - Eötvös Lóránd Research Network) Centre for Ecological Research, and its three institutes are the Institute of Ecology and Botany, the Institute of Aquatic Ecology and the Institute of Evolution.

KEY FEATURES

- **Main topics:** traditional and local ecological knowledge, historical landscape ecology, conservation management
- **Founded in:** 2013
- **Type of organisation/legal entity:** research group of a governmental research institute
- **Type of actors involved:** researchers, herders, farmers and other land users, as well as, decision makers

The main mission of the Centre for Ecological Research is to conduct high-quality research on biodiversity and ecosystems, including aquatic and terrestrial life. The centre is primarily dedicated to ecological research, but many of their studies are related to the impact of agriculture and forestry on biodiversity, traditional ecological knowledge or interdisciplinary topics. They are working hard to integrate institutes and disciplines, as it is difficult to tackle complex environmental challenges in isolation. In addition to research, they are committed to building bridges between science and society and thus are involved in EU and global policy development.

The Institute of Ecology and Botany seeks to propose scientific solutions to the environmental challenges of our time, such as land-use change, habitat degradation, climate change, urbanisation, the effects of intensive agriculture, pest outbreaks, and the emergence of new diseases. The Institute's nearly 80 researchers which are organised in research groups, work on a wide range of species groups and habitats, using a variety of methodological approaches. In addition to its basic research activities, the institute carries out a number of public monitoring and applied research activities. The Traditional Ecological Research Group is one out of the nine research groups of the institute.

The main goal of the research group is to conduct and facilitate research on traditional ecological knowledge (TEK) among Hungarians living in the Carpathian basin and in Serbia, Mongolia, Iran and Kenya. The main focus of the group is landscape ethnoecology, local landscape perception and TEK related to habitats, vegetation and traditional land use. Researchers of the group use both botanical and ecological anthropological research methods. Besides scientific publications, they also emphasize the value of TEK in nature conservation management and motivate the use of multiple evidences in nature conservation. They are active members of the IPBES and CBD.

In Europe, many semi-natural grasslands need traditional management to maintain their biodiversity. However, traditional management practices need fine-tuning because of substantial social and ecological changes.

Using the approach of knowledge co-production the Research Group is working with traditional herders and conservationists to develop tradition-based solutions. They have an intensive collaboration with around 10-15 herders, but all together they are in touch with several hundred from various countries. In general, very few ecologists and rangeland scientists work closely with herders, hence the importance of the joint paper released in 2020 with one of the herders as co-authors, on the importance of knowledge co-production with traditional herders on cattle grazing behaviour for better management of species-rich grasslands (Molnár et al., 2020).

Picture 8: A snippet from the participatory action research of the Traditional Ecological Research Group: the shepherd and the researcher on the pasture – both working. Source: Ábel Molnár.

WHAT CAN WE LEARN?

Transdisciplinary research is vital to understand the intricate interactions of indirect and direct drivers causing biodiversity loss. Working with traditional knowledge holders helps learn about landscapes and biodiversity in a more holistic way, which is easier to link to sustainability goals.

POSITIVE IMPACTS

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Increasing acknowledgement by the general public, scientific and policy institutions of traditional ecological knowledge, in this case, herders' knowledge by making a 3-hour long documentary (followed by several interviews in different media outlets) on an afternoon grazing carried out by a traditional shepherd, narrated by him with guiding questions from the researcher.

SOCIETY AND EQUITY: The co-creation of knowledge between practitioners and researchers is a central element of their work.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Several researchers at the centre are part of IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), CBD (Convention on Biological Diversity) and SCAR (Standing Committee on Agricultural Research of the EU).

LIMITATIONS & CHALLENGES

EDUCATION: It is a big challenge for natural scientists to understand other knowledge systems, like the knowledge of Indigenous Peoples and local communities. The knowledge co-production process between scientists and traditional knowledge holders is improving, researchers apply novel approaches and methods. The classical ways scientists publish their results often prevent efficient communication with the public.

5. CONCLUSION AND FUTURE PERSPECTIVE

In recent years, agroecology has gained recognition in Hungary as a holistic concept through the work of initiatives such as the Hungarian Agroecology Network and various EU-funded projects that focus on agroecology. Although agroecology is still not a widespread concept, many actors and initiatives fall under its umbrella. In the Hungarian context, agroecology resonates with experts mostly within the themes of organic agriculture, agricultural environmental management and traditional farming systems. However, there are several barriers to the widespread adoption of agroecology. Government policies favour large actors and have a technocratic approach in food system development. Further, agroecology often gets equated with agronomic concepts, such as organic farming, making it hard to for professionals to distinguish the concepts from one another. Additionally, agroecology is endangered by co-optation for greenwashing by industrial actors and reductionism in government policies. Despite these barriers, there are opportunities for agroecology to move forward in Hungary. The Hungarian Agroecology Network has played a key role in integrating the activity of various stakeholders and fostering various collaborations. The convergence of social and environmental movements around the themes of solidarity and food sovereignty can be observed, and there are several local and national initiatives related to agroecology. Furthermore, the crisis of COVID, the Ukraine war, rising energy and input prices, and droughts have made farmers and consumers more open to alternatives. As leftist social movements converge with environmental movements for social change and solidarity, questions of food and land sovereignty, farmers' rights and access to land are put into focus, and agroecology can play a central role in addressing these issues.

Even though the crucial roles that civil society plays have been identified by many different cases and actors, the very limited funding available for them heavily influences their outreach, impact and long-term economic sustainability. New forms of networks of alternative food systems have been forming in the last decade, but a lack of collaboration is still very much present, most likley due to historic collectivisation traumas. Nevertheless, there are many new entrants to agroecology willing to act collectively, and their numbers keeps increasing with the appearance of more grassroot training opportunities.

Going forward, it will be crucial to protect agroecology from co-optation and ensure that it is embedded more widely in discussions regarding the future of the food system. There is a need for national-level networking, grassroots organisation and a unified vision for the many small actors, with the urgency to provide an enabling environment with fair funding possibilities to support their activities. The biggest challenge for the near future is to ensure that agroecology is not lost in terminology, at rivalry for funds with other similar concepts, and that actors from different backgrounds can find common ground in their vision and act collectively. This could be called agroecology, permaculture, regenerative farming or traditional agriculture, but what is important is that there is a unified common fertile ground.

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ABBREVIATION

AE4EU: Agroecology For Europe H2020 project
ALT: ASSOCIATION FOR THE LIVING TISZA
AÖP: AGRO-ECOLOGICAL PROGRAMME
CAP: COMMON AGRICULTURAL POLICY OF THE EUROPEAN UNION
CSA: COMMUNITY SUPPORTED AGRICULTURE
ELKH: EÖTVÖS LÓRÁND SCIENCE NETWORK
ESSRG: ENVIRONMENTAL SOCIAL SCIENCES RESEARCH GROUP
FIBL: RESEARCH INSTITUTE OF ORGANIC AGRICULTURE
HANA: HUNGARIAN AGROECOLOGY NETWORK ASSOCIATION
MAPER: HUNGARIAN PERMACULTURE ASSOCIATION
MATE: UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES
MTA: HUNGARIAN ACADEMY OF SCIENCES
NAIK: NATIONAL AGRICULTURAL RESEARCH AND INNOVATION CENTRE
NAK: CHAMBER OF AGRICULTURE
NAKP: NATIONAL AGRI-ENVIRONMENTAL MANAGEMENT PROGRAMME
NÉBIH: NATIONAL FOOD CHAIN SAFETY OFFICE
ÖMKI: RESEARCH INSTITUTE OF ORGANIC AGRICULTURE
WWF: WORLD WIDE FUND FOR NATURE

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MAPPING AGROECOLOGY IN THE REPUBLIC OF IRELAND

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REPUBLIC OF IRELAND

EXECUTIVE SUMMARY

The following report provides an analysis of the development and the current state of agroecology in the Republic of Ireland. Key informants were interviewed to obtain information on ongoing initiatives related to agroecology. The initiatives were discussed in relation to five activity categories: Education and Training, Living Lab, Movement, Practice, and Science.

Agroecology is still in its infancy in Ireland. The Irish agri-food system is focused on meat and dairy production and the Irish economy is reliant on the exportation of agricultural goods. This context, as well as the difficulty faced by potential farmers in acquiring land, limits the opportunities for agroecological initiatives to proliferate. The challenges facing the adoption of sustainable farming practices is highlighted by the relatively low amount of organically farmed area in Ireland (1.6% versus a EU average of 9.1% and an EU target of 25% by 2030), although the number of fully converted organic farms is steadily increasing.

Nevertheless, interesting initiatives associated with agroecology exist in Ireland. Training courses are available in farming approaches related to agroecology such as permaculture, regenerative agriculture, and agroforestry, and higher educational courses are available in sustainable agriculture, for example, the Sustainable Agriculture & Rural Development Master of Science degree in University College Dublin (UCD). There are numerous agriculture European Innovation Partnerships, which in some cases can be considered as living labs, that are based on topics associated with agroecology such as biodiversity conservation in agroecosystems. Movements such as Talamh Beo, Social Farming Ireland, and Farming for Nature have arisen which promote food sovereignty, social inclusion, environment and biodiversity friendly farming practices, and the production of healthy food. Examples of agroecological practices such as the use of multi-species swards, mixed farming, agroforestry and permanent pastures are evident in a small but growing number of farms in Ireland. Further research on these practices is needed in Ireland and research institutions such as UCD, Atlantic Technological University, and Teagasc have already contributed to the study of topics related to agroecology. The recent Covid-19 pandemic and, especially, the war in Ukraine have highlighted the dependence of the Irish agricultural sector on exports of food products and imports of livestock feed. These recent events and the raising awareness of environmental issues offers hope that these agroecological initiatives can thrive and that new ones may appear. The ambitious target of 25% EU certified organic land on average in the EU by 2030 might also help to change the political climate. Although it is unlikely that the Republic of Ireland will reach this benchmark by 2030, this target may lead to an increase in the total of organically farmed area.

REPUBLIC OF IRELAND

EXECUTIVE SUMMARY (IN IRISH)

Déanann an tuarascáil seo cur síos ar fhorbairt na hagra-éiceolaíochta agus ar a staid reatha i bPoblacht na hÉireann. Cuireadh faisnéiseoirí faoi agallamh le heolas a bhailiú ar na tionscnaimh a bhaineann le hagra-éiceolaíocht atá ar bun faoi láthair. Tá na tionscnaimh sin roinnte i gcúig chatagóir: Oideachas agus Oiliúint, Saotharlann Bheo, Gluaiseacht, Cleachtas, agus Eolaíocht.

Níl an agra-éiceolaíocht ach ina thús in Éirinn. Tá earnáil an agraibhia dírithe ar tháirgeadh na feola agus na déiríochta, agus braitheann eacnamaíocht na tíre ar easpórtáil earraí talmhaíochta. Mar gheall air sin, agus ar an deacracht atá ag daoine talamh a cheannach le feirmeacha a bhunú, tá teorainn leis na deiseanna tionscnamh na hagra-éiceolaíochta a mhéadú sa tír. Tá sé seo soiléir má bhreathnaítear ar a laghad den limistéar talmhaíochta atá á shaothrú go horgánach in Éirinn (1.6% i gcomparáid le meán an AE de 9.1% agus sprioc AE de 25% faoi 2030), cé go bhfuil líon na bhfeirmeacha orgánacha atá tiontaithe go hiomlán ag méadú go seasta.

Mar sin féin, tá tionscnaimh spéisiúla in Éirinn a bhaineann le hagra-éiceolaíocht. Tá cúrsaí oiliúna ar fáil i gcleachtais feirmeoireacht inbhuanaithe — an bhuantalmhaíocht, cuir i gcás, an talmhaíocht athghiniúnach agus an agrafhoraoiseacht — agus tá cúrsaí ardoideachais ar fáil i dtalmhaíocht inbhuanaithe, mar atá an cúrsa máistreachta san eolaíocht "Sustainable Agriculture & Rural Development" sa gColáiste Ollscoile, Baile Átha Cliath (UCD). Tá Comhpháirtíochtaí Nuálaíochta Eorpach um Talmhaíocht cruthaithe sa tír ar féidir saotharlanna beo a thabhairt orthu, agus a phléann le hábhair atá bainteach le hagra-éiceolaíocht, cosúil leis an gcaomhnú bithéagsúlachta san agra-éiceachóras. Bunaíodh gluaiseachtaí ar nós Talamh Beo, Farming for Nature agus Social Farming Ireland a chuireann chun cinn biafhlaitheas, ionchuimsiú sóisialta, cleachtais ferimeoireachta atá neamhdhíobhálach don timpeallacht agus don bhithéagsúlacht, agus táirgeadh bia folláin. Tá báinseacha ilspeiceas, feirmeoireacht mheasctha, agrafhoraoiseacht agus féarach buan ina gcleachtais agra-éiceolaíochta i roinnt feirmeacha. Teastaíonn tuilleadh taighde sna cleachtais seo in Éirinn. Tá taighde á dhéanamh ag institiúidí ar nós UCD, Ollscoil Teicneolaíochta an Atlantaigh, agus Teagasc ar ábhair a bhaineann leis an agra-éiceolaíocht. Leis an bpaindéim Covid-19 a tharla le déanaí agus, go háirithe, an cogadh san Úcráin, tá aird tugtha ar an spleáchas atá ag earnáil talmhaíochta na hÉireann ar onnmhairiú táirgí bia agus ar allmhairí beatha le haghaidh beostoic. Tugann na hathruithe domhanda sin, agus an t-ardú feasachta ar chúrsaí timpeallachta, dóchas go n-éireoidh leis na tionscnaimh agra-éiceolaíochta seo agus go dtiocfaidh tionscnaimh nua chun cinn. D'fhéadfadh an sprioc uaillmhianach de 25% de thalamh orgánach deimhnithe ar an meán san AE faoi 2030 cuidiú freisin leis an aeráid pholaitiúil a athrú. Cé nach bhfuil morán dóchas ann go sroichfidh Poblacht na hÉireann an tagarmharc seo faoi 2030, d'fhéadfadh méadú ar an limistéir a ndéantar feirmeoireacht orgánach a bheith mar thoradh ar an sprioc seo.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Ireland are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants (KI) in the Republic of Ireland.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	NGO	Agroforestry	
2	NGO	Agroforestry	
3	University	Food system	
4	Education provider	Organic agriculture	
5	NGO	Agroecology, land rights and social equity	
6	University	Sustainable agriculture	
7	Ministry of Agriculture	Agriculture and Ecology	

2. CONTEXT

Agriculture in Ireland is dominated by meat and dairy production (IRL-Key Informant (KI)-1, Table 1). Approximately 92% of the total agricultural area consists of grassland according to a survey conducted in 2016[1]. The dominance of grassland in the Irish agricultural landscape is partly due to the rich soil found in many parts of Ireland and the maritime climate found in Ireland (Collins, 2016). Cattle and dairy systems represented 74% of farm population in 2021[2]. The general trend of increasing farmer age observed in Europe is also evident in Ireland with the average farmer age increasing from 56 years in 2016 to 59 years in 2021[3/4]. This trend is partly due to the difficulty that young farmers face in obtaining agricultural land as only a small amount of agricultural land is available to buy and, consequently, is expensive (IRL-KI-2). Farming is practiced by more men than women, with women representing only 13% of the farmer population[5], although this figure does not take into account the work women do in the background in farming households (IRL-KI-5).

The agricultural sector plays an important economic role in Ireland. The agri-food sector represented 7% of total employment in 2020[6] (DAFM, 2022a). The sector is reliant on exportation. Around 90%

[1] Central Statistics Office (CSO), 2016. Farm Structure Survey 2016. https://www. cso.ie/en/releasesandpublications/ep/p-fss/farmstructuresurvey2016/
[2] Teagasc National Farm Survey, 2017. https://www.teagasc.ie/media/website/publications/2017/NFS-2016-Final-Report.pdf
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[5] Central Statistics Office (CSO), 2021. Press Statement Census of Agriculture 2020. https://www.cso.ie/en/csolatestnews/pressreleases/2022pressreleases/pressstatementcensusofagriculture2020-detailedresults/ Published: 09/12/2021.
[6] Bord Bia, 2022. Export Performance and Prospects 2021–2022. https:// www.bordbia.ie/industry/insights/performance-and-prospects/performance-prospects-2022/.

of the food produced in Ireland is exported, with the main products exported being meat and dairy[7]. This means that Ireland is dependent on trade deals and export deals which results in the agri-food sector being sensitive to changes in global market stability (IRL-KI-2). On the other hand, livestock production is extremely reliant on feed import, with the demand recently reported as 65% of total requirement (Hennessy, 2021). This makes Ireland vulnerable to external factors and events such as the recent war in Ukraine (IRL-KI-2). The recent increase in feed prices means that in some cases farmers sell their lambs at their local market at a lower price than the expenses paid to feed them (IRL-KI-2). The war in Ukraine has led to the launch of a €12 million Tillage Incentive Scheme (DAFM, 2022b) to encourage farmers to grow cereals and forage to be less reliant on feed importation (IRL-KI-2).

The current development of agroecology in Ireland is limited (IRL-KI-1 & KI-3). This in part is due to the economic importance of the dairy sector which is reliant on intensive farming practices in Ireland (IRL-KI-1). These farming methods are incompatible with the concept of agroecology and with sustainable farming methods. This is reflected by the amount of organically farmed area in Ireland. Ireland had the second lowest percentage of agricultural area that is organically farmed in the EU in 2020 with only 1.6% compared to an across EU state average of 9.1%[9/10], although the number of fully converted organic farms is steadily increasing[11]. The organic area in England, Scotland, and Wales is, however, similarly low as in Ireland. Like the United Kindgom, Ireland has also a relatively low woodland cover and a low amount of agroforestry, however it has many woody landscape features, like hedges. The word "agroecology" itself has not yet penetrated the lexicon of the citizens of Ireland. People do not really know what agroecology is and the term is still situated too much in the academic paradigm (IRL-KI-2 & KI-5). People in Ireland are more familiar with other terms associated with sustainable farming such as nature-friendly farming, organic farming, permaculture, and regenerative farming (IRL-KI-1; Agroecology Europe, 2020). There are a few initiatives that occur in Ireland that could be categorised as agroecological initiatives, and some of them are detailed in this report. Such initiatives tend to be more frequently found in the west of Ireland (IRL-KI-3). This is evident by the predominance of High Nature Value farmland in the west of Ireland (Matin et al., 2016). This could be due to the poorer land found there where conventional agriculture practices are not as effective as in more fertile areas (IRL-KI-3, KI-4 & KI-5). Furthermore, a greater influx of foreigners occurred in this part of Ireland due to the cheaper price of land (IRL-KI-4 & KI-5). Their arrival is thought to have positively influenced the uptake of more environmentally friendly practices such as organic farming (Barry and Doran, 2009).

At the decision-making level, it seems that sustainability of the agri-food sector is an area of interest. In 2012, Bord Bia, the Irish state agency in charge of promoting sales of Irish food, drink, and horticulture, launched the Origin Green programme with the aim of increasing the sustainability of Irish agri-food products (IRL-KI-6). However, there is a worry that the term "sustainability" may be misappropriated for marketing Irish food products (IRL-KI-3). The term "agroecology" is not employed at the decision-making level. This is apparent in the CAP Strategic Plan 2023-2027 first drafted by Ireland in which the term "agroecology" did not feature in the first draft. The European Commission's answer to the proposal contained a recommendation for the addition of actions supporting agroecological practices (DAFM, 2020a). Despite this, the Irish Government has funded environmentally friendly agricultural schemes such as the Green, Low-Carbon, Agri-Environment Scheme (DAFM, 2020b) and the Agri-Climate Rural Environment Scheme (DAFM, 2022c).

[7] Bord Bia, 2022. Export Performance and Prospects 2021–2022. https:// www.bordbia.ie/industry/insights/performance-and-prospects/performance-prospects-2022/
[9] Central Statistics Office (CSO), 2022. Census of Agriculture 2020 - Preliminary Results. https://www.cso.ie/en/releasesandpublications/ep/p-coa/censusofagriculture2020-preliminaryresults/. Published: 26/05/2022.
[10] European Commission (EC), 2020. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Organic_farming_statistics (retrieved September 2022).
[11] Eurostat, 2023. Organic crop area by agricultural production methods and crops. https://ec.europa.eu/eurostat/databrowser/view/org_cropar/default/ table?lang=en (retrieved March 2023).

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

There are no education or training courses or programmes that deal specifically with agroecology in Ireland. However, training courses are available in practices associated with agroecology. The national research and advisory body in agriculture, Teagasc[15], provide a course in agroforestry, as do the Centre for Environmental Living and Training, and the National Organic Training Skillnet[16] (NOTS). A post-graduate course in Agroforestry and Landscape Biodiversity is available in Waterford Institute of Technology (IRL-KI-1). Training courses in organic agriculture and regenerative agriculture are also provided by NOTS. The Kinsale Campus of Cork College in Education and Further Education and Training Service in County (Co.) Cork offers a two-year course on permaculture and sustainable horticulture (IRL-KI-4). There are several graduate and post-graduate courses in Ireland which teach sustainable agriculture (Table 2). However, there is the worry that the world sustainability has been wrongly appropriated in Ireland, and that some of the courses might not be as closely linked to agroecology as one would hope (IRL-KI-3). There are also modules available in agroecology-related themes in some courses which are not focused on sustainable agriculture or related topics, for example, the sustainable food system module in the Co-operatives, Agri-Food & Sustainable Development diploma course offered by University College Cork. Furthermore, agroecology topics may be taught in Bachelor of Science degrees in agriculture or forestry.

Apart from higher educational courses, The Carraig Dúlra Farm in Co. Wicklow[17] and Earthcare in Co. Roscommon[18] both organise permaculture design courses. The Hollies Centre for Sustainability in Co. Cork[19] also run courses on agroecological approaches such as permaculture and regenerative agriculture. The Talamh Beo organisation[20] - which is part of the European branch of Via Campesina, provides an online library, The Hedge School, with a section dedicated to educational information on agroecology (IRL-KI-5).

Table 2: List of higher education and further education courses associated with agroecology that are available in Ireland. EQF = European Qualifications Framework.

Higher education institute	Course name	EQF level	Program type
Munster Technology University	Innovative and Sustainable Agriculture	7	Post-graduate diploma
South East Technological University	Sustainable Farm Management and Agribusiness	6	Bachelor of Science degree
University College Dublin	Sustainable Agriculture & Rural Development	7	Master of Science degree
Kinsale Campus	Sustainable Horticulture/ Permaculture	5	QQI Level 6 award

[15] https://www.teagasc.ie [16] https://www.skillnetireland.ie/networks/national-organic-training-skillnet/ [17] https://www.suziecahn.com
[18] https://earthcare.ie [19] https://www.thehollies.ie [20] https://talamhbeo.ie

3.2. LIVING LAB

Most of the initiatives in Ireland that can be classified as living labs and have a link with agroecology are agriculture European Innovation Partnerships (EIP-AGRI). These partnerships, funded by the European Commission, promote research, development, and innovation in agriculture and sustainability by bringing together different actors in the agricultural sector such as farmers, advisors, businesses, and researchers[21]. EIP projects related to agroecology in Ireland include the Inishowen Upland Farmers Project[22], a project based in the Inishowen peninsula in County Donegal, involving farmers and Teagasc, which aims to increase farm profitability while also protecting biodiversity and water quality and increasing carbon sequestration by trialling farming practices. Another initiative which aims to develop sustainable farming practices is the Danú Farming Group[23]. This EIP-AGRI project aims at developing a biological farming transition programme by trialling agricultural practices on twelve farms in Ireland (see Agroecology Europe (2020) for further details).

The Cúlra Créafóige EIP-AGRI project[24] aims at restoring and supporting sustainable agricultural practices in Cloich Cheann Fhaola, a Gaeltacht (Irish-speaking) parish in County Donegal. It uses a systemic approach by adopting regenerative agricultural practices coupled with enterprise diversification and the development of crop markets. Their main aim is to achieve farm economic viability while maintaining ecological sustainability. The Soil Biodiversity Literacy & Enhancement EIP project is run by Talamh Beo and includes farmers and a soil scientist who collaborate to develop innovative ways of improving soil quality and to teach farmers about soil quality evaluation (IRL-KI-5). Many of the EIP projects aim at enhancing or conserving biodiversity and habitats such as the Inagh project, the MacGillycuddy Reeks project[25], the BRIDE project[26], the Protecting Farmland Pollinators project[27], the FarmPEAT project[28], the Blackstairs farming Futures project[29], the SUAS project[30] and the CRiBZ scheme[31].

One limitation of EIP projects is their short lifespan. These projects are funded for a maximum of 5 years. However, in some cases the project can evolve into a new related initiative (see for example the Burren Programme in part 4, initiative n° 4). There are also a few examples of more perennial living labs which are not EIP-AGRI projects in Ireland. The Cork Food Policy Council can be considered as a living lab as multiple diverse stakeholders collaborate in achieving the production of healthy food for citizens through several initiatives (See part 4, initiative n° 6 for more information; IRL-KI-3). The Signpost Programme run by Teagasc can also be considered as a living lab (IRL-KI-6). The programme has a network of "signpost farms" which demonstrate climate-smart farming practices and technologies in real farm settings to encourage the adoption of more sustainable farming systems[32]. Other long-term initiatives which can be considered as living labs are the Burren Programme and the UCD Lyons Farm Long-term Grazing Platform. Both are discussed in detail in part 4, initiative n° 4 and 3.

3.3. MOVEMENT

Ireland has recently seen the appearance of movements related to different aspects of agroecology even if most of them do not explicitly mention "agroecology" in their communications. The Farming for Nature movement[33] was established in 2018 as a way of promoting environmentally friendly agricultural practices (Agroecology

[21] https://ec.europa.eu/eip/agriculture [22] https://www.inishoweneip.com/ [23] https://ec.europa.eu/eip/agriculture/en/find-connect/projects/dan%C3%BA-farming-group-project-plan-biological-farming
[24] https://cillulta.ie/pages/culra-creafoige [25] https://www.macgillycuddyreekskerry.com/ [26] https://www.thebrideproject.ie/ [27] https://biodiversityireland.ie/projects/protecting-farmland-pollinators/
[28] https://www.farmpeat.ie/ [29] https://ec.europa.eu/eip/agriculture/en/find-connect/projects/blackstairs-farming-futures-bff-sustainable [30] https://wicklowuplands.ie/suasproject/
[31] https://inishowenriverstrust.com/CRiBZ/ [32] https://www.teagasc.ie/environment/climate-change--air-quality/signpost-programme/ [33] https://www.farmingfornature.ie/

Europe, 2020; IRL-KI-2, KI-4 & KI-7). This is done by championing farmers who use such practices and awarding them the title of Farming for Nature ambassador. This initiative allows for the development of a network of farmers who are interested in sustainable farming systems and the organisation of farm walks and talks. Social Farming Ireland[34] is another example of an initiative developed which is related to an aspect of agroecology that is different to the biodiversity and environmental protection aspect (Agroecology Europe, 2020; IRL-KI-2). They offer people with a disability or disadvantage an opportunity to participate in farming activities and to interact with people. Ireland has had mixed experiences with Community Supported Agriculture (CSA), with CSAs such as the Derrybeg Farm[35], Cloughjordan Community Farm (see part 4 initiative n° 7 for further details), Moy Hill Farm[36] having established themselves in their respective areas while others have not been as successful (IRL-KI-3 & KI-4).

Other movements in Ireland support agroecological practices. The Irish Agroforestry Forum[37] was recently setup in order to promote and support agroforestry in Ireland by organising educational and training activities (IRL-KI-1 & KI-2). BASE Ireland[38] is a farmer-led organisation which promotes sustainable agricultural practices such as minimal soil disturbance. Similarly, Organic Growers Ireland[39] promotes organic farming in Ireland by organising educational events. These initiatives are conducted at a national scale while other regional or local scale movements exist such as the Leitrim Organic Farmer's Coop[40] and the Dublin Community Growers[41]. Finally, Talamh Beo is an agroecological movement in Ireland which supports food sovereignty, women's rights, and sustainable farming and employs the term "agroecology" in their communications (see part 4 initiative n° 7 for more details; IRL-KI-3, KI-4, KI-5 & KI-7).

3.4. PRACTICE

The use of agroecological practices remains limited in Ireland (IRL-KI-1, KI-3 & KI-5). Examples of practices which are encountered in Ireland include multi-species swards, catch crops, cover crops, agroforestry, riparian buffer zones, and low stocking permanent pastures, (IRL-KI-2, KI-3, KI-4, KI-6 & KI-7). Farming for Nature promotes many farms and farmers that use practices which benefit biodiversity and the environment. Some of these farmers have been designated as Farming for Nature ambassadors and detailed descriptions of their activities can be found on the Farming for Nature website[42]. Among those is Clive Bright[43] who runs the Rare Ruminare farm in County Sligo (Agroecology Europe, 2020). This beef and lamb farm practices rotational grazing where livestock is considered as part of the agroecosystem and as of equal importance as the soil. The Leaf and Root farm[44] in County Galway has a diversified farming system with plenty of variety in terms of vegetables and fruits grown. They use no chemical inputs, but instead focus on soil health, which is evident by their use of cover crops. Another example of a farm which uses agroecological practices is Moy Hill farm[45] in County Clare (Agroecology Europe, 2020). They use regenerative farming techniques in their mixed horticulture farm and have a diversified food distribution system. Finally, Cloughjordan community farm[46] also uses an agroecological approach to its farming practices with no chemical inputs used and with a local food distribution system (see part 4 initiative n° 7 for more details).

[34] https://www.socialfarmingireland.ie [35] http://www.derrybegfarm.ie [36] https://www.moyhillfarm.com [37] https://www.irishagroforestry.ie [38] http://www.baseireland.ie
[39] https://organicgrowersireland.ie [40] http://www.leitrimorganic.com [41] https://www.dublincommunitygrowers.ie [42] https://www.farmingfornature.ie
[43] http://www.rareruminare.com [44] http://www.leafandroot.org [45] https://www.moyhillfarm.com [46] https://cloughjordancommunityfarm.ie

3.5. SCIENCE

Research related to agroecology in Ireland is focused on how agricultural practices can preserve natural habitats and less on the use of natural resources in agricultural practices, as seen by the number of EIP-AGRI projects which are focused on biodiversity and habitat conservation. These projects are also the main source of research in agroecology related themes (IRL-KI-7) and are an example of the agriculture for biodiversity approach as opposed to a biodiversity for agriculture approach (Bàrberi and Moonen, 2020).

The main institutions which conduct research on themes related to agroecology according to the key informants are University College Dublin (UCD)[47], Atlantic Technological University (ATU)[48], and Teagasc[49] (IRL-KI-1, KI-6 & KI-7). The research teams working on those themes do not necessarily employ the term "agroecology". A particular attention is given to research on grass and sward management and cropping systems in UCD and, more specifically, mixed sward systems (IRL-KI-6). A long-term grazing platform at Lyons farm is run by researchers from UCD to monitor the effects of mixed swards on different agronomical and environmental parameters (see part 4 initiative n° 3 for more details). The Agro-ecology and Rural Development (ARD) research group, based in the ATU, is involved in many projects related to biodiversity-friendly agricultural practices (see part 4 initiative n° 8 for further details). Teagasc conducts research activities on different themes which can benefit agroecology, among them is the research conducted on mitigating the effects of agriculture on climate change. They perform marginal abatement cost curve analysis to quantify the potential of different measures in reducing greenhouse gas emissions (IRL-KI-6).

[47] www.ucd.ie/agfood/research [48] https://mfrc-atu.ie [49] https://www.teagasc.ie/about/research--innovation

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 3: An overview about initiatives, cases and examples described and analysed.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Sustainable Horticulture/ Permaculture**	National	Further education college	Education course to teach sustainable horticulture and permaculture					
2	**MSc (Agr) Sustainable Agriculture & Rural Development**	National	University	Education in safe and ethical food production, environmental health, and sustainable and affordable energy.					
3	**The UCD Lyons Farm Long-term Grazing Platform**	Local	Research institution	Compare three different grazing systems					
4	**Burren Programme**	Local	Multiple stakeholder programme	Encourage sustainable agricultural practices in the Burren area					
5	**Talamh Beo**	National	Company limited by guarantee	To promote food sovereignty, agroecology, and peasant's rights					
6	**Cork Food Policy Council**	Regional	NGO	To achieve a fair, healthy, secure, and sustainable food system					
7	**Cloughjordan Ecovillage**	Local	Ecovillage	To achieve a sustainable living model and resilient community					
8	**Agro-ecology and Rural Development research group**	National	Research group	To conduct research sustainable agriculture					

Cork College of FET
Cork's Further Education & Training Service
KINSALE CAMPUS
A Pathway for Every Learner

INITIATIVE N°1 – CORK COLLEGE OF FET

www.kinsalecampus.ie/sustainable-horticulture-permaculture-5

SUSTAINABLE HORTICULTURE/ PERMACULTURE – CORK COLLEGE OF FET

The main aim of the **Sustainable Horticulture/ Permaculture** courses is to encourage and teach people to grow food sustainability and protect and enhance biodiversity. The courses offer an education in practical and theoretical aspects of sustainable food production and biodiversity conservation practices. It is provided by Kinsale Campus of Cork College in Education and Further Education and Training Service in County Cork, a further education college which offers European Qualification Framework (EQF) level 4 and 5 courses. According to the Kinsale Campus, it was the first college in the world to offer a 2-year long course in permaculture back in 2001.

KEY FEATURES

- **Type of education and training**: European qualification framework level 4 and 5 courses
- **Main topics:** permaculture design and sustainable horticulture
- **Training duration:** 2 years
- **Type of legal entity:** further education college
- **Founded in:** 2001
- **Accessible to:** further education students

The Sustainable Horticulture/Permaculture programme contains a 1st year EQF level 4 course and a second year EQF level 5 course. During the first year, students learn about agricultural techniques. The first-year modules are Permaculture Design, Biodiversity and the Natural Environment, Organic Production, Plant Protection, Plant Science, Plant Identification & Use, Soil Science & Growing Media, Work Practice, and Communications. A greater emphasis is placed on leading community projects and making a living out of permaculture in the second year. The second-year modules are Tree and Shrub Management, Sustainable Horticulture, Entrepreneurship, Nursery Stock Production, Market Gardening and Leadership. The first-year course is accessible to anyone in possession of a leaving certificate, the certificate awarded after the completion of the final exam of the Irish secondary school system, or equivalent. Applicants must possess a passion for nature and food growing, and entry to the course is subject to an interview. The course uses a mixture of classroom teaching and visits from specialists, practical activities, site visits, and group project works.

Although the term "agroecology" does not figure in description available online of the courses, concepts, practices, and approaches associated with agroecology are taught in the courses, such as regenerative agriculture, organic farming, permaculture, sustainable agriculture, biodiversity, sustainable resource management, and community development.

WHAT CAN WE LEARN?

The courses introduce permaculture and sustainable horticulture to students and offers them an opportunity to gain practical experience in these agricultural approaches. It offers them the tools to pursue a living in sustainable agriculture or to undertake courses with a higher EQF level. The course has a relatively low fee (€350) compared to other courses in sustainable agriculture of a similar duration in Ireland.

Picture 1: Sustainable Horticulture/Permaculture. Source: www.kinsalecampus.ie/sustainable-horticulture-permaculture-5.

INITIATIVE N°2 – MSc (AGR) SARD

https://hub.ucd.ie/usis/!W_HU_MENU.P_PUBLISH?p_tag=PROG&MAJR=X376

MSc (AGR) SUSTAINABLE AGRICULTURE & RURAL DEVELOPMENT

The main aim of the **Master of Science (MSc) in Sustainable Agriculture & Rural Development** (SARD) is to provide an education in safe and ethical food production, environmental health, sustainable and affordable energy, and rural community development. The programme typically has around twelve students involved.

The programme is provided by University College Dublin (UCD). The university has the biggest number of graduates in Agricultural Science in Ireland. They take in about three hundred students each year in their Bachelor of Agricultural Science (BAgrSc) programme while other universities obtain around thirty to forty new students each year in their BAgrSc programmes. The BAgrSc programme in UCD teaches sustainable agriculture from 2nd year onwards and agroecological practices would be mentioned as part of teachings. The MSc in SARD gives an opportunity to students at the end of their BAgrSc degree who are interested in sustainable agriculture to continue their studies in this field. The programme aims at preparing graduates for roles in leadership, advocacy, and influence in sustainable agriculture and rural development by offering a one year full-time course or a two-year course on a part-time basis. Training is provided to develop analytical, communications, and entrepreneurship skills alongside the teaching of theory, policies, practical implementation of sustainable agriculture and rural development.

KEY FEATURES

- **Type of education and training**: master of science degree
- **Main topics:** sustainable agriculture and rural development
- **Training duration:** one or two years
- **Type of legal entity:** university
- **Founded in:** 2010
- **Accessible to:** holders of a second-class honours degree, or international equivalent.

Although agroecology does not feature as the main topic of the MSc programme, the subject is broached in one of the core obligatory modules provided by the programme entitled "Sustainable Agriculture". Although the term "agroecology" is not used in the module title, there is a focus on agroecological principles and on approaches such as sustainable agricultural systems and organic farming. An optional module in organic farming is also offered by the programme. The MSc in Sustainable Agriculture & Rural Development is possibly the only MSc programme in the Republic of Ireland which teaches agroecological practices, although organic farming will be taught in a new MSc programme proposed in Waterford by the South-East Technological Institute.

WHAT CAN WE LEARN?

The course along with the BAgrSc programme provides a clear pathway for a career in fields related to sustainable agriculture. It is a popular course and a unique example of an MSc degree in a topic related to agroecology.

Picture 2: MSc (Agr) Sustainable Agriculture & Rural Development. Source: www.youtube.com/watch?v=oaRjoQHRR4o.

www.ucd.ie/lyonsfarm/research/long-termpasturebasedproductionsystemsresearch/

INITIATIVE N°3 – LONG-TERM GRAZING PLATFORM

UCD LYONS FARM LONG-TERM GRAZING PLATFORM

The main aim of the **UCD Lyons Farm Long-term Grazing Platform** (UCD LGP) is to assess and compare three different grazing systems which vary in terms of species and fertiliser quantity input. The grazing platform is coordinated by scientists from University College Dublin (UCD). It accommodates different research projects and events with the purpose of sharing findings and knowledge such as farm visits.

KEY FEATURES

- **Main topics:** animal grazing systems
- **Founded in:** 2019
- **Type of organisation supporting the living lab:** research institution
- **Type of actor involved:** scientists and students
- **Scale of the living lab:** local

The UCD LGP is a natural continuation of the SmartGrass project (2013-2018) also conducted by UCD researchers at the UCD Lyons Farm. The aim of the project was to compare the performance of multispecies swards with a grass clover mixture and a perennial ryegrass monoculture. The experiments conducted at a plot scale demonstrated that multi-species swards yielded as much good quality herbage as perennial ryegrass despite the quantity of fertiliser input nearly being halved for the mixed species plots compared to the monoculture ryegrass plot. The UCD LGP runs similar experiments testing the performance of the same sward composition which featured in the SmartGrass project but at the farm scale with 20 hectares of farmland assigned per pasture type.

The project is run by UCD although collaborations exist with external stakeholders such as Teagasc, the national research and advisory body in agriculture. The university used internal funding to acquire and establish the experimental farm and activities on the farm are mainly supported by research grants and other funding types provided by external research funding agencies such as the Department of Agriculture, Food and the Marine (DAFM) and industry partners. Staff and students are often hired to work on the UCD LGP using external funding for research projects which focus on different aspects of the grazing platform. Some of those projects may include a knowledge transfer aspect and the involvement of farmers. Knowledge transfer in the initiative may also occur either through the organisation of field days in which farmers, advisors, researchers, and other stakeholders may partake.

Although the grazing platform is run by researchers, other types of actors are also involved. Exchanges occur between the researchers and advisors, farmer cooperatives, and farmer organisations regarding the grazing platform. Farmers are also involved in projects in which they trial multi-species swards. Although farmers have no direct input in the running of the grazing platform, their questions or suggestions may influence the decision-making choices of researchers in the planning of experiments. The Irish beef industry is also involved in the UCD LGP as they provide funding.

Agroecology is not necessarily a term that is used to describe the activities undertaken in the UCD LGP by the people running the platform. However, the adoption of multi-species swards instead of perennial ryegrass monoculture can be considered as an agroecological practice as it is associated with a greater biodiversity and a reduction of chemical fertiliser inputs. The reduction of fertiliser use can also be linked to an increase in food sovereignty in Ireland due to the absence of chemical fertiliser production in the country.

Similarly, the term living lab is not employed by the people running the UCD LGP despite the presence of certain aspects found in living labs. The grazing platform is innovative in its approach in trialling multi-species swards in Ireland at the farm scale. Researchers from multiple fields collaborate in the UCD LGP, such as animal production, ruminant nutrition, biodiversity, soil and water quality, greenhouse gas emissions, and carbon sequestration. They aim to obtain a holistic view of the effects of pasture type on the agroecosystem by monitoring various parameters which describe the farming system in the long-term.

Picture 3: Long-term grazing platform. Source: https://globalfarmplatform.org/lyons-farm/.

Although this living lab is run at a local scale, it has an impact at a national scale as actors from all parts of Ireland may participate in projects or farm visits. UCD LGP is also part of the Global Farm Platform, an international network of grazing platforms, which allows the platform decision-makers to interact with people involved in similar initiatives, in particular the North Wyke Farm Platform (UK), INRAe Aster Mirecourt (France), and INRAe Saint Laurent de la Prée (France), regarding grazing platform management and results obtained.

WHAT CAN WE LEARN?

The UCD LGP aims at obtaining a comprehensive overview of differences between pasture types. It provides a unique example of a long-term monitoring programme of the effect of species and functional biodiversity on agronomic and economic parameters in Ireland. Although the platform is run by researchers, it engages with a variety of different stakeholders, for example during farm visits and in associated projects.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT:
The initiative is demonstrating the positive economic and agronomic effects of multi-species swards, which are also associated with a reduction in chemical inputs and a greater biodiversity.

EDUCATION: The long-term experiment offers a platform to educate farmers and students on the use and benefits of multi-species swards.

LIMITATIONS & CHALLENGES

COOPERATION:
Decision-making is limited to researchers which limits a full recognition as living labs.

INITIATIVE N°4 – BURREN PROGRAMME

http://burrenprogramme.com

BURREN PROGRAMME

The Burren Programme is an agri-environmental initiative led by multiple stakeholders and financed by the Department of Agriculture, Food and the Marine (DAFM). Its main aim is to encourage sustainable agricultural practices in the Burren area for habitat conservation purposes.

KEY FEATURES

- **Main topic:** habitat conservation
- **Founded in:** 2016
- **Type of organisation supporting the living lab:** department of agriculture, food and the marine
- **Type of actors involved:** farmers, advisors, scientists
- **Scale of the living lab:** local

The programme is a follow-up of two previous similar projects led in the Burren. The BurrenLIFE project (2005-2010) benefited from the EU LIFE Nature fund and, in 2017, was recognised as the joint best programme funded under this scheme (Dunford and Parr, 2020). The project's aim was to implement various management practices across twenty farms in the Burren in order to address a selection of environmental challenges. The success of the project led to the funding of the Burren Farming for Conservation Programme (2010-2015) by DAFM. The aim of the programme was to implement findings of the BurrenLIFE project by also including a financial incentive for approximatively 500 farmers who participated in the programme for their conservation efforts. The Burren Programme is an expansion of this project across the entire Burren area. It uses a mixture of payment for actions scheme to fund management actions on the farm which aim to improve site management and condition, and a result-based payment scheme to reward habitat quality of the managed fields. A total of 328 farmers were offered 5-year contracts to participate in the programme.

Governance of the project is handled by a team of ten people composed of scientists, administrators, and advisors. The scientists are involved in the creation of the environmental health assessment tools and the field scoring of the farms. External advisors help farmers make on-farm decisions to improve the field score of their farm while also participating in the scoring of the farms. The advisors are selected by DAFM and trained in the management and conservation of the Burren ecosystem. Farmers must pay for the services of these advisors. The project administrators help alleviate the bureaucratic burden faced by farmers. The farmers are the main actors of this initiative. They are free to decide on the management practices to undertake. There is no guideline in practices to follow in order to achieve the highest scores. Farmers are free to follow the advice given by the programme scientists or their advisors, or they can find solutions themselves using their own knowledge, skills, and experience.

The initiative is based in the Burren area. This area is a limestone landscape which covers around 720 km^2 in the west of Ireland. It is known for its biodiversity with many rare animal and plant species present and is of high conservation value. The main goal of the Burren Programme is to preserve the habitats found in the Burren. Funding for the farmers which participate in the programme is provided by DAFM. They also provide the funding for the running costs of the team handling the governance of the programme. The National Parks and Wildlife Service of the Department of Housing, Local Government and Heritage also provide financial support to the programme team. The Burren Programme also achieves support from other stakeholders such as Teagasc and the Burren branch of the Irish Farmers Association.

Although the Burren Programme does not employ the terms agroecology or living lab in their documentation outputs, the two terms could be employed in describing the initiative. The programme is farmer-led and offers the opportunity of co-creating solutions between farmers, scientists, and advisors. Agroecological farm management is at the heart of the project as farmers are incentivised in finding solutions to improve the impact that their management practices have on habitat quality. The initiative may be considered as a living lab as there is a co-creation of solutions to the constraints provided by habitat conservation goals to agricultural management between farmers, advisors, and scientists. Scientists and advisors do not tell farmers what to do but instead help them to come up with their own solutions to their particular problems. The continuous evaluation of the environmental health of the Burren pastures allows for a monitoring of the impact of management practices, which is another characteristic of living labs.

Picture 4: Burren Programme. Source: http://burrenprogramme.com/the-burren/farming/.

The Burren Programme interacts with other national and international initiatives. It is a part of an EU funded project aiming to implement similar payment schemes in other areas in Ireland and in the Navarra region in Spain. The programme is also part of a network of ten high-value nature farming systems known as learning areas in the HNV-Link initiative[50]. The Burren Programme has also worked with the Aran LIFE project and the follow-up project Caomhnú Árann[51]. Furthermore, it works closely with the Farming for Nature initiative[52] which aims at promoting environmentally friendly farming practices.

The Burren Programme and its previous iterations have been highly successful. The programme has had a positive environmental, economic, and social impact in the Burren. The future of the programme is not clear as its funding comes to an end. In the future, the programme may consider a more holistic farm management scheme as the current programme iteration focuses on the species-rich area of the farm (Dunford and Parr, 2020).

WHAT CAN WE LEARN?

The Burren Programme is an excellent example of what can be achieved by combining payment for action and payment for results to reward farmers for their environment-friendly actions.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The conservation of the habitats in the Burren is the key goal of the programme.

COOPERATION: The cooperation between farmers, scientists, and advisors is key to the achievement of the aims of the Burren Programme.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Although the payment scheme is an interesting method in raising farmer awareness and interest in nature/friendly farming, it may not be economically sustainable since it is dependent on government funding.

[50] http://www.hnvlink.eu [51] https://www.caomhnuaranneip.ie [52] https://www.farmingfornature.ie

INITIATIVE N°5 – TALAMH BEO

https://talamhbeo.ie

TALAMH BEO

Talamh Beo is a national movement that aims to transform the Irish food system using a bottom-up approach by allowing farmers and consumers to have more control on the decision-making process. Talamh Beo is part of the European Coordination Via Campesina*, a movement which fights for a fairer and more sustainable agricultural system by promoting food sovereignty, agroecology, and peasants' rights. Both farmers and consumers can become members of Talamh Beo. They currently have over 300 members.

KEY FEATURES

- **Main goals:** transform the food system in Ireland
- **Founded in:** 2019
- **Type of organisation:** company limited by guarantee
- **Farming sectors:** every sector
- **Scale of the organisation:** national

Talamh Beo was founded in March 2019 with the aim of mobilising the public and farmers to transition from current agriculture and land use policies. Agroecology is very much a term employed by the movement, and it is involved in many initiatives that promote its development. It supports for example, circular and solidarity economy, co-creation and sharing of knowledge, and human and social values. All farming sectors and food sectors are concerned by the movement. Talamh Beo is funded through its membership fees and donations, and they received funding for a European Innovation Partnership (EIP) project provided by the EU Recovery Instrument Funding under the Rural Development Programme 2014-2022.

The term "agroecology" is often employed by Talamh Beo, and the word and its principles are seen in many of their projects They have developed a food policy framework[53] in which agroecology is often cited and recommended actions are in line with elements of agroecology, for example the promotion of circular and solidarity economy by establishing Community Food Hubs (Barrios et al., 2020). They also have an "agroecology in action" project called "Living from the Land" with the aim of developing agroecological approaches and encouraging farmer to farmer learning. Talamh Beo is also engaged in promoting gender equality through their Talamh Beo Women action group. They aim to bring feminism into agriculture policies and programmes and to support gender mainstreaming across the agricultural sector. Their main project at the moment is the Soil Biodiversity Literacy & Enhancement EIP Project. This living lab project aims to educate farmers and other citizens on the importance of soil biodiversity by trialling innovations associated with soil biodiversity in different farm types in terms of practices and water catchment areas. Results and experiences are then discussed and shared in a knowledge transfer group. They also have other projects which promote seed and food sovereignty and tackle unfair trade practices.

Picture 5: Talamh Beo. Source: https://talamhbeo.ie/.

* https://www.eurovia.org [53] Talamh Beo, 2021. A Local Food Policy Framework. https://talamhbeo.ie/local-food-policy/

WHAT CAN WE LEARN?

Talamh Beo is an inclusive movement which anybody can join whether they be farmers or consumers. They are involved across the spectrum of agroecological principles and the food production system through their working groups which target different aspects of agriculture, food production, and biodiversity.

POSITIVE IMPACTS

COOPERATION: Cooperation between farmers and between farmers and specialists is encouraged via the EIP project.

GOVERNANCE: Talamh Beo has developed a local food policy framework to improve the governance of the Irish food system. They also proposed interventions supporting agroecology to the DAFM's Common Agricultural Policy (CAP) Strategic Plan 2023-2027.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: Talamh Beo, through its food policy framework, advocates for fair payment for local food products by incorporating "income supports, labour and finance incentives, pilot projects for land access and short supply chain supports and infrastructure".

TRADITIONAL FOOD AND HERITAGE CONSERVATION: It has a seed sovereignty project which aims at preserving crop heritage.

SOCIETY AND EQUITY: Talamh Beo promotes gender equality. Its organisational structure is evenly balanced between men and women as is participation in the EIP project.

EDUCATION: Talamh Beo provides educational material through their Hedge School. It also encourages farmer to farmer knowledge transfer as seen in its EIP project.

LIMITATIONS & CHALLENGES

GOVERNANCE: Talamh Beo has only recently been established and has not yet gained any major influence on national agriculture and food policies. This is highlighted by their proposed interventions on the DAFM's CAP Strategic Plan 2023-2027 which did not seem to impact the published strategic plan since it does not mention agroecology.

EDUCATION: Education provided by Talamh Beo is limited to the sharing of knowledge, the dissemination of educational material, and advertising seminars and conferences. They do not provide a structured education course or training programme. It also encourages farmer to farmer knowledge transfer as seen in its EIP project.

INITIATIVE N°6 – CORK FOOD POLICY COUNCIL

CORK FOOD POLICY COUNCIL
Pure Cork – real food for all

http://corkfoodpolicycouncil.com

CORK FOOD POLICY COUNCIL

The Cork Food Policy Council (CFPC) aims to achieve a fair, healthy, secure, and sustainable food system for the people of County Cork. The council is an inter-agency group composed of representatives from the community, food retail, farming, fishing, restaurant and catering, education and academia, environmental and health sectors, and local authorities.

KEY FEATURES

- **Main goal:** influence local food policy for a healthy, sustainable, & resilient food system
- **Founded in:** 2013
- **Type of organisation:** NGO
- **Farming sectors:** all
- **Scale of the organisation:** region

The Cork Food Policy Council evolved from a community garden project run in Knocknaheeny in County Cork. The success of the community garden encouraged the Northside Community Health Initiative and Cork Healthy Cities to expand the initiative by creating CFPC in 2013 (it was publicly launched in 2014) which would influence food production in the whole of County Cork. One of its aims was to increase the understanding of citizens of the food system and to encourage them to get more involved and to shape the food system. The council is composed of food producers, researchers, and people form the restaurant and retail sector. They started off by encouraging food production in Cork city which led to an increase in organic horticulture farming practices in the city. The initiative is now community driven with the initial leadership role provided by the steering committee being less important. The focus in terms of the Cork Food Policy Council is to give citizens access to local and healthy food and has the following goals:

1. Raising awareness on the effect of food and diet on health and well-being.
2. Encouraging the participation of local food enterprises.
3. Organising public events to promote local food traditions and engaging with local communities.
4. Influencing the education given regarding food culture.
5. Supporting environmentally friendly food production.

The type of farming advocated by CFPC is organic horticultural farming. This is challenging considering that beef and dairy farming are dominant in the Cork region (Giambartolomei et al., 2021). Examples of activities led by the council includes mapping and analysing food businesses in Cork, communicating on the access and production of healthy food and Agroecology is not used as a term to define the activities led by CFPC. However, the co-creation of initiatives that respond to challenges in providing healthy food to a community is very much considered as an agroecological practice (Barrios et al., 2020). The initiative is supported by numerous local businesses and public organisations.

Picture 6: Cork Food Policy Council. Source: http://corkfoodpolicycouncil.com/services/.

WHAT CAN WE LEARN?

The Cork Food Policy Council is a good example of how an initiative which empowers local citizens to take action in influencing the food system can create a resilient community with members cooperating to achieve a common goal.

POSITIVE IMPACTS

HEALTH: Giving the people of Cork access to healthy food and raising awareness of the benefits of a healthy food and diet are key objectives of CFPC[54].

COOPERATION: The cooperation between members of the community not only helps in achieving the goals of CFPC but also creates a bond between members of the community which increases community resilience.

GOVERNANCE: The food policy council raises awareness and citizen participation concerning the local food system through community actions.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The food policy council promotes the local economy by encouraging local producers and suppliers to participate in sustainable food practices and by encouraging local food production and commercialisation.

LIMITATIONS & CHALLENGES

COOPERATION: The Cork Food Policy Council has had difficulty in obtaining the collaboration of local organic horticultural growers partly due to their scarcity in the region.

[54] https://corkhealthycities.com

INITIATIVE N°7 – CLOUGHJORDAN ECOVILLAGE

CLOUGHJORDAN ECOVILLAGE
building • sustainable • community

https://www.thevillage.ie
https://cloughjordancommunityfarm.ie

CLOUGHJORDAN ECOVILLAGE

Cloughjordan ecovillage is an ecovillage community developed to achieve a sustainable living model which co-exists in harmony with its natural surroundings. The concepts of sustainable living and resilient community is key to the project. The village is located on 27 ha of land in County Tipperary and it currently has around 130 residents. It is divided into three areas: a residential area, a woodland, and a community farm.

KEY FEATURES

- **Type of initiative:** ecovillage and community farm
- **Founded in:** 1999
- **Farming sectors concerned:** organic and biodynamic horticulture
- **Types of stakeholders involved:** farmers and citizens

The idea of establishing an ecovillage was first proposed in 1999 by Sustainable Projects Ireland Ltd., a not-for-profit members' cooperative, and in 2005 the site near Cloughjordan town was purchased. The first residents moved into the ecovillage in 2009. The village also hosts participants of the European solidarity corps. A key aspect of the ecovillage is its low greenhouse gas emissions, and it currently holds the distinction of being the village with the lowest ecological footprint in Ireland.

A community farm is located on 4 ha in the village. It is a horticultural farm which started in 2008 and uses organic and biodynamic practices. It is also a community supported agriculture (CSA) initiative and is the oldest and largest CSA in Ireland. The farm supplies food for over 70 households and each member of the CSA has access to training and educational events for free or for a low fee. They organise school tours and other educational visits while also providing an online learning platform and educational material. Members are not just residents of the ecovillage but also locals from the surrounding area. The ecovillage also organises training and events in topics related to sustainable agriculture.
Sustainable Projects Ireland Ltd., the company associated with the ecovillage, is a registered educational charity and donations to them help support the ecovillage. The ecovillage also receives funding from the Department of the Environment, Climate and Communications via the Irish Environmental Network in which they are member.

Picture 7: Cloughjourdan Ecovillage. Source: https://cloughjordancommunityfarm.ie.

WHAT CAN WE LEARN?

The ecovillage provides a blueprint for a resilient and sustainable living model. It has a low carbon footprint and is characterised by a strong community participation and provides local and healthy food for its residents and the surrounding area.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: A key part of the initiative is to establish a community which lives in harmony with their surrounding natural resources.

COOPERATION: Each adult resident of the village pledges 100 hours per year to community activities in the ecovillage.

GOVERNANCE: A democratic governance exists in the ecovillage where every resident participates in the decision-making process during monthly meetings.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Native apple varieties are grown on the community farm.

SOCIETY AND EQUITY: The non-hierarchical structure of the ecovillage gives all residents an equal say in the decision-making process.

EDUCATION: The ecovillage runs courses and events on topics related to sustainable agricultural practices.

LIMITATIONS & CHALLENGES

ENERGY AND WASTE MANAGEMENT: A major challenge is to find a solution to the current waste treatment plant in Cloughjordan as it is at full capacity. This issue does not allow any new planning permissions to be given in the area.

INITIATIVE N°8 – ARD RESEARCH GROUP

https://mfrc-atu.ie/meet-the-team/dr-james-moran/

AGRO-ECOLOGY & RURAL DEVELOPMENT (ARD) RESEARCH GROUP

KEY FEATURES

- **Main goal:** research in sustainable agriculture
- **Main topics:** biodiversity, high nature value farmland and ecosystem services
- **Type of actors involved:** scientists

The Agro-ecology and Rural Development (ARD) research group is hosted by the Atlantic Technological University in the west of Ireland. It performs research in the area of sustainable agriculture. It is the only research group in the Republic of Ireland which contains the term "agro-ecology" or "agroecology" in its title. As part of a public institution, it receives funding from the Irish government. The research group is also involved in a number of European Innovation Partnerships and therefore also benefits from European funding which is redistributed by the department of Agriculture, Food and the Marine. Although the ARD research group consists only of research staff and students, the group also interacts with other stakeholders such as farmers through their involvement in EIPs.

"Agro-ecology" as opposed to "agroecology" features in the name of the research group which hints at a focus on the scientific field regarding the convergence between agriculture and ecology rather than on the practice or movement aspect of agroecology (Bellon & Ollivier, 2018). The projects led by the research group tend to focus on how agriculture can improve biodiversity and nature conservation rather than on how biodiversity can improve agriculture. For example, projects such as HNV_FarmForBio project and the High nature value Ireland[55] programme look at adaption of high nature value farming to improve biodiversity, and similarly the research group also runs EIP projects around the topic of Results Based Agri-environment Payment Pilot Schemes, such as the Hen Harrier project, the Pearl Mussel project, and the Blackstairs Farming Futures project. The ARD research group conducts research in the topics of nature conservation, farmland biodiversity, ecosystem services, and sustainable farming systems.

Picture 8: Agro-ecology and Rural Development research group. Source: https://mfrc-atu.ie/meet-the-team/dr-james-moran/.

WHAT CAN WE LEARN?

The ARD research group is involved in numerous projects which incentivise the financial rewarding of farmers whose practices provide environmental benefits. This type of research can lead to a better recognition of the positive effects that agroecology can have on non-agronomical sectors at the policy-making level.

[55] https://hnvfarmforbio.ie

5. CONCLUSION AND FUTURE PERSPECTIVE

There was an overall optimistic feeling among the key informants towards the development of agroecology in Ireland. This was partly because the state of agroecology in Ireland is currently so poor that it can only improve. Recent measures taken at European Union level seem to promote agroecological practices and Ireland will eventually have to get somehow in-line with policies being advocated at European level (IRL-KI-6, Table 1). This is starting to be seen with the Irish Government seeming to be more willing in backing sustainable agricultural practices (IRL-KI-1 & KI-7). Furthermore, recent events such as the global pandemic and the war in Ukraine have highlighted the vulnerability of the agricultural sector (IRL-KI-2). Some of the informants believe that we have entered a time of change due to these events along with the increasing public awareness of climate change and the biodiversity crisis, and this context can provide a platform for developing agroecology in Ireland (IRL-KI-1, KI-2, KI-5 & KI-7). The United Kingdom's recent departure from the European Union could also create and strengthen ties between the Republic of Ireland and Northern Ireland. This may lead to an increase in initiatives such as the Irish Agroforestry Forum[56] launched in April 2021 which covers the whole of Ireland through their members and activities (IRL-KI-1).

However, there remain important barriers which can impede the uptake of agroecological practices in Ireland. Although the Irish Government seems to want to support sustainable farming methods, the vision of food production in Ireland is about massive export of agricultural products (IRL-KI-6). The agri-food trade missions undertaken in 2022 by government ministers in the Gulf region, Japan, Singapore, and Vietnam, highlight their willingness to continue meat production for exportation (DAFM, 2020c). This strategy seems incompatible with agroecology, especially since agroecology is seen by some people as not being able to respond to food production demands (IRL-KI-7). It is also thought that there are major companies in Ireland which have vested interests in the current system and are not interested in transitioning to a more sustainable food system (IRL-KI-3 & KI-5). This transition demands a redesign of the food production system which imposes many challenges to farmers (IRL-KI-3). Farmers have to rethink how they farm which demands a change of mindset and the acquisition of knowledge and training on farming practices (IRL-KI-1, KI-3 & KI-6). Convincing farmers to transition to agroecology is also challenging as they may not see it as economically beneficial, from a production point of view and due to technological lock-ins as many farmers get into debt to acquire milking machinery and tractors (IRL-KI-1, KI-3 & KI-7). As well as farmers, consumers also have a role to play in changing the food system as they need to be willing to change their habits and purchase food products directly from farmers or farmer cooperatives more frequently (IRL-KI-3). Two key informants also thought that Teagasc is impeding agroecology transition because they are focused on conventional agriculture (IRL-KI-4 & KI-5). Finally, the difficulty that exists in acquiring land in Ireland is contributing to an ageing farmer population and makes it more difficult to achieve gender parity in farming. (IRL-KI-5 & KI-7).

In conclusion, the lack of implemented agroecological practices in Ireland means that it has a long way to go to be considered as a country with a sustainable food system. However, recent global events and the increasing public awareness of environmental issues offers the possibility for an agroecological transition. Bottom-up initiatives promoting agroecology and top-down support from the Irish government and the European Union will be needed for this transition to succeed.

[56] www.irishagroforestry.ie

ABBREVIATIONS

CAP: Common Agricultural Policy of the EU
CSA: Community Supported Agriculture
DAFM: Department of Agriculture, Food and the Marine of the Republic of Ireland
EU: European Union
IRL-KI: Key Informant for the mapping in the Republic of Ireland

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MAPPING AGROECOLOGY IN REPUBLIC OF MOLDOVA

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REPUBLIC OF MOLDOVA

EXECUTIVE SUMMARY

The current report reflects the results of research in the field of agroecology and documents the activities of initiatives from different areas: Education and Training, Living Lab, Movements, Practice, and Science. Through the analysis of leading initiatives and interviews with key informants, the development of agroecology in Moldova was analysed. The study was conducted by combining the efforts of partners from academia, non-government organisations (NGOs), civil society organisations, and national government structures.

The concept of agroecology was already emerging in Moldova in the early 90s at the Research Institute 'Selection' and the Academy of Sciences of Moldova. Agroecology became more widespread with the foundation of NGOs cooperating with other countries. For example, one of the leading NGOs, EcoVisio has been operating in Moldova since 2013.

Today, agroecology in Moldova is only in its initial stages although the initiatives outlined in this report confirm the strong growth and positive dynamics of the development of this concept and its application. The fundamental factors are the fields of education and science, as they allow producers and interested parties to understand the essence of the concept. The scientific institutes of Moldova have laid the foundation for the formation of movements in the field of agroecology, but still, not all producers can clearly explain what it is, despite the large percentage of the population engaged in agriculture.

The positive dynamics of the development of agroecology is observed among young people, as more and more students with formal and/or informal education in the field of agroecology are registered. Further, there is a trend of individuals who are moving from the cities to rural areas to garden and revive old local traditions.

Since such trends are only now beginning to gain strength, no examples of living labs were found in Moldova. However, if individuals from Moldova join international projects and find financing, a lot of the work that has already taken place, in terms of the dissemination of agroecological practices in the educational, economic, and social sectors, can be further implemented.

Moldova can become quite a unique example of an agroecological state due to its rich natural resources for agriculture and good climatic conditions. For this to take place though, well-established mechanisms for concerted action will need to be created, for informing and monitoring.

Overall, the concept of agroecology in the Republic of Moldova is vague and often incorrectly understood. Producers often do not understand the difference between concepts such as agroecology, organic farming, or sustainable agriculture, and are not familiar with the advantages and benefits of agroecology, why it is so important, and how it helps the farmer. Nevertheless, many actions among interested producers are agroecology-oriented, thus offering a solid ground for its development in Moldova.

REPUBLIC OF MOLDOVA

EXECUTIVE SUMMARY (IN ROMANIAN)

Acest raport reflectă rezultatele cercetării în domeniul agroecologiei și documentarea activităților inițiativelor din diferite domenii: Educație și Formare, Laborator viu, Mișcări, Practică și Știință. Datorită analizei inițiativelor principale și interviurilor cu informatorii cheie în perioada septembrie - octombrie 2022, a fost identificat nivelul de dezvoltare a agroecologiei în Moldova. Studiul a fost realizat prin combinarea eforturilor partenerilor din mediul academic, ONG-uri, organizații ale societății civile și structuri guvernamentale naționale.

Conceptul de Agroecologie a început să se formeze în Moldova cu mult timp în urmă, la la începutul anilor 90, la Institutul de cercetare "Selecția" și Academia de Științe a Moldovei. Agroecologia a devenit mai răspândită odată cu înființarea organizațiilor neguvernamentale care cooperează cu cele din alte țări. De exemplu, una dintre cele mai active ONG-uri, "EcoVisio" activează în Moldova din 2013.

Astăzi, agroecologia în Moldova abia începe să se dezvolte, iar inițiativele descrise confirmă creșterea exponențială și dinamica pozitivă a dezvoltării acestui concept. Factorul fundamental este domeniul educației și științei, deoarece acestea permit producătorilor și părților interesate să înțeleagă esența conceptului. Institutele științifice din Moldova au pus bazele formării mișcărilor în domeniul agroecologiei, dar totuși nu toți producătorii pot explica clar ce este, în ciuda vectorului agrar de dezvoltare a statului.

Dinamica pozitivă a dezvoltării agroecologiei se observă în rândul tinerilor, sunt înregistrați tot mai mulți studenți cât în educație formală, atât și informală în domeniul agroecologiei. Și tendința de a se muta de la orașe în zonele rurale și tendința de grădinărit se dezvoltă, revigorând vechile tradiții locale.

Deoarece tendințele doar încep să câștige forță, nu există exemple de laboratoare vii în Moldova, multe idei sunt încă în curs de dezvoltare. Cu toate acestea, cu ajutorul atragerii de proiecte și finanțări internaționale, s-au implementat deja multe în ceea ce privește diseminarea practicilor agroecologice în sectoarele educațional, economic și social.

Cu resurse naturale bogate și condiții climatice favorabile pentru activitatea agricolă, Moldova poate deveni un exemplu unic de stat agroecologic. Pentru a face acest lucru, va fi necesar să fie create mecanisme bine stabilite pentru acțiune concertată, informarea și monitorizarea acestui domeniu.

Rezumând cele de mai sus, conceptul de Agroecologie în Republica Moldova este vag și adesea conotat incorect. Producătorii de multe ori nu înțeleg diferența dintre concepte precum agroecologia, agricultura ecologică, agricultura durabilă și nu sunt familiarizați cu avantajele și beneficiile agroecologiei, de ce este atât de importantă și cum ajută fermierul. Cu toate acestea, multe acțiuni în rândul producătorilor interesați sunt orientate spre agroecologie, oferind astfel un teren solid pentru dezvoltarea acesteia în Moldova.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Republic of Moldova are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in Republic of Moldova.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	NGO	Preservation and restoration of agrobiodiversity, with strong emphasis on seeds	
2	Ministry of agriculture	Research and innovation, coordination of the research area	
3	Research infrastructure	Research and innovation and sustainable agriculture	

[1] https://www.all-ready-project.eu/

2. CONTEXT

The Republic of Moldova is a small agrarian state with 1,810,500 arable ha, making agriculture one of the traditional pillars of the economy of the state. Moldova's agriculture accounts for about a third of the country's gross domestic product (GDP) and almost 70% of total exports, while employing more than 25% of the country's active workforce. However, this sector contributes significantly to the depletion of natural capital, ecosystem degradation and loss of biodiversity (Gerciu and Rundgren, 2017). Agricultural activities involve about 75% of the country's lands which is clearly higher than in many other European countries, including Greece, 70%; Romania and Poland, 62%; and/or Italy, 58% (JICA, 2017).

Organic agriculture is still poorly developed in Moldova (MDA-KI-2, Table 1) representing only 1.1% of its agricultural area. The area cultivated with organic crops is estimated at about 26,000 ha . According to the "Atlas of Organic Agriculture"[2] 50% of all organic production takes place in the northern part of Moldova, followed by the centre area with 33% and the South with 17%[3]. Almost 94% of total organic area is operated by holdings of approximately 50 ha or larger[4]. However, there is a significant lack of complete information about land use, including the types of crops grown in organic agriculture due to the transfer of information to inspection and certification bodies that are not registered at the national level (MDA-KI-2, Table 1).

Although agroecological approaches have existed in Moldova long before the Industrial Revolution, many things are not called agroecology as small farmers and gardeners that apply agroecological practices do so without knowing the essence of its terminology and concepts. Agroecology manifests itself in a variety of ways. While the percentage of organic production is quite low, natural food production which follows agroecological principles (HLPE 2019) is present in many backyard gardens and so-called 'datchas,' which maintain the legacy of the days of the USSR, when the state gave everyone small plots of land to ensure food and nutritional security (MDA-KI-1, Table 1). This has resulted in almost every second person in Moldova gardening and having even minimal experience in food growing (MDA-KI-1, Table 1), which could be seen as an informal manifestation of agroecology. Another illustration is the different initiatives of small producers at the community level, such as a family farm in the North that is specialised in cheese production. They purchased cows for the local villagers and buy milk from them at a fair price (paying twice as much as dairy factories), and sell this cheese primarily at the local market directly to consumers, thus strengthening short food supply chains (Fromage- fabricat in Moldova[5]). Other practices include composting or recycling resources inside the community, or developing initiatives similar to Community Supported Agriculture. That is how, even without using the term agroecology, some producers are developing in this direction.

As mentioned, the general awareness of agroecology is still low in the country. Even though trials and iniatives have tried to raise awareness on the topic, many producers and consumers still do not realise that agroecology is based on broader principles than mere organic farming. Producers and consumers seem more aware of the practices involved within concepts such as organic farming and sustainable agriculture.

[5] https://www.facebook.com/fromage.md

In order to bring agroecology to a new level, a lot of effort will be needed by various stakeholders. Moldova is a small country, but thanks to small projects, big things are being realized (MDA-KI-2, Table 1). Examples of such projects are EcoVisio[6], which promote and document existing practices of organic agriculture, EcoVillage Farms connecting producers and consumers[7], Gradina Moldovei supporting farmers' seed systems, EcoLocal farmers supporting farmer-to-farmer knowledge sharing, fostering collaboration with HORECA for better food waste management, and many others.

Moldovan legislation for small producers (the main ones interested in organic agriculture and community development) is favorable. Current policy enhances organic production and supports small producers in many ways including through the creation of new farmers' markets in the cities.[8] Besides increased subsidies for organic farming, the state has adopted new regulations which contribute to development of agroecology in Moldova (MDA-KI-2).

[6] https://www.ecovisio.org/
[7] https://ecovillage.farms.md/#who
[8] https://www.legis.md/cautare/getResults?doc_id=128666&lang=ro

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

In Moldova, education in the field of agroecology and related concepts such as organic farming and sustainable agriculture are developing through different types of educational methods. While formal education is an important one, it is not the main type observed. One example within formal institutions is the faculty of Natural Sciences and Agroecology at the University of Alecu Russo in Balti[9] (established in 2003 with two specialisations: Geography – Biology and Agroecology[10]). There is an agroecology-oriented programme at this faculty called the Master's in Agricultural Ecology[11], which is available depending on the number of applicants. Another programme, called the Agroecology study programme[12], is available at the State Agrarian University of Moldova which is connected to the European Qualifications Framework for training specialists with high professional competencies in the field of Natural Sciences. The training is centred on agroecosystems and the minimisation of human impact on the environment by rational and sustainable use of soil resources and agricultural environments, and production of quality products through maintaining the ecological balance between the components of the biosphere[13].There is also a module on organic agriculture offered in 3 different colleges since 2021[14], which can become the key building block to lay the foundation for the development of agroecology in the future.

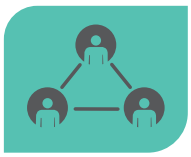
Table 2: Main training programmes related to agroecology (formal and/or informal) in Moldova.

Host	Formal/Informal	Education programmes or courses
University of Alecu Russo in Balti	Formal	Faculty of Natural Sciences and Agroecology. Specializations in Geography, and Biology and Agroecology; Master's in Agricultural Ecology.
State Agrarian University of Moldova	Formal	Agroecology study programme.
Specialized secondary education institution (colleges)	Formal	Module on organic agriculture
MOVCA online platform	Informal	Online training programme "Organic farming system"
EcoVisio Training Centre	Informal	Seminars and workshops related to agroecology.
Women's Association for Environmental Protection and Sustainable Development ("Asociacia Femeilor pentru Protecția Mediului şi Dezvoltarea Durabilă" (AFPMDD)	Informal	Projects on agroecology introducting the concept of sustainable use of natural resources in schools, also involving the community in sustainable agriculture.

[9] https://usarb.md/ [10] Mihaela Ciocan. Universitatea de Stat Alecu Russo din Bălți Didactica pro..., Nr.3 (19), iunie 2003, p. 3 - 8.
[11] Master's programme: http://planstudii.usarb.md/?sp=26&ciclul=2&fbclid=IwAR3KTtscm0i30wHHa3H3LViZ3mVbttrd_8BJqw5CaUfEVDYkqJagjcPKamM
[12] https://www.uasm.md/ [13] https://www.uasm.md/images/stories/studii/catalogul%20cursului/catalog%20ciclul%20II.pdf
[14] http://prodidactica.md/wp-content/uploads/2021/09/Agricultura-ecologica-All.pdf

Informal education is more well-known and accessible to farmers, since it is not enclosed in the frameworks and obligations of the conventional university system, which requires completing several courses of the curriculum and takes much more time. It is based on the diversification of approaches on practical experience in symbiosis with scientific theory. On the account of various NGOs, students, farmers and others, interested individuals can gain high-quality knowledge in a short period. For instance, MOVCA's online course "Organic Farming System"[15] has already been taken by more than 2000 users in 2022. Seminars and workshops from EcoVisio Training Centre[16], Gradina Moldovei[17] and other associations are held directly for the purpose of informing the general public about what defines agroecology. Such informal education methods can be considered a good platform for education, research, experience and for the reinforcement of natural and social values in agroecology. In recent years, young Moldavians have shown a high interest in such environmentally oriented approaches, in particular young couples deciding to move to the countryside.

In the south of Moldova there is the Women's Association for Environmental Protection and Sustainable Development[18] (*Asociacia Femeilor pentru Protecția Mediului şi Dezvoltarea Durabilă* (AFPMDD)) which also have projects on agroecology. A lot of their work focuses on the introduction to sustainable use of natural resources in schools, and involves the community in sustainable agriculture.



3.2. LIVING LAB

According to the results of this mapping, no initiatives labelled as living labs were found in Moldova. The concept of living labs is new in Moldova, therefore key informants could not give concrete examples of or describe it. However, demonstration sites can be found at the Research Institute "Selection"[19] in Balti, where long-term experiments are conducted. Another site is found at the NGO "Gradina Moldovei"[20], a private site where the owners work and implement permaculture principles and sometimes host workshops for interested parties. Agroecology producers, who open their farm to learning visits, can also be found. Nevertheless, these few examples do not yet represent an organised and structured system for living labs. An opportunity for development could be the involvement of volunteers and interns working on farms (MDA-KI-1, Table 1).

3.3. MOVEMENT

Despite finding various education and training activities in Moldova, the agroecological movement component is still beginning. A movement presupposes a series of organised activities working toward an objective, or an organised effort to promote or attain an end, and in relation to agroecology, such existing activities and effort are still poorly organised. A number of initiatives and partnerships do exist, but a common understanding of agroecological concepts is still lacking, as well as concerted action. Started in the past couple of years, actors from civil society and organic producers started collaborating, developing a common vision, and being engaged in collective action.

[15] https://studii.movca.md [16] https://www.ecovisio.org [17] https://gradinamd.com/2022/08/14/training-multiplicarea-si-pastrarea-semintelor-vii-in-cadrul-proiectului-cigarleni-moldova-14-08-2022/
[18] http://mediu.md/index.php/ro/ [19] https://selectia.md/en [20] https://gradinamd.com

Among such actors, EcoLocal Farmers' Market[21] can be cited as one of the best examples of a movement acts with a link in agroecology. It was founded by a group of volunteers whose activities aim to develop the local market. Today, they supports more than 70 producers of ecological and handcrafted products.

Community-supported agriculture (CSA) is partially a new type of movement in Moldova and developing slowly. After the collapse of the Soviet Union in 1991, the idea of collective farms was abolished, and mass privatisation took place (Istoria Republicii Moldova, 2002). Now EcoVillages[22] are developing through the subscription of fresh produce from local farmers. Such a scheme is also directly in link with some agroecological principles.

In the HoReCa (Hotel, Restaurant, Café) sector, particularly in small restaurants, chefs are looking for local quality products and are starting to connect with small farmers to purchase the produce directly, or by supplying farmers with organic waste for composting. There is an operating restaurant on this principle called Rozmarin and it has been collaborating with an organic farm Ecoparadis from EcoLocal farmers' market. Agrotourism and rural recreation are gaining popularity. Buying local food directly from the producers has been increasingly promoted by local festivals, fairs, and open air events. The local markets, for instance EcoLocal Farmers' Market[23], IarmarEco.md[24], "My Village" (Satul meu), and other online markets (including for micro-producers) have been supported by both the government and local public authorities. Even supermarkets have been advertising and promoting the image of local farmers and local seasonal food.

3.4. PRACTICE

According to key informants, agroecological practices are well-developed in Moldova. Nevertheless, for the most part, they seem to be informal and undocumented. Many agricultural practices are not recognised as agroecology-related, even though they are (MDA-KI-1). Key informants (MDA-KI-1 & KI-3, Table 1) mentioned several agroecological practices or related approaches that are used mainly by medium- and small-scale farmers and gardeners, such as mulching, minimal soil disturbance, composting, and decreasing the use of chemicals. Formally, there are initiatives such as "Gradina Moldovei", which directly specialise with agroecology, the development of healthy relationship between people and agroecosystems, and the rights of peasants and producers. EcoVisio and their AgroVisio department is another example, as their organisation deals with various aspects, including agroecology. For instance, the project EcoVillage[25] was developed to showcase sustainable ways of living, including sustainable food production, and the development of cooperative and community-supported agriculture (CSA).

Another important aspect related to agroecological practices in Moldova is geographical identification. This label is very important because of wine specialisation; thus the uniqueness of products and the quality guarantee are shown. It promotes the development of local production, communities, and agroecology. Moldovan producers are gradually beginning to learn about this label, which opens up new prospects for international cooperation, trade, and image development. It also plays an important role for agrotourism and small-scale farmers. Gradually, such productions are developing in the direction of agroecology, seeking more nature-friendly and socially fair production (MDA-KI-2, Table 1). A new desirable conceptual approach for Moldova is the observance of the main patterns in ecology and agriculture

[21] https://ecolocal.md [22] https://ecovillage.md [23] https://ecolocal.md [24] https://www.iarmareco.md [25] https://ecovillage.md

(landscape approaches to land organisation, reproduction of soil fertility, crop rotations, and the combination of plant and animal husbandries) (Duca et al. 2006). It has been promoted through the concept of permaculture, and its respective permaculture design course.

Seeds make up the bulk of agricultural products and farmers often buy seeds for annual crops. There are also many non-certified seeds sold through a barter system at the markets. Small-scale farmers and gardeners used to prefer old local varieties grown from plants of previous years.[26] This, however, was partially lost over the past decades. Only in the past years the demand for local and traditional varieties has grown amongst gardeners, peasants and family farmers who practice seed-saving, yet these acts are usually on a small scale and unorganised in networks or other structures (MDA-KI-1, Table 1).

3.5. SCIENCE

The public Research Institute for Field Crops "Selectia"[27], as well as the State Agrarian University of Moldova are two academic spaces where the scientific activities linked to agroecology are carried out, even though in a limited scale. These two institutes also include master's and doctoral studies in agroecology[28]. Nevertheless, scientific publications on agroecological topics are mainly published by organisations with foreign funding. For instance, "AgroEco"[29] is an initiative carried out by Agrobiznes, within the project "InfOrganic" and implemented by the public Association "Education for development" (AED), with the financial support of the foundation "Liechtenstein Development Services" (LED) from Moldova. The site publishes various materials, such as brochures which are divided into categories from organic farming and vegetable growing, to financial planning and marketing for producers. The materials are provided in several languages, in open access.

[26] https://www.fao.org/3/y2722e/y2722e0x.htm [27] https://selectia.md/en [28] https://www.uasm.md/en [29] https://agrobiznes.md/agroeco

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 3: An overview about initiatives, cases and examples described and analysed in Moldova.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Agroecology Master – University of Moldova**	National	University	Understanding of the processes of the agricultural environment	✓				
2	**AgroVisio project**	Inter-national	NGO	Advisory trainings, workshops and activities promoting agroecology	✓			✓	
3	**MOVCA** *Moldova Organic Value Chain Alliance*	Inter-national	NGO	Promotion of organic farming	✓		✓		✓
4	**EcoLocal** *Association Of Eco And Artisan Consumers And Producers*	Inter-national	Association	Association of Eco and Artisan Consumers and Producers. Producer – consumer linkage through short food chains, promotion of ecological agriculture and healthy products			✓	✓	
5	**Gradina Moldovei** *Garden of Moldova*	Inter-national	Public Association	Supporting agroecology and permaculture initiatives				✓	✓
6	**GRĂDINĂ ECOLOGICĂ ECOCOSTEL** *Ecological Garden EcoCostel*	Local	Farmer	Implementing agroecological approach				✓	
7	**Codru Eco-Nursery** *ECO-PEPINIERA CODRU (CASA PADURII)*	Local	Private initiative	Permacultural cultivation of trees, consulting in permaculture and foraging (wild spontaneous flora)				✓	
8	**INSTITUTUL PUBLIC DE CERCETĂRI PENTRU CULTURILE DE CÂMP "SELECȚIA"** *Research Institute for Field Crops "Selectia"*	National	Research Institute	Research of agricultural crops and seeds	✓			✓	✓
9	**Institutul Ştiinţifico-Practic De Horticultură Şi Tehnologii Alimentare** *Institute of Horticulture and Food Technologies*	National	Research Institute	Scientific research in horticulture	✓				✓

Table 4: Additional initiatives in Moldova - not included in this report.

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Gori's Tomatoes	National	Local farm	Naturally growing vegetable varieties in Moldova, developing CSA					
Fromage	National	French cheese factory	Providing quality products, produced from local raw materials					
Agrobiznes	National	Media project	Support for agricultural initiatives					
Certificat-Eco	National	Private firm	Certification of organic products					
EcoContact	National	Public Association	Environmental protection and public involvement					
Donau Soja	Inter-national	Not-for profit membership organisation	A sustainable, safe and European protein supply					
Small Grants Programme	Inter-national	Program of The Global Environment Facility (GEF)	Support of activities that reconcile sustainable livelihoods with GEF global priorities					
Vitality	National	Public Association	Promotion of environmental initiatives in Transnistria					
Katalyst Kitchens	National	Public Association	Development of local food businesses according to sustainable principles					

INITIATIVE N°1 – MASTER'S IN AGROECOLOGY

https://www.uasm.md/ro/agronomie

AGROECOLOGIA
MASTER'S IN AGROECOLOGY

The master's programme "Agroecology" in the State Agrarian University of Moldova aims to strengthen the general competencies regarding agroecological processes within undergraduate courses to update professional knowledge, develop skills that will allow the master's student to analyse the issues specific to the field in a scientific manner, as well as develop managerial strategies and find solutions for development.

The programme provides the application of theoretical knowledge in agricultural research and development of agroecological projects with the use of contemporary technologies. The programme offers an internship but students can choose the location (including abroad), in which the students apply the accumulated knowledge, experimentally. The University cooperates with several international partners, for example, CASEE[30], AGRI LIDA[31], and SUSFOR[32], which provide an opportunity to practice in the field of agroecology and organic agriculture, adopting the experiences of other countries.

KEY FEATURES

- **Type of education and training:** master's degree
- **Main topics:** understanding of agricultural environment processes
- **Training duration:** 4 semesters (3600 hours)
- **Type of legal entity:** university
- **Founded in:** 2003
- **Accessible to:** any graduate or practitioner with higher education in the field of biological, economic, agricultural, administrative sciences

At the present stage, the university professors involved in this programme are doctors of agricultural sciences and related fields, as well as scientific researchers. They teach students a modern holistic approach in the agricultural environment, minimizing the impact of agriculture on the biosphere.

The objectives of the master's programme are oriented towards the development of general and specific competences for agroecology, which contribute to train professionals who are prepared both theoretically and practically for state structures, such as agricultural enterprises, environmental agencies, ministries and departments, and local public administration.

WHAT CAN WE LEARN?

Students receive the necessary competencies for professional activities, and develop the following key competences: ecological knowledge and understanding of the problems of the agricultural environment; application of the methodology of agroecological scientific research; agroecological argumentation in solving situations; and elaboration and expertise of agroecological projects.

[30] https://www.ica-casee.eu/index.php/members [31] https://agrilida.dk [32] https://susfor.msfu.ru/eng/

Picture 1: Theoretical and practical classes of students. Source: https://uasm.md/ro/agronomie.

INITIATIVE N°2 – AGROVISIO PROJECT

agrovisio

https://www.agrovisio.org

AGROVISIO PROJECT

Agrovisio is a project of the environmental NGO EcoVisio in the village of Riscova (within the central region of Moldova). Their main aim is to provide training for farmers, and advice to farmer organisations and other public institutions. In order to fulfill this, the association puts in place different actions:

(i) promoting agroecological practices through regular live-streams with examples from the local agro-community, trial of best practices by members of the association that they later promote, and organise trainings and create educational materials for farmers;

(ii) providing consultancy services to farmers or farmer organisations, and greening up services to businesses and CSOs; and

(iii) setting up experimental demonstration plots as a platform for training farmers and to contribute to the creation of Moldova's first agri-food business incubator for small food producers.

KEY FEATURES

- **Type of education and training:** seminars, advisory trainings, workshops and activities promoting agroecology
- **Main topics:** agricultural management and agroecological practices
- **Training duration:** varied, from 1 to more than 5 days
- **Type of legal entity:** NGO
- **Founded in:** 2017
- **Accessible to:** student and farmers

Step by step, AgroVisio is widely implementing agroecological practices, enlarging from organic agriculture to agroecology. For instance, they promote and assist composting practices, ecological methods of pest control, and techniques that favour soil fertility or promote forest protection.

The NGO tries to enhance the capacity of local communities through the skill development of farmers and agricultural students. For this, they organise multiple trainings, which include theoretical and practical components, as well as inspiring study visits, as examples of successful best practices.[33]

The team consists of five members, including a programme advisor, manager and specialist, environmental experts, and practitioners.

The duration of the programmes depends on the target groups—anywhere from one to a few days. The education and training programmes rely on many workshops and study visits to attract farmers and promote the adoption of agroecological practices. Since 2019, together with the Education and Development Association, the organisation created theoretical manuals, infographics and videos for farmers, and has been organising public events such as the "Fair of Ecological Opportunities and Social Entrepreneurship" and "Potato Festival" to showcase and promote sustainable agroecological practices. The NGO also created a platform and atlas of organic agriculture[34], which is updated every year with new organic producers.

AgroVisio's work with farmers consists of many trials and experiments. For 2 years, the NGO has been working with small- and medium-sized farmers to promote practices such as mulching, rainwater harvesting, preservation of natural habitats and respect for the environment. Every farmer taking part in these seminars would try and adopt the practices that would fit their situation.

[33] https://www.agrovisio.org
[34] https://experience.arcgis.com/experience/c9e40f5d2376449ca0293178eaaf319f/?fbclid=IwAR1yFpJuv5ODYDAFdV9pBzktu_AOybmxIroOvYZxHc8dsoKPQjYQOWPnpTU

Picture 2: Exhibition "Moldagroteh autumn" and "Farmer" 2020 in Porumbeni village (Left). Workshop #EcoFusion "Vegetable tart with Inga Berdan" (Right). Source: https://www.facebook.com/agrovisio.moldova.

The Swedish government (through the Embassy of Sweden in Chișinău) and IM Swedish Development Partner have had a special role in the development of this organisation, providing the core funding for a period of 3 years, from 2018 and 2019 respectively[35]. The NGO aims to develop several new ideas, however, they have only found very little grants devoted to organic farming. The team aspires to collaborate with international associations to obtain joint grants and projects.

WHAT CAN WE LEARN?

In their work, the NGO explores, shares, and supports a diversity of agroecological practices, but they also encourage organic certification coupled with intrinsic motivation and action to rehabilitate soil and water, protect biodiversity, and establish fair working conditions in farms and processing facilities. The NGO was founded on an approach to agriculture that ensures healthy future for society, all other living organisms and the whole planet. They are convinced that step-by-step Moldova can become a model country that implements agroecological practices widely[36].

Picture 3: Participant at the public event in Râșcova village. Source: https://www.facebook.com/agrovisio.moldova.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Through the promotion of rainwater collection, drip irrigation, and respect for the environment and its habitats, the initiative protects the ecosystem and provides the necessary information on the agroecological management for ecosystem services.

SUSTAINABLE AND FAIR ECONOMICS: An EcoVillage Farm initiative is now established in the village of Riscova, where agroecological practices are implemented. A network has been created where local residents sell their products as a cooperative through fresh baskets delivered to consumers. It also supports local women with low financial income.

LIMITATIONS & CHALLENGES

GOVERNANCE: The law is the main limitation for organic producers in Moldova as organic legislation remains unclear and not in line with European law and regulation number 148. So far, the first and last law in Moldova on organic agriculture is from 2005, but it is not perfect and is put on hold. For example, the export-related part is not well-regulated. Farmers have to carry out double certification, which means that the local farmers have to certify with a local, but also an international body, if they want to export organic produce. This is a barrier, because it gives additional costs for farmers. Further, there is no clear national certification mechanism to date.

[35] https://www.agrovisio.org [36] https://www.agrovisio.org

MOVCA

https://studii.movca.md

INITIATIVE N°3 – MOVCA

MOVCA
MOLDOVA ORGANIC VALUE CHAIN ALLIANCE

The Organic Farming Value Chain Alliance (MOVCA) is an association of producers, consumers, processors, traders, suppliers of certification bodies and inputs in the organic farming system. The MOVCA Association is recognised in the Republic of Moldova as a representative body and voice for organic farmers. It helps stakeholders assess practices, knowledge, and innovation in organic farming from planting to marketing[37]. In 2020, the association presented a novelty in the field of agroecological education –training programme sub-measure 2.5.– to support the promotion and development of organic agriculture. The training programme "Organic farming system" aims to train farmers already in the organic farming system, potential organic farmers, students and all those interested in practicing organic farming.

KEY FEATURES

- **Type of education and training:** online courses
- **Main topic:** organic farming
- **Training duration:** 10 hours
- **Type of legal entity:** non-governmental organisation
- **Founded in:** 2015

The fundamental objective of this training programme is to provide theoretical and practical knowledge, allowing the beneficiaries to develop and practice the skills necessary to overcome information deficiencies in the practice of organic farming. The course explains how soil quality, food quality and human health are related. Experts from the association show that after the transition period, the productivity in ecological agriculture does not differ from conventional. Moreover, in dry years, agroecology can help to increase the yield by 40% compared to traditional conventional practices, and income can grow 3-6 times. The interactive training courses consists of 40 video lessons, presentations, and texts from experts in agronomy. More than 2,000 individuals have registered to this training. This e-learning educational portal in organic agriculture helps to train farmers in order to achieve the general objective of the project: to popularise the application of harmless and environmentally friendly agricultural practices. Although the platform already exists and the course is open, the project is still developing: from its 10 modules, 2 are already uploaded to the platform, 5 modules are in the process of filming and 4 modules are in the process of mounting. The modules include the following topics: principles of organic farming, green fertilisers, ecological practices, legislation in organic farming, and standards and certification.

The expected results include, among others, training students from agricultural institutions from all over the country (Chisinau State Agrarian University and Alecu Russo State University in Balti, centres of excellence and Agro-Industrial colleges). New farmers also find this course helpful for developing their practical knowledge in organic farming (MDA-KI-1, Table 1).

[37] http://movca.md/ro/

Picture 4: MOVCA team and its members (Left). New brochures (Right). Source: http://movca.md/ro/.

WHAT CAN WE LEARN?

The described e-Learning platform is a major initiative that achieved great success, as it is a great instrument to popularise agroecological principles amongst both practitioners and students. The course is available to anyone who wants to gain knowledge from experienced professionals and get a certificate.

INITIATIVE N°4 – ECOLOCAL

https://ecolocal.md

ECOLOCAL
ASSOCIATION OF ECO AND ARTISAN CONSUMERS AND PRODUCERS

EcoLocal is a non-profit association of Ecological and Handcrafted Producers and Consumers which was founded in 2018. The mission of the organisation is to develop a local market for ecological and handcrafted products, as well as to ensure effective connection and communication between producers and consumers. The Association has started to develop a model that can support farmers who want to become organic certified with the help of the EcoLocal CERT project, which amongst other things, facilitates farmer-to-farmer knowledge exchange and sharing.

EcoLocal Market is one of the core projects of the organisation as it creates spaces in in the capital city of Moldova, Chisinau, for producers to come and sell their ecological products directly to consumers. At the beginning, there were 17 producers on the market, but their number has grown to about 70 participants.

KEY FEATURES

- **Main goals:** producer – consumer linkage through short food chains, promotion of ecological agriculture and healthy products
- **Founded in:** 2018
- **Type of organisation:** association
- **Farming sector:** every sector
- **Scale of the organisation:** national

To achieve its goals, the EcoLocal Association carries out several activities which include the development of a mobile market to sell ecologically certified, handcrafted and traditional products; training activities, seminars, conferences, awareness raising campaigns, and producing informational material (publications); and providing professional assistance to organic, artisanal and traditional producers.

Producers from different regions participate in the market and offer a wide range of products which include bread, fresh fruits and vegetables, cheese, jams, and sauces, but also some non-food products such as soaps and artisanal cosmetics. Although the EcoLocal Association allows the members to exchange seeds within the group, there are not many organic seeds in Moldova and the non-organic ones that farmers use are under a derogation.

EcoLocal CERT is a pilot project of EcoLocal, which is currently testing the model of training and knowledge sharing in order to make the model available to other farmers. Many seminars on a variety of topics were organised for the farmers in transition to organic agriculture, where they learn about investing in land and soil restoration. EcoLocal CERT has been leading a group certification project for 9 farmers who are undergoing a 'conversion' into organic production systems. All the members of the group are small farmers (under 5 ha) in their 2nd year of conversion that grow annual plants (i.e., legumes, greens, vegetables) and sell their products at the EcoLocal Market.

Picture 5: EcoLocal Awards Gala 2020-2021 (Left). Eco-farmer (Right). Source: https://www.facebook.com/AsociatiaEcoLocal/photos.

The work of the association is carried out by its members which commit to dedicate 50 hours a year of voluntary work, together with the support of participants, partners, government agencies and through grant funding, for instance from GEF Global Environmental Fund[38] and Helvetas[39].

Picture 6: Local products on the market. https://www.facebook.com/AsociatiaEcoLocal/photos.

WHAT CAN WE LEARN?

EcoLocal has been very active in the promotion of agroecology, food safety, short food chains through support and assistance to small farmers and is open to finding and implementing solutions together with the state and other actors. Its work with EcoCERT is an example of learning solution for small-scale farmers, which represent most producers in Moldova.

POSITIVE IMPACTS

HEALTH: The market allows people to experience agro-organic farming as a traditional local craft, reviving the traditional approach to farming. The consumer, on the other hand, has the opportunity to buy food directly from producers with who they often develop relationships.

COOPERATION: This market model strengthens short food supply chains, efficient resource management, and promotes sustainability principles.

SUSTAINABLE AND FAIR ECONOMICS: Only local producers are admitted to the market, no intermediaries nor importers. Members of the association monitor and ensure the fact that only organic (or those in conversion) or handcrafted producers are selling on the market.

LIMITATIONS & CHALLENGES

GOVERNANCE: For years the state department of organic agriculture has had only one or two people working on the development of organic farming strategies. Having a bigger team would contribute to the development of new programmes and measures which would motivate the farms' conversion.

SUSTAINABLE AND FAIR ECONOMICS: Farmers have difficulty to recruit workers due to a high rate of taxes that limit the salary and the attractiveness of the job proposed.

[38] https://www.thegef.org [39] https://www.helvetas.org/en/switzerland/how-you-can-help/follow-us/blog/inclusive-systems/Navigating-Moldova

INITIATIVE N°5 – GRADINA MOLDOVEI

https://gradinamd.com

GRADINA MOLDOVEI
GARDEN OF MOLDOVA

Gradina Moldovei is an organisation made up by peasants and gardeners, focused on the preservation and restoration of agrobiodiversity, with a strong emphasis on seeds. The association was created to promote the idea of agroecology, an organic approach to agriculture in Moldova.

The organisation was founded in 2015 by 3 initial members but has grown to include 7 members, a team of people working on a contractual basis and several volunteers who intervene occasionally.

The founders' goal was to show that through agroecology, it is feasible to grow food and achieve a very high level of food autonomy, while creating a demonstration site that will prove the effectiveness of agroecology in practice. Biological gardening is applied through various methods (intercropping, crop rotation, allelopathy or judicious combination of plants, green fertilizers, etc.) that are respectful of the environment and the consumer. The organisation also aimed to develop knowledge about all aspects of biological gardening, accessible to the public. For this, Gradina Moldovei has developed and enhanced knowledge exchange among their members and delivered different publications such as the "Agroecology guide" which explains agroecological principles and elements, and showcases different agroecological practices, in particular intercropping and crop rotations.

KEY FEATURES

- **Agroecological practices concerned:** organic farming practices (in particular seeds' saving), ecosystem approach to gardening with emphasis on biodiversity and ecosystem services, promotion of direct producer-consumer relationships
- **Founded in:** 2015
- **Farming sectors concerned:** horticulture
- **Types of stakeholders involved:** gardeners, local agroecology producers, agroecology associations, small family farms
- **Scale of the initiative:** international

Another important pillar of Gradina Moldovei is the creation of a collection of local organic seeds that are adapted to the pedo-climatic conditions of the area. Having noticed the growing demand for knowledge on growing culturally acceptable varieties of crops, fruits and vegetables, as well as seedsaving, Gradina Moldovei has set up a Centre of Agroecology in order to provide education and raise awareness on the importance of locally adapted and reproducible seeds, as well as knowledge of agroecology and its underpinning philosophy. The Centre of Agroecology is informal, located in the village of Cigîrleni, on the site of the founder of the organisation. It offers training to all citizens, providing them with experiences gathered from several countries in the field of eco-gardening through various methods that respect the environment and consumer, while being a unique source of peasant-bred seeds for local gardeners and organic farmers. For instance, the training session "Multiplication and preservation of live seeds" helps participants better understand the value of peasant seeds and the technical aspects of plant breeding. These type of seminars have been supported by the NGO Scuola Campesina[40] (Italy) in collaboration with the United Nations Food and Agriculture Organisation for Eastern Europe and Central Asia (FAO REU)[41]. Other training sessions and educational activities are financed through different grants and projects, including with the Agroecology Fund[42], FAO REU, and UNDP Challenge Fund.

Picture 7: Allies.

[40] https://www.scholacampesina.org [41] https://www.fao.org/home/en/ [42] https://gradinamd.com/pace/

The organisation cooperates and maintains contact with local seeds producers, permaculture gardeners, associations promoting permaculture, plant nurseries, etc. It has been working with the project Eco-village in Riscova and recently tested the TAPE tool (Tool for Agroecological Performance Evaluation) with community members. In 2020, the organisation took part in the H2020 Bond project (Bringing Organisations & Network Development to Higher Levels The Farming Sector in Europe) and recently finalised PACE Project (Peasant Agroecology in Central Asia and Eastern Europe) which organised a free distribution of peasant seeds. The team of people with whom the organisation cooperates is constantly expanding. It also participates in international and regional projects where experiences are exchanged. Gradina Moldovei is a member of the Nyéléni Europe and Central Asia Food Sovereignty Movement.

Picture 8: Live seed and plant fair. Source: https://gradinamd.com.

Gradina Moldovei is implementing projects on the creation of seed libraries, seed savers' networks and a seed bank which joins several organisations and academia. In their work on seeds and biodiversity restoration, they are mainstreaming the participatory action research approach which brings together agronomists, ecology experts, and farmers.

Gradina Moldovei does not have core funding. From the very beginning, the organisation existed at the expense of outside grants, either from projects and/or other organisations, including the East Europe Foundation – Moldova, Agroecology Fund, FAO Moldova, FAO Regional Office for Europe and Central-Asia (REU), Schola Campesina, amongst others. Further, the 2% of the income tax returns (government programme to support NGOs) that people redirect in their fiscal declaration is another source of financial support.

WHAT CAN WE LEARN?

Gradina Moldovei is aimed at preserving seeds and local biodiversity, promoting the ideas of agroecology within training sessions and different activities, while also supporting those who seek agroecology.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: This initiative uses practices that favour soil fertility in agroecological gardening, increase natural biodiversity and protect the ecosystem. The organisation provides training on soil fertility conservation and increasing agrobiodiversity (including seeds).

HEALTH: Team members grow diversified products and promote healthy nutrition based on local products.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Traditional knowledge and gastronomic culture is promoted through this initiative.

LIMITATIONS & CHALLENGES

COOPERATION: There is a weak connection with other associations, and there are no permanent platforms for communication and coordination with other local agroecological initiatives.

INITIATIVE N°6 – GRĂDINĂ ECOLOGICĂ ECOCOSTEL

https://www.ecocostel.com

GRĂDINĂ ECOLOGICĂ ECOCOSTEL
ECOLOGICAL GARDEN ECOCOSTEL

The ecological garden EcoCostel is located in Roșu, a rural village in Moldova which was founded by Constantin Furtuna. Constantin discovered permaculture ten years ago and since then, it has become his passion and lifestyle[43]. Any promising practice is immediately applied in the EcoCostel garden and, if necessary, adapted to local natural conditions and the specifics of the land plot. Thus far, there is no organisation behind this project, the producer works independently and the activity is only supported by voluntary donations.

The initial goal was to grow food as naturally and profitably as possible but now the focus is also to show people the benefits of an agroecological approach by offering organic seeds that can be preserved in permaculture gardens. The EcoCostel initiative helped the gardener to achieve nearly full seed autonomy.

KEY FEATURES

- **Agroecological practices concerned:** organic farming practices
- **Founded in:** 2012
- **Farming sectors concerned:** horticulture
- **Types of stakeholders involved:** local residents, tourists
- **Scale of the initiative:** local

For planting certain species, there is special preparatory work, for example, increasing or decreasing humidity and acidity. The plot is not chaotically planned, as the design is applied by levels so that each species receives the necessary amount of resources. The combination of species is carefully thought-out in order to use the maximum number of possible relationships between the representatives of the site, thereby stimulating them or protecting them from pests (i.e. allelopathy). In addition to the garden and farm development, online coaching or coaching in-person are offered which focuses on practical advice.

Picture 9: Constantin and his garden. Source: https://www.ecocostel.com.

WHAT CAN WE LEARN?

The initiative demonstrates how an active attitude and desire can change the space around us to be friendlier with nature. This approach to farming can be adopted by everyone. It brings more free time, helps to manage weeds, obtains high yield of fruit trees, and there is no need to buy new seeds, as well as many other advantages.

[43] https://www.ecocostel.com

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Five years ago the initiative started with eco-friendly production methods, e.g., filling the garden with leaves and grass which are effective and rapid methods for soil restoration. Water is collected from the roof for watering the garden and bee-keeping activities are on the site.

ENERGY AND WASTE MANAGEMENT: The initiative shows how it is possible to function waste-free by using compost pits

SUSTAINABLE AND FAIR ECONOMICS: EcoCostel promotes ecological agrotourism which helps to attract consumers to handcrafted food products such as homemade vegetable oil, kombucha and other artisanal products which also represent a source of income for family farmers.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Agrotourism also allows the promotion of traditional dishes and to receive a higher income for small producers.culture is promoted through this initiative.

LIMITATIONS & CHALLENGES

GOVERNANCE: Peasant seeds cannot be sold according to existing legislation. Also, the complexity may appear in the creation of a forest garden, since there are only two concepts in Moldovan legislation: arable land (for agriculture) and forest (under the competence of forestry agency). There are different laws for creating each of them, but the term "forest garden" does not exist in principle.

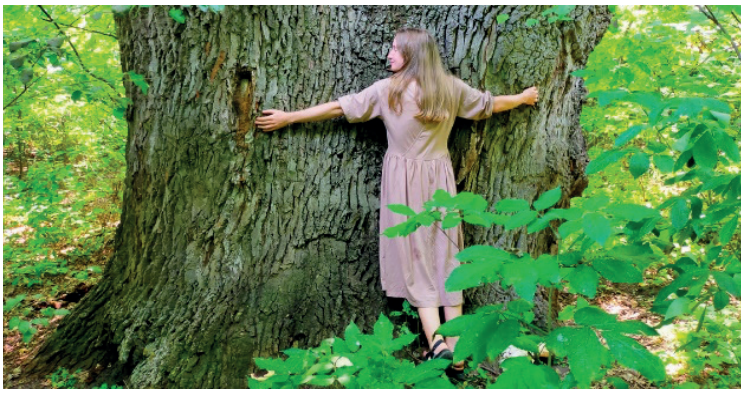
INITIATIVE N°7 – ECO-PEPINIERA CODRU (CASA PADURII)

CODRU ECO-NURSERY
ECO-PEPINIERA CODRU (CASA PADURII)

The Codru Eco-Nursey is run by a young couple since 2020 in combination with a family farm based on permaculture principles. Through the eco-nursery, the couple promotes the use of non-fruit endemic species of trees in food production, emphasising the importance of them for soil formation and other ecosystem services, for instance pest management through attraction of natural enemies of pests (insects or birds). The concept of eco-nursery itself is based on the fact that seeds are harvested from local trees; compost juice, vermicompost and little water is used; and that the trees are grown with a closed root system which allow them to grow faster. The couple is also foraging plants (spontaneous wild flora), while gathering seeds for their eco-nursery. All the material used for the nursery is local and the main source of water is harvested rainwater. Plants are soaked in containers with rainwater which only gives the seedlings water once every two weeks, while the water loss is zero.

KEY FEATURES

- **Agroecological practices concerned:** cultivation of non-fruit trees in permaculture system, foraging (gathering edible wild spontaneous flora)
- **Founded in:** 2020
- **Farming sectors concerned:** permanent crops
- **Types of stakeholders involved:** gardeners and small farmers
- **Scale of the initiative:** local



Picture 10: The local forest (Left). Sprouted seeds of Úlmus laévis (Right). Source: https://www.facebook.com/casapadurii.md/photos.

The aim of the nursery is to provide enough trees to the family's food forest and maximizing biodiversity, as at least 10% of the permaculture plots are allocated to non-fruit forest trees. At the moment, there are 25 species of trees and bushes at the nursery which include decorative, medicine, honey, fruit and forest (supporting) trees, such as elm, poplar, linden, or trees for medicinal use such as Amur cork, Ginkgo biloba or horse Chestnut.

The couple cooperates with everyone who is interested in seeds and trees by giving away seeds and seedlings which they have in abundance. Their partners include NGOs but also kindergartens and schools.

Picture 11: Seed laying stage. Source: https://www.facebook.com/casapadurii.md/photos.

WHAT CAN WE LEARN?

Agroecology offers a range of opportunities for young newcomers in food production, where these can produce food, develop a nursery, provide consulting and be involved in a range of community projects. Also, potential of agroecological practices allows to develop economic activities which do not disrupt natural biorhythms and ecosystems.

POSITIVE IMPACTS

ENERGY AND WASTE MANAGEMENT: The founders are attentive to natural resources, save water and make compost.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Through the promotion of non-fruit trees in food production, rainwater collection, no-till soil cultivation, composting, seed-saving and foraging, the initiative protects and enhances the local (sometimes threatened) species, habitat and ecosystems' diversity.

INSTITUTUL PUBLIC DE CERCETĂRI PENTRU CULTURILE DE CÂMP "SELECȚIA"

RESEARCH INSTITUTE FOR FIELD CROPS "SELECTIA"

The public Research Institute for Field Crops "Selectia" was officially founded in January 1944 in the former USSR, in the Balti District. At first, the main aim of the Institute was to select seeds adapted to local soil and climate conditions.

The seeds collection of the Institute started from seeds coming from the local community, especially women and farmers who collected local varieties. Today the Institute collaborates with farmers who have been using and saving its seeds on-farm, while also sharing seed-related knowledge with researchers. Through these actions, the Institutes supports participatory breeding approaches. The institute cooperates with local agroecology initiatives and recognises the farmers' role in selecting and developing locally adapted seeds. Interested farmers can also contact the institute to get seeds.

At the moment, the Research Institute of Field Crops has 4 laboratories that work directly with the growing of crops. Crop protection is another goal of the institute, which focuses on the impact of chemicals on the environment and how to reduce it. The institute strongly advocates for agroecology and has experimental fields demonstrating the difference between conventional and organic approaches to production.

Currently, the main activities of the Institute are:

i) developing new varieties of field crops, including hybrids resistant to major pests and diseases, and which are tolerant to environmental changes;
ii) producing seeds and propagation of certified seeds on the basis of subcontracts with private seed farms;
iii) developing environmentally friendly technologies for the production of field crops, ensuring savings of non-renewable energy resources; and
iv) developing new sustainable agricultural systems that improve soil fertility and the production of organic products.[44]

KEY FEATURES

- **Main goal:** research of agricultural crops and seeds
- **Founded in:** 1944
- **Main topics:** seed conservation and selection, sustainable agriculture
- **Type of actors involved:** scientists, farmers

Picture 12: Examination of the state of crops of wheat, barley, flax and peas. Source: https://www.facebook.com/icccselectia.

[44] https://selectia.md/en/about

Within the institute, the Department of Sustainable Farming Systems is conducting research in long-term field experiments with different crop rotations, permanent crops, systems of fertilisation and irrigation in crop rotations. Some experiments of the department last more than 50 years. Since 1989 they have started new experiments on crop rotations, soil tillage and fertilisation, without using chemicals for pest, weed and disease control. The results obtained in long-term field experiments have been used for the elaboration of agroecological farming systems in Moldova. On the account of the director of the Institute, Dr. Boris Boincean (researcher, professor, and advocate of sustainable agrarian science and more holistic approaches[45] to agriculture in the Republic of Moldova), the concept of ecological agriculture and awareness about agroecology has been growing in Moldova[46]. The director of the Institute has been actively supporting NGOs and initiatives linked to agroecology. He also spoke at the first international conference on agroecology in Moldova. Thus, the results of the experiments are used not only for practical training of farmers during seminars, educational work with students and post graduate students, but also for the broader public and advocacy.

Picture 13: An honorary diploma of the Government of the Republic of Moldova was awarded to Boris Boincean, director of the Research Institute for field crops "Selecția" (Top). Agriculture and food industry visited the experimental fields of Institute (Down). Source: https://www.facebook.com/icccselectia.

The Institute has various scientific publications that describe various aspects of agroecological farming and techniques for achieving sustainable agricultural development in Moldova that are free to access. For example, there is one on the use of no-till technology in winter wheat cultivation in order to increase water storage capacity in the soil and reduce fuel costs.

Picture 14: A group of journalists visited the Research Institute for field crops "Selecția" (Left). Employees of the Institute "Selecția" (Right). Source: https://www.facebook.com/icccselectia.

[45] https://www.developmentaid.org/news-stream/post/125572/world-soil-day-restoring-soil-through-regeneration-of-agricultural-systems
[46] https://gradinamd.com/organizarea-conferintei-internationale-pe-agroecologie-in-cadrul-zilei-mondiale-a-alimentatiei/

In collaboration with other institutes in the United States and Africa, the institute have reserved of about 2000 types of wheat seeds from all over the world which are used for crossbreeding. During the institute's 74 years of activity, 349 varieties and hybrids have been developed, out of which 160 were officially recognized. From ICARDA (The International Centres for Agricultural Research in the Dry Areas), Syria, Morocco, they obtain varieties of soybeans, lentils, chickpeas, crops resistant to drought. They test these seeds, conduct an analysis, and cross their forms with those.

WHAT CAN WE LEARN?

The activity of the Institute "Selectia" shows the importance of ecological agriculture, which focuses on the quality and health of the soil, on microorganisms in the soil, and on mixed crops. The Institute's work directs Moldova's agriculture to a sustainable path of agroecology, creating seeds adapted to local conditions while bringing people closer to their land.

POSITIVE IMPACTS

COOPERATION: The data collected by the initiative is made available to researchers and to a large extent the general public.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The research institute develops practices that preserve and favour soil fertility, increase natural biodiversity, and protect the ecosystem.

INSTITUTUL ŞTIINȚIFICO-PRACTIC DE HORTICULTURĂ ŞI TEHNOLOGII ALIMENTARE

SCIENTIFIC-PRACTICAL INSTITUTE OF HORTICULTURE AND FOOD TECHNOLOGIES

ISPHTA is a scientific research institution, functioning as the national coordinator of technical and scientific development in horticulture, winemaking and food technologies in Moldova. It includes laboratories operating in agricultural biotechnologies, soil fertility and food security[47].

Within the framework of the institute, researchers are experimenting in different areas. Since the beginning, the institute did not have sufficient funds and could not purchase synthetic fertilisers and pesticides, and thus the Iliev's laboratory for seeds took the direction of natural agriculture.

Their crops are planted in early spring, when the risk of freezing goes away, because they work with open ground. After natural treatment, researchers select seeds through natural selection, monitor which plants are sick, when they bloom, etc., and then select only the healthiest plants.

Before joining the institute, researchers worked with plant immunity, finding diseased plants throughout the republic, isolating the disease in the laboratory and, when planting, dipping the roots into a special chatterbox with an infection, selecting more resistant plants and seeds in the spring that gave a good harvest. Since 2009, there's also a special focus on organic seed production, following natural selection approaches. They use practices such as intercropping, crop rotation and no-till technologies for pest control reasons.

Agronomists from the institute provide consultations for NGOs and farmers if needed on the topics of agroecology and organic farming. For instance, for small farmers, mulching is a suitable method for sprouting potatoes with sufficient humidity and heat preservation, then planting in straw-insulated beds, so straw in the ground performs aeration of the roots and when harvesting potatoes is easier to clean.

KEY FEATURES

- **Main goal:** research of agricultural crops and seeds
- **Founded in:** 1944
- **Main topics:** seed conservation and selection, sustainable agriculture
- **Type of actors involved:** scientists, farmers

Picture 15: Choosing vegetables for seeds and drying seeds. Source: Irina Iliev.

[47] https://isphta.md

Throughout the years, researchers have created a rich collection of locally adapted seed varieties (grown organically) and are cooperating with and supporting local agroecology initiatives, most of them are described above, with knowledge and seeds for free or by exchange. Now the researchers are actively collaborating with other NGOs and farmers in trial to create a joint seed bank, but also to advocate for a system where farmers' seed can be sold locally.

Within the framework of international projects, they cooperate with Luxembourg, Romania, Azerbaijan, Uzbekistan, Russia, and Turkey on seeds and potatoes.

WHAT CAN WE LEARN?

The institute and its staff, through scientific publications and practical research, promote the ideas of agroecological vegetable growing, which is useful for small and medium-sized farmers. Agronomists collaborate with local NGOs and international organisations in order to raise awareness of stakeholders in organic farming and show the benefits of nature-friendly principles.

LIMITATIONS & CHALLENGES

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The inability of the laboratory to sell varietal seeds, due to bureaucratic problems and corruption. The accounting department of the institute has not been showing interest in the official commercialisation of seeds.

Organic certification: With time, researchers wanted to obtain organic certification for the seeds they produce (which would be unique for Moldova) within the Institute but as they are not landowners, it was not possible to move forward with this initiative.

5. CONCLUSION AND FUTURE PERSPECTIVE

The concept of agroecology is not widely known or used by local Moldovan farmers and producers. Nevertheless, the concept is gaining ground thanks to the initiative of local non-governmental organisations and existing scientific publications (MDA-KI-2).

The main findings from this mapping are that (i) training opportunities on agroecology, both formal and informal, exist through universities and NGOs, (ii) local organisations like MOVCA, Gradina Moldovei, AgroVisio, EcoLocal promote the development of agroecology, (iii) practitioners already practice and promote agroecology at a smaller scale and (iv) research teams exist in the area of agroecology. The main challenges are related to public support and policy. For example, since there are no permanent platforms for communication and coordination between agroecological initiatives and farmers, peasant seeds cannot be sold in Moldova according to existing legislation and the state department of organic agriculture has very limited staff, slowing down development.

From the current opportunities for agroecology development, organic agriculture is the one to emphasize (MDA-KI-2) as organic producers are the ones looking into the direction of agroecology. Accredited private certification bodies began to certifying Moldovan producers in 2003, and the volume of economic agents under the National ecolabel has increased rapidly. In 2019, two inspection and certification bodies "Certificat Eco" SRL and SRL "Control Union Dnjestr" have been activated in the Republic of Moldova in accordance with the provisions of law no.115[48] of 09.06.2005 on organic agri-food production. In parallel, 8 inspection and certification bodies have been activated which are recognized by the European Commission and operated under European regulation 834/2007 (Buletin privind agricultura ecologică din Republica Moldova, 2020).

In general, the use of fertilisers has historically been low in Moldova, and it is the shortage of skilled labour, the dysfunctional architecture of land ownership, as well as financing and marketing that represent the areas that need to be reviewed and improved (Gerciu and Rundgren, 2017). The capacity-building of producers, as well as raising the awareness of government officials about the benefits of agroecological approaches in agriculture and food systems should also be an important component of the promotion strategy in Moldova. Moreover, many difficulties exist with the export of organic agricultural products, due to organic certification difficulties and cost for small-scale farmers (MDA-KI-2). Thus, the certification process should be more accessible, so a larger number of producers will begin the transition to agroecological practices that will help them compete in the local market, therefore developing the entire agricultural sector.

Future prospects are associated with a more in-depth implementation of agroecological practices. For example, taking care of sustainability and soil health, such as through annually adding compost as a fertiliser, ensuring that the soil is covered with crops or mulch, and the introduction of animals into the rotational system (Boincean and Dent, 2020). People today are becoming more familiar with agroecology and organic farming through the work of many social organisations engaging in this type of production (MDA-KI-1).

[48] http://lex.justice.md

There are many opportunities for agroecology in Moldova, including a favorable political environment where the ministry is trying to support producers and show how to deal with drought by agroecological methods. Further, since prices for agrochemicals are rising, farmers are looking for alternatives tosave on production. In Moldova, every second person is engaged in gardening and the culture of food cultivation in some way, which creates an active interest and audience for the springboard for successful information campaigns and practical actions in the field of agroecology (MDA-KI-1).

To improve the situation in the described area, including the current state of soil resources, the imperative mission lies with both science and policy-makers (Leah 2015) to improve existing laws, their correlation with European legislation and more extensive information activities.

Agroecological projects in Moldova are mainly financed by other European countries, but they are also starting to receive support from major UN bodies such as UNDP and FAO. There are collaborations with other organic farmers in other countries, thus helping to build a regional network and accelerating the adoption of agroecological approach.

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MAPPING AGROECOLOGY IN THE NETHERLANDS

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THE NETHERLANDS

EXECUTIVE SUMMARY

The aim of this report is to provide an overview of the current state of agroecology in the Netherlands. This work is meant to be illustrative, not exhaustive, and aims to share key insights regarding this topic. The information was collected online and through in-depth interviews with key informants from several selected initiatives and cases (three to four from each of the five activity categories of agroecology: Education and training, Living labs, Movement, Practice, and Science).

The Netherlands is a small country, yet it still manages to be the second largest exporter of agricultural goods globally. The country is considered to be an international leader in horticulture, fisheries and dairy farming (i.e. fourth-largest milk producer in the European Union, by volume). Currently, the dominant agricultural systems are highly intensive, with more than four times the average European livestock density. Despite all this, the agricultural sector is still considered economically vulnerable, with farmers' income constantly under pressure.

Since the second World War, the general trend within the Dutch agricultural sector has been to increase and highly intensify (i.e. 'efficient' or industrialised) production, with negative side-effects for biodiversity and the natural environment, and high environmental costs. Currently the agricultural sector is a large contributor to national greenhouse gas emissions. Numerous calls have been made recently by a variety of 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 sustainable approaches, and these are therefore promoted as 'innovative' and promising alternatives.

In the following report, the current state of agroecology in the Netherlands is described for each of the five activity categories, as well as the evolution of agroecology in the country. It shows how agroecology has been under the radar for a long time, but is now getting more recognition and momentum. The number and diversity of agroecological initiatives and networks have grown in recent years and an agroecological movement has been established. A total of 17 cases, initiatives and examples related to agroecology in the Netherlands are described in detail in the second part of this report.

THE NETHERLANDS

EXECUTIVE SUMMARY (IN DUTCH)

Het doel van dit rapport is een overzicht te geven van de huidige situatie van agroecologie in Nederland. Ons werk is illustratief bedoeld en niet uitputtend, en het rapport heeft tot doel belangrijke inzichten over het onderwerp te delen. Informatie werd online verzameld en door middel van diepte-interviews met sleutelinformanten van verschillende initiatieven en 'cases'; drie tot vier voor elke van de vijf activiteitencategorieën binnen agroecologie (Onderwijs & training, Living labs, Sociale Beweging, Praktijk, en Wetenschap).

Nederland is een klein land, maar slaagt er ondanks dat toch in om wereldwijd de op één na grootste exporteur van landbouwproducten te zijn. Het land wordt beschouwd als een internationale leider op het gebied van tuinbouw, visserij en melkveehouderij (b.v. op drie na grootste melkproducent, qua volume). De huidige dominante landbouwsystemen zijn over het algemeen zeer intensief, met meer dan vier keer de gemiddelde Europese vee dichtheid. Ondanks dit alles wordt de landbouwsector nog steeds als economisch kwetsbaar gezien en staan de inkomens van boeren constant onder druk.

Sinds de Tweede Wereldoorlog is de algemene trend van de Nederlandse landbouwsector geweest om te focussen op productieverhoging en intensivering, met verschillende negatieve neveneffecten voor de natuurlijke omgeving, zoals de afname van biodiversiteit. De landbouwsector levert momenteel een grote bijdrage aan de nationale uitstoot van broeikasgassen. Recentelijk zijn er talrijke oproepen gedaan door verschillende belanghebbenden (b.v., burgers) om de huidige landbouwsystemen om te vormen tot duurzamere systemen, die voedsel leveren binnen de ecologische grenzen. Als reactie hierop zijn er door het Ministerie van LNV twee alternatieven aangedragen: het concept van kringlooplandbouw en dat van natuurinclusieve landbouw. Biologische landbouw, regeneratieve landbouw en agroecologie zijn momenteel in Nederland de meest zichtbare duurzame alternatieve vormen van landbouw, en worden daarom gepromoot als 'innovatief' en kansrijk.

De huidige situatie van agroecologie in Nederland wordt elk van de vijf activiteits-categorieën beschreven en daarnaast wordt een overzicht van de ontwikkeling van agroecologie in Nederland gegeven. Agroecologie was lange tijd nauwelijks bekend in Nederland, maar de afgelopen jaren is het aantal en de diversiteit van initiatieven snel toegenomen en is er een zichtbare agroecologische beweging ontstaan. Verder wordt in het tweede deel in totaal 17 'cases', initiatieven en voorbeelden, die betrekking hebben op agroecologie in Nederland, uitgebreid beschreven.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in The Netherlands are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in The Netherlands.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	University	Education & Research	
2	Institute for Vocational Training	Education	
3	Association	Agriculture	
4	University	Research	
5	Network	Agriculture	
6	Private, Governmental	Agriculture	
7	Association	Agriculture	
8	Farmer	Agricultural production	
9	Farmer	Agricultural production	
10	University	Research	
11	Research infrastructure	Research	
12	Private	Agriculture	

[1] https://www.all-ready-project.eu/

2. CONTEXT

The Netherlands is a relatively small country with 3.4 million ha of land, of which 1.8 million (53%) is used for agricultural activities. Agricultural lands are currently dominated by grassland (1.2 million ha) and arable land (0.5 million ha). In spite of its small size, the country is the second largest exporter of agricultural goods in the world (Ministry of Agriculture, Nature and Food Quality, 2019). According to the Dutch ministry, the agricultural sector is well known for its innovativeness, making the Netherlands a global leader in horticulture, dairy farming and fisheries. Highly intensive, industrialised agriculture dominates the landscape. For example, the country holds more than four times the average European livestock density (mainly poultry, pigs and dairy cattle) and is the European Unions' fourth-largest milk producer by volume (Vermunt et al., 2021). While the number of farms has decreased rapidly from more than 97.000 in 2000 to 52.000 in 2021, the average size of a Dutch farm has almost doubled, from 20 ha in 2000 to 35 ha in 2021 (CBS). The contribution of agricultural production to the total Dutch economy is limited and the gross domestic product has decreased from 2.0% in 2000 to 1.4% in 2019. The number of jobs under a full-time equivalent has also decreased, from 190.000 in 2000 to 158.000 in 2019.

Generally, the last decades have seen an agricultural sector that has put an emphasis on increasing production and decreasing costs, resulting in increasingly large-scale activities. Due to increasing competition, this often goes hand in hand with small or even negative margins for farmers. This makes the sector very vulnerable economically (Ministry of Agriculture, Nature and Food Quality, 2022). Further, while the costs for agricultural production have increased by almost 50% between 1995 and 2019, the prices for agricultural products has increased by only 22% in the same period – a clear indicator that farmer income is constantly under pressure. Decades of intensified production have also lead to increasing pressures on the natural environment, with loss of biodiversity and deterioration of water, soil and air quality (Ministry of Agriculture, Nature and Food Quality, 2019). The agricultural sector also remains a large contributor to Dutch greenhouse gas emissions (RIVM, 2021). In response, there have been numerous bottom-up, as well as high-level, calls to transform the currently dominant agricultural production systems into more sustainable ones that deliver food within ecological limits (Vermunt et al., 2021).

In 2021, this resulted in the national 'nitrogen crisis'. Forced by legislation from the European level, economic activities leading to increases in N-deposition were stopped. This led to plans for a substantial reduction of N-losses which was presented by the Minister of Agriculture in 2022. Those plans resulted in severe protests from farmers, as many felt that these new chanages would threaten their existence, way of farming and identity. Nature-inclusive and agroecological farmers have since presented alternative plans which are supported by the Ministry of Agriculture, Nature and Food Quality. This transition will cause a insecure period for the Dutch agricultural sector as farmers attempt to adapt to changing conditions and find a way to make a living based on sound ecological and social practices.

The Ministry of Agriculture, Nature and Food Quality recognises that the current Dutch agricultural production methods and food systems are putting a heavy burden on our planet and causing severe problems related to animal welfare. In response to these problems, the ministry has recently introduced two alternatives: the concept of circular farming (Ministry of Agriculture, Nature and Food Quality, 2019) and the concept of nature-inclusive agriculture (Van Doorn et al., 2016). Circular farming focuses on reducing the use of raw materials and imports (by sourcing all goods as locally as possible). An agricultural production model applying circular principles will bring about an ecologically and economically vital and prevalent production method, in balance with nature and appreciated by society. In such a circular farming system, arable farming, livestock

farming and horticulture primarily use raw materials from each other's supply chains, as well as waste flows from the food industry. Circular models can be structured in various ways: within a company, in a specific area (e.g. at the local, regional or provincial level), within the Netherlands or across national borders. The motto is: source it locally if possible, and only regionally or internationally if necessary. The second concept is that of nature-inclusive agriculture (NIA), which was introduced as a policy term in a vision document for Dutch nature by the Ministry of Economic Affairs (Ministry of Economic Affairs, 2014). Its three underlying and interconnected principles are: "to employ ecosystem services rather than external inputs; minimise environmental pressures and contribute maximally to 'non- functional' biodiversity and landscape quality" (Runhaar, 2021). To that end, practicing NIA implies conserving, improving and using the services of water and soil; closing nutrient cycles and minimising harmful emissions to water, soil and air; and constructing and conserving landscape elements (Erisman et al., 2017).

Following the need to transform the Dutch agricultural and food systems and the two policy concepts introducing alternative farming practices, several approaches and networks have been established. Organic agriculture, regenerative agriculture and agroecology are currently the most visible alternative approaches, and they are promoted as promising alternatives to the dominant agricultural systems in the Netherlands (Vermunt et al., 2021).

Agroecology was not a term generally used in the Netherlands for alternative, nature-inclusive types of farming systems. Up until recently, organic farming and low input farming were the only alternative paths for farmers. During the last 5 years though, agroecology has really taken root as a practice and movement in the Netherlands. It was initially stimulated by a group of first generation farmers who organised themselves under the flag of Future Farmers. An increasing number of CSA farmers and societal organisations opting for a different, more democtratic, and regionally oriented food system started cooperating under the flag of "Voedsel Anders". These, organisations joined forces with existing organic horticultural farmers, permaculture farmers and vegan farmers. They adopted the term agroecology, as some of the initiators were inspired by the agroecological movement in Southern America (Visser et al. 2020; Nieboer, 2022). Nevertheless,many of Voedsel Anders' farmers, especially the organic ones, and their organisations did not adopt agroecology as a term. They stress that of the importance of organic farming remains its clear regulations policy objectives (i.e. 25% of organic farming in the Netherlands) and formal label. Agroecology is lacking this institutional and regulatory embedding, as well as a uniform definition. Its lack of a singular definition though is what allows it to be such a promising system, as it can be adapted to local realities.

At the moment, the term agroecology is usually used by farmers who subscribe to the principles of the Nyeleni declaration (Nyeleni, 2015). Small-scale food producers, consumer organisations and social movements gathered in Nyeleni to come to a common understanding of agroecology as a key element in the construction of Food Sovereignty, and to develop joint strategies to promote agroecology and defend it from co-optation. The decleration opts for the transformation of agricultural and food systems. Other farmers, use the term agroecology with a focus on nature inclusive and circular farming, which targets incremental changes of current practices. This difference is in line with the distinction between transformative and conformist agroecology (Sachet et al., 2021). Recent debates in the Netherlands have focused increasingly on political matters regarding agroecological transitions and food system transformation versus agricultural conformism. This trend may be exemplified by Dutch policy, where agroecology is used as a policy term for nature-inclusive agriculture (Runhaar, 2021), which may be considered less transformative than agroecology and its principles. Nevertheless, this is in line with different definitions of agroecology at the European level (Deijl and Duncan, 2020). The exchange and discussion between researchers regarding their vision of agroecology have intensified since 2021, when several agroecological research projects started in the country.

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

On May 5th, 1947, at the request of parents, the 'Foundation for the promotion of biodynamic agricultural and horticultural education' was established to ensure the existence of vocational education in the field of biodynamic agriculture. Later, universities of applied sciences started to give trainings in organic farming, but these do not cover all topics and the principles of agroecology. At the university level the chair group Farming Systems Ecology of Wageningen University offers the MSc Organic Agriculture, which some of its specialisations on agroecology. These specialisations aim to serve the next generations of researchers, policy makers, and agricultural consultants specialised in agroecology. Until today, 'Warmonderhof' is the only public vocational institute to offer practical trainings in agroecology (Table 2). Currently, the institute is looking into whether a second public course in the field of agroecology can be established, since the current demand is larger than the availability.

Table 2: Different types of education and training in Agroecology in the Netherlands.

Type of education	Name
Vocational training for future farmers	Warmonderhof: part-time and full-time education (2-3 years)
University level for MSc Students	Wageningen University. MSc organic farming
Courses for general public	Kraaijbeekerhof: courses ranging from 1 day to one year
Informal learning between AE farmers	"Boerenvuren" meetings organised by farmers' organisation

There is a huge variety of informal education bodies that complement formal education in regards to agroecology which have developed throughout the years. This varies from the establishment of the biodynamic agriculture training centre 'Kraaybeekerhof Academie' in 1975, to 'Boerenvuren' (i.e. farmer fires: meetings where mainly first generation farmers exchange experiences and learn from each other in an informal way) which was initiated in 2015 by the agroecological farmers association 'Toekomstboeren'.

[5] https://usarb.md/ [6] Mihaela Ciocan. Universitatea de Stat Alecu Russo din Bălți Didactica pro..., Nr.3 (19), iunie 2003, p. 3 - 8.
[7] Master's programme http://planstudii.usarb.md/?sp=26&ciclul=2&fbclid=IwAR3KTtscm0i30wHHa3H3LViZ3mVbttrd_8BJqw5CaUfEVDYkqJagjcPKamM
[8] https://www.uasm.md/ [9] https://www.uasm.md/images/stories/studii/catalogul%20cursului/catalog%20ciclul%20II.pdf
[10] http://prodidactica.md/wp-content/uploads/2021/09/Agricultura-ecologica-All.pdf

Picture 1: Compilation of photos taken during 'Boerenvuur' training for small mechanisation. Source: Taco IJzerman.

3.2. LIVING LAB

In 2017, 90 living labs were identified in the Netherlands (Maas et al. 2017), but none of these focused on agroecology. During the last few decades many networks and communities have been initiated in the agricultural sector, with many of them focusing on technical innovations. Nowadays, an increasing number of them have an area based approach in combination with nature inclusive and circular farming practices. For example, the living lab Friesland in the north (livinglabfryslan.frl) and Duinboeren in the south of the Netherlands. In recent years, living labs focusing on biodiversity in rural areas have been established, such as the Ooij living lab, which focuses on clay soils in the eastern part of the country[2], Alblasserwaard living lab focusing on peaty grassland soils used for animal husbandry in the western part of the country[3] and B7 living lab focusing on soils used for growing flower bulbs[4]. In addition many successful agriculture-nature collectives of farmers have been established around the country. Their umbrella organisation is boerennatuur[5] which represents more than 11,000 farmers.

[2] www.vianatura.nl [3] www.groenecirkels.nl [4] www.livinglabb7.nl [5] www.boerennatuur.nl

The development of a specific agroecological living lab at the national level started in July 2021, which aims to support the agroecological transition in the Netherlands. This living was an initiative of the farmers' networks united under the Federation of Agroecological farmers. They were supported by the TransNational Institute (TNI), researchers of Wageningen University and research within the EU project AE4EU.

The first meeting of the Dutch 'Agroecology Network' took place in July 2021 and had 30 participants. This joint initiative of the Federation of Agroecological Farmers was supported by Wageningen Research (WR) and TransNational Institute (TNI). The meeting focussed on connecting agroecology-related actors to strengthen the network and develop a strategy to tackle the challenges agroecological farmers experience, as well as to 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.

The second meeting took place in October 2021 and hosted twice as many as the first meeting; a total of 60 participants. The meeting included a farm visit, as well as discussions on topics related to knowledge for agroecology, policies, etcetera.

Picture 2: Compilation of photos taken during Living Lab meeting Agroecologie Netwerk. Source: Jan Hassink.

The third meeting took place at an agroecological farm in November 2021 and facilitated the exchange between the Dutch Ministry of Agriculture, Nature and Food Quality and the 'Rijksdienst voor Ondernemend Nederland' (RVO). 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 rather restricting regulations.

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. During 2022, four meetings were organised by one of the established working groups. They 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.

3.3. MOVEMENT

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 a 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, the Netherlands does not have a concrete agroecology strategy for the food system, in regards to 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), and alignment of a large number of agroecological organisations with different priorities and focuses is essential. 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).

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 with more than 2500 farmers, citizens, activists, researchers and students from the Netherlands and Flanders (Belgium) which participate in a growing network for an alternative food system. Some of the key issues for Voedsel Anders is fair prices 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 the influence of farmers and citizens on food. The first conference in 2014 was attended by 800 people and the second in 2016 by 1000. The third conference in 2022, organised by civil organisations and small farmers' organisations, was attended by 400 NGOs, farmers, researchers and policy makers. Voedsel Anders' agroecological farmers have also taken steps to organise themselves and meet on other occasions.

Another organisation '*Toekomstboeren*'[6] (meaning Future Farmers), which consists primarily of first generation farmers, was founded in 2015. The Biogardeners organised themselves in an organic horticultural organisation, with an expansion to a CSA association in 2019. These organisations, together with permaculture farmers and the network of vegan farmers, merged in the Federation of Agroecological farmers in 2019.

Since 2021, the Federation, several NGOs and researchers have joined forces and established the Agroecology Network. This network started several working groups around pressing

[6] www.toekomstboeren.nl

topics such as access to land and knowledge for agroecology. The Federation has also joined forces with other ecological oriented organisations and networks, such as '*BoerenNatuur*', '*Herenboeren*' and Caring Farmers in the '*Boerenraad*' 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.

In addition to the core partners of the Federation of Agroecological farmers and the agroecology network, there are many other organisations that are loosely connected to the movement. Visser et al. (2020) investigated 45 Dutch agroecological oriented organisations on the importance of each of the principles of agroecology within their organisation. The conclusion of the study was that the principles 'biodiversity' and 'soil quality' were significantly the most important for the organisations.The most frequently mentioned necessity for a transition as mentioned in Jansen's (2020) research is changed legislation and regulations. This includes banning chemical agents, the implementation of agroecological practices, but also the development of food forests. Additionally, according to these organisations, the food system in the Netherlands would benefit from short supply chains and consumption on a regional scale (Jansen, 2020).

According to Jansen (2020), organisations contribute to the transition by sharing knowledge amongst farmers. Several organisations have internal trainings and offer significant support to farmers who are interested in transitioning to agroecology. Many of the organisations indicated that they contribute to the transition by practicing it. This means that they already contribute to the goals of agroecology and that they show that there are other ways of farming, what this looks like and that it works. The organisations campaign for a true cost and price system, finance for the transition, regionalisation of agriculture, access to land, a removal of business from decision-making and other laws and regulations.

Many of the organisations are in different partnerships and have different reasons to work together (Jansen, 2020). The most frequently mentioned motivation for cooperation is the formation of a counter-movement to industrialised agriculture. For this, the FAB and the Boerenraad are well-established points of contact. The '*Boerenraad*' is in contact with the '*Land- en Tuinbouworganisatie*' (LTO) to ensure support. Furthermore, the organisations achieve a great deal of knowledge sharing and support from cooperation.

3.4. PRACTICE

The Netherlands is known for its intensive and export-oriented agricultural sector, and until recently, agroecology was not a commonly heard term. The last decade has seen a nationwide increase in agroecological practices, which partly reflects a changing attitude in Dutch society. Especially since covid-19, there is more interest in local food, reconnecting farmers and citizens, and embedding agricultural practices at a local level. A clear example is the increasing number of initiatives using Community Supported Agriculture (CSA) in the last decade. Currently there are over 200 CSA's subscribed to the CSA Network in the Netherlands, with the majority operating at full capacity and with a waiting list for new members. There is also an increasing number of first generation farmers, which are often young people motivated to start farming and applying groecological principles. Many of them also run a CSA and are a member of 'Toekomstboeren', which currently has over 400 members. Biodynamic farmers have a longer history in the Netherlands and their number (currently 90) is

[22] https://selectia.md/en [23] https://www.uasm.md/en [24] https://agrobiznes.md/agroeco

increasing gradually. Many of such farmers, run a mixed farm. Furthermore, newer organisational models are emerging for local food such as '*Herenboeren*', a system of land ownership by citizens who hire a farmer to grow food for the community (approximately 200 families), and other initiatives where citizens invest in buying and regenerating agricultural land. Examples are '*Land van Ons*', '*Lenteland*' and '*Aardpeer*'. More and more citizens like to retake control over their food system participating in different types of community gardens and pick-it-yourself gardens that people can visit to purchase local and fresh products. Furthermore, food cooperatives are also increasing.

Major challenges of agroecological farmers are: access to land (especially for first generation farmers), administrative monitoring systems that do not match agroecological practices, and a general lack of policy support or recognition. An inventory of these challenges were one of the outcomes of the first meeting of the national living lab agroecology.

3.5. SCIENCE

Similarly to the agricultural sector, it is only recently that the term 'agroecology' has begun being used in the scientific community in the Netherlands. The rural sociology group of Wageningen University which researched low-input farming systems in the Netherlands for the last few decades, along with the increased attention being given to organic or alternative agriculture allowed a dynamic which led to the creation of the Louis Bolk Institute, a research organisation for organic and biodynamic farming. The first professor in organic agriculture was appointed at Wageningen University in the beginning of the 1980's.

The term agroecology is generally used by the scientific community as the application of ecological principles and practices in agricultural farming systems (van de Ven and van Keulen, 2007). One of the concrete examples of the term in use is the Agroecology and Technology fieldlab of Wageningen University and Research (Farm of the Future). Only in recent years, agroecology (as well as regenerative farming) have been described by social scientists as exponents of alternative food systems, building food sovereignty, food citizenship and reconnecting farmers and citizens (e.g. Leitheiser et al., 2022).

Within the scientific community in the Netherlands there is on-going debate and confusion about the meaning, interpretation and implication of the word 'agroecology'. It is mainly used at farm and agroecosystem level by agronomists and ecologists. A good example of the term being used in this way is the agroecology research and innovation centre 'Farm of the Future', where new ecological concepts are studied. Other researchers, mainly social scientists, focus the term at the food system scale, and highlight the transformative and political dimensions of agroecology. At Wageningen University different teams are focusing on agroecology. For example, natural scientists focus on the application of ecological principles and practices like the use of hedgerows, strip cropping and pixel farming as a strategy ro reduce diseases and pests, while social scientists are paying attention to the political and economic factors affecting the transition to agroecology.

An increasing number of researchers from Wageningen University and Research, Louis Bolk Institute, University of Utrecht, Leiden and Twente perform participatory research in close collaboration with agroecology farmers.

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 3: Overview of agroecology initiatives, cases and examples described and analysed in the Netherlands.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Farming Systems Ecology Group**	International	Chair group at university	Research and education in agroecology					
2	**Warmonderhof**	National	Training Institute	Vocational education in agroecology					
3	**Boerenvuren** *Farmer Fires*	Local and national	Association	Inspire and exchange experiences agroecological farmers					
4	**Boerderij van de Toekomst** *Farm of the Future*	Local, National, International	Research Farm	Research on agroecology					
5	**Netwerk voor Agroecologie en Voedselsoevereiniteit** *Dutch Agroecology Network*	National	Network	Support agroecological transformation					
6	**Livinglab natuurinclusieve landbouw Fryslân** *Living Lab Nature-Inclusive Agriculture Fryslân*	Regional	Living lab	Support agroecological transition					
7	**Federatie Agroecologische Boeren** *Federation of Agroecological Farmers*	National	Federation	Support agroecological transformation					
8	**Toekomstboeren** *Future-farmers*	National	Association	Support (first generation) agroecological farmers for agroecological transformation					
9	**Boerenraad** *Farmers'Council*	National	Network	Support and broaden agroecological transition					
10	**Voedsel Anders** *Food Differently*	National	Network	Support agroecological transformation					

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
11	**Zelfoogsttuin - Ús Hôf Farm** *CSA Network Ús Hôf*	Local	Farm	CSA with food cooperative for members					
12	**Tuinderij de Wilde Peen** *Horticulture Garden De Wilde Peen*	Local	Farm	CSA with solidarity payment scheme					
13	**Land van Weert, Herenboeren** *Herenboeren Land of Weert*	Local	Non-Governmental Organisation	Citizen owned box scheme					
14	**BD Boerderij Ruimzicht** *Biodynamic Farm Ruimzicht*	Local	VOF	BD dairy farmer and caring farmer					
15	**Het Regeneratieve Landbouwprogramma** *Regenerative Agriculture*	Regional, National	Public-Private Partnership	Support regenerative transition and research					
16	**Agroforestry**	National	Public-Private Partnership	Research in agroforestry					

Table 4: Examples of additional initiatives in the Netherlands - not included in this report.

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Exploitatie Reservegronden Flevoland *Exploitations of reserve lands in Flevoland (ERF)*	Local	Living lab	Experimenting with new techniques in organic farming					
Lighthouse Farms & Network	Local to inter-national	Living Lab	Exemplary farms offering and demonstrating solutions for sustaiability challenges					
De Plaetse *Swampy land*	Regional	Education and Training	Regional centre for inspiration, learning and exchange between farmers and other stakeholders					
Eet Meerbosch *Forest food*	Local	City farm	Community supported agriculture in urban context					
Herenboeren *Gentleman farmers*	National	Foundation	Network of Herenboeren: farms owned by citizens hiring a farmer to produce local food for 200 families					
Land van Ons *Our Land*	National	National organisation	Citizen initiatives buying agricultural land and transforming it into regenerative agriculture					
Lenteland *Spring Land*	National	National organisation	Organisation buying agricultural land to regenerate it					
Boeren en Buren *Farmers and Neighbours*	Regional	Network	Regional network of farmers in short food chain					
Burgerboerderij de Patrijs *Community farm de Patrijs*	Regional	Social entrepreneurs and community	Community farm in eastern part Netherlands					

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Buurtmarkt Goed Volk *Food cooperative "Good people"*	Regional	Network of citizens	Food cooperative in eastern part Netherland					
De Nieuwe Ronde *The New Round*	Local	Private farm	CSA farm					
De Ommuurde Tuin *Horticultural garden "the Walled Garden"*	Local	Private farm	CSA farm					
De Pippert	Local	Private farm	Dairy farm in short food chain					
Fruittuin van West& *Fruit farm*	Local	Private farm	Biodynamic Farm in short food chain					
Korte Keten Zeker Weten *Short Chain for Sure*	Regional	Network of citizens	Organisation of citizens promoting short food supply chains					
Landgoed Velhors *Estate Velhorst*	Regional	Private farm	Farmer active in short food chain in eastern part of the Netherlands					
Moestuin – Maarschalkerweerd *Horticultural Garden Maarschalkerweerd*	Local	Farm growing vegetables	Short food chain initiative and teagarden in city of Utrecht					
MOMA	Regional	Network	Initative connecting citizens, dairy farming and landscape around Amsterdam					

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Natuurvlees *Nature Meat*	National	Network of farms	Producing "nature" meat in short food supply chain				✓	
Nieuw Bureveld – Herenboeren *New field neighbors – Gentleman farmers*	Local		Community owned farm producing for 200 families				✓	
Pluk! Groenten van West *Pluk! Vegetables of West*	Local	CSA farm	Connecting with citizens and creating a community				✓	
Rechtstreex *Direct*	Regional	Network	Network in short food chain in western part of the Netherlands				✓	
Stadsboerderij Almere *Urban Farm Almere*	Regional	Private farm	Urban multifunctional BD farm				✓	
Netwerkduurzame *Villages Network Sustainable*	Regional	Network	Nework of villages in Friesland with sustainable and local food activities				✓	
Tuinderij Land en Boschzigt *Horticultural garden Land en Boschzigt*	Local	Private farm	BD selfpich farm				✓	
Veld en Beek *Field and Brook*	Regional	Private farm	CSA with 3500 members				✓	
Vlinderstrik - Herenboeren *Bow tie Gentleman farmers*	Local	Cooperative Herenboerderij	Community owned farm, producing for 200 families				✓	
Vokomokum *Food cooperative Amsterdam*	Local	Food Cooperative	Organisation of citizens buying and distributing food from local farmers				✓	

WAGENINGEN UNIVERSITY & RESEARCH

Farming systems ecology group
@fse_wur (X)

FARMING SYSTEMS ECOLOGY GROUP

The Master of Organic Agriculture (MOA) is coordinated by the Farming Systems Ecology Group (FSE) of Wageningen University. MOA has three specialisations, namely two in 'Agroecology', one done fully at Wageningen and another European MSc coordinated with Isara in Lyon, France, and 'Sustainable Food Systems'. At the moment the specialisation 'Agroecology' is a natural science specialisation and the specialisation 'Sustainable Food Systems' a social science specialisation. It is foreseen that in the future this will become more interdisciplinary like in the European MSc Agroecology.

KEY FEATURES

- **Type of education and training:** BSc, MSc
- **Main topics:** organic agriculture
- **Training duration:** 2 years
- **Type of legal entity:** public
- **Founded in:** 2007
- **Accessible to:** students with bachelor in natural and social sciences

The Master in Organic Agriculture currently educates around 100 students every year. To quote a lecturer of the chair group: "We are teaching the next generation of politicians, policy-makers, consultants to empower decision-makers in the food system". The concept of agroecology is a key concept within the master, and it's interpreted differently in each course, with the focal point of attention differentiating depending on the specialisation. Overall, the 'environmental' dimension is fully covered in the master. According to the lecturer interviewed, the programme in particular shines in the category of 'cooperation' (i.e. promotion and development of synergies and collaboration between actors along the food chain). The 'political' dimension is partly dealt with. According to students, there is little attention given to agroecology as a movement, specially for scientific publications. However, students can address these topics in their own thesis and internships. The 'economic' and 'social' dimensions are dealt with in the specialisation 'sustainable food systems'. According to the interviewed lecturer, the biggest limitation is the lack of time available to cover all of the dimensions and categories well and in an integrated manner.

Picture 4: MOA students examining soil quality. Source: WUR, FSE.

INITIATIVE N°2 – WARMONDERHOF

https://warmonderhof.nl

WARMONDERHOF

Warmonderhof is part of AERES University of Applied Sciences and provides vocational educational training (MBO) in Biodynamic Farming. It is the oldest educational training on agroecology in the Netherlands. The course provides a four year full-time education for young people, a two year part-time education for adults and multiple day trainings for professionals in the agricultural sector. Both the two and four year courses include, to a large extent, working on a learn-work farm. All students participating in the four year course, live within the school in order to build a strong connection with the work and place (e.g. livestock, plants and soil). Most students also become farmers and rural workers at agroecological farms. At the moment there is more demand for education than there are places for students.

The 'environmental' dimension of agroecology at 'Warmonderhof' has a focus on soil health and does not include off-farm waste streams. The 'political' dimension is only partly dealt with. Agroecology as a movement is only presented in extracurricular activities to students but can be addressed in a students thesis and internships. The 'economic' and 'social' dimensions are mostly covered, with a few exceptions such as 'traditional knowledge and gastronomic culture' and 'gender issues'.

KEY FEATURES

- **Type of education and training:** MBO level for becoming a farmer
- **Main topics:** all topics related to organic farming agriculture, technology, economics, anthroposophy, art, education, and biology
- **Training duration:** 2-4 years
- **Type of legal entity:** public education
- **Founded in:** 1947
- **Accessible to:** part time and full time students completed high school

Currently, a specialisation on agroecology is being developed, which will focus on combining agriculture and ecology through topics such as permaculture, food forests (i.e. 'voedselbossen'), strip cropping, and regenerative and nature-inclusive agriculture. According to the interviewed lecturer the 'hot' topics amongst students are: the role of livestock in agriculture, and social innovations to ensure a living income for labour intensive, consciously chosen, not-high technological and small-scale agriculture.

Picture 5: Greenhouse facilties of Warmonderhof. Source: Aeres MBO.

INITIATIVE N°3 – BOERENVUREN – TOEKOMSTBOEREN

BOERENVUREN – TOEKOMSTBOEREN
FARMER-FIRES

A **Boerenvuur** (i.e. farmer-fire) is an informal meeting of the 'Toekomstboeren', happening around a campfire in the yard of a farm, generally twice a year. The meeting does not involve a fixed or official programme with workshops or speakers, farmers simply get together to chat, eat together and exchange stories. The main objective is to bring (future) farmers into contact with each other so that they can support each other with friendship and fun, but also with tips, advice and cooperation.

These regional meetings are a first step in the building of a strong network, from which all kinds of great initiatives arise. Affect and joy are the mobilising forces of this informal education on agroecology. Through affect the farmers get the capacities and motivation for agroecology. The topics of a 'Boerenvuur' may vary from small machinery, fossil free farming, braiding hedges, farmer health, starting a farm, and solidarity payments. All principles of agroecology are addressed through the diversity of topics discussed.

KEY FEATURES

- **Type of education and training:** informal peer to peer
- **Main topics:** related to farm practices
- **Training duration:** variable
- **Founded in:** last decade
- **Accessible to:** all members of Toekomstboeren

Picture 6: Boerenvuren meeting farmers. Source: Toekomstboeren.

INITIATIVE N°4 – BOERDERIJ VAN DE TOEKOMST

https://farmofthefuture.nl

BOERDERIJ VAN DE TOEKOMST
FARM OF THE FUTURE

The Farm of the Future aims "to be the platform for supply chain parties, farming organisations, governments and civil society organisations to discuss the current larger economic system of which agriculture is a part" (Boerderij van de Toekomst, 2023). The Ministry of Agriculture, Nature and Food Quality and Wageningen University and Research (WUR) initiated the Farm of the Future, seeing it as "the link between research and practice, and an important part of the implementation plan towards circular agriculture" (Boerderij van de Toekomst, 2023). WUR designed the living lab using input from a group of both arable and livestock farmers, and in collaboration with experts from knowledge-institutes and businesses.

KEY FEATURES

- **Main topics:** technology for conventional and agroecological farming systems
- **Type of organisation supporting the living lab:** research institution, national and provincial government
- **Type of actor involved:** farmers, scientists, government, and business sector
- **Scale of the living lab:** NGO
- **Founded in:** 2018
- **Accessible to:** local, national and international (i.e. European)

The origin of this living lab can be traced back to 1978, when a pilot farm at Nagele (province of Flevoland) began using the agroecological approach to farming system research that is still used by the 'proeftuin' of the living lab. This 'Proeftuin Agroecologie en Technologie' (i.e. Testing Garden Agroecology and Technology) formally opened in September 2018 and acts as an incubator where fundamentally different and relatively high-risk experiments can be carried out. Agroforestry is an example of this, which can be seen as redesign rather than an optimisation of a farming system. Innovations proven successful in the 'proeftuin' are incorporated into the 'field lab'. The second element of the Farm of the Future, is when successful innovations from the 'proeftuin' are incorporated into a business setting. A third, and perhaps the most important element, is the stakeholder platform for dialogue, which integrally connects to the proeftuin and field lab. It encourages actors' focus to shift from (polarising) measures and barriers to finding solutions based on collectively formulated goals.

Currently, the Farm of the Future in Lelystad (province of Flevoland) is funded by the Ministry of Agriculture, Nature, and Food Quality, province of Flevoland, and WUR. It involves farmers, scientists from different disciplines (i.e. sociologists, economists, agroecologists), communication advisors (e.g. PSG), and upstream industry (e.g. croplife, BASF, Pepsico, McKain, Cosun). The scale of the living lab ranges from local to international. On a local level, the living lab collaborates with municipal authorities, on a regional level the water board and provincial authorities, while on a national scale, the Ministry of Agriculture, Nature and Food Quality are involved (also as funders).

The living lab is governed by a programme board and a steering committee. The steering committee includes funders (i.e. province of Flevoland, WUR, and Ministry of Agriculture, Nature, and Food Quality). The programme board includes 'BO Akkerbouw', supply chain actors, NGOs, and the tech industry. The coordination and execution of the living labs' projects are done by researchers and communication professionals (either in-house or temporarily hired).

Regarding knowledge transfer, access to data depends on the arrangements made with funders or commissioners. Research results of the Fieldlab are accessible for everyone, including the supplementary data, if available.

Picture 7: Photo of the Farm of the Future in Lelystad. Source: farmofthefuture.nl.

While the Farm of the Future focuses on arable (e.g. potatoes, grains, legumes) and permanent (e.g. fruit and nut trees) crops in the Netherlands, the livestock sector is involved as well. The living lab does not produce animal-based products, but does collaborate with the livestock sector. For example, through the exchange of grass clover and straw with a dairy farmer for manure. Other aspects that the living lab covers relate to the development of seed technologies and machinery, which may be initiated by members of the living lab itself or in collaboration with other stakeholders.

The initiative uses the Dutch translation of living lab 'proeftuin' and agroecology in the context of one of its elements, the 'Proeftuin Agroecologie en Technologie'. Here, agroecology is considered mainly as a technical approach to farming systems. As such, its experiments consider the application of agroecological practices, such as agroforestry, but does not focus on possible social or political issues.

Currently, knowledge circulation with stakeholders that are outside the living lab happens mainly via the various networks it is engaged in and the initiatives it is involved in. These initiatives and related networks cover multiple scales, from local to national to European and international. In the future, the living lab would like to start small-scale processing, which is impossible due to lack of funding.

WHAT CAN WE LEARN?

The living lab seeks to be resilient to risks with creation of innovation that encourages experiments for fundamental redesign, rather than optimising existing production systems. It does so by providing vouchers and sharing its research infrastructure. Furthermore, the living lab facilitates dialogue among diverse stakeholders, shifting the focus from (often polarising) measures and barriers, to finding solutions based on collectively formulated goals.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Through its projects related to, for example, strip cropping and agroforestry, the initiative contributes to developing production systems with increased biodiversity.

COOPERATION: In a diversity of projects, the living lab brings together various stakeholders such as farmers, governmental organisations, and other organisations from the supply chain. And as part of European projects, it supports cooperation beyond national borders.

LIMITATIONS & CHALLENGES

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The Farm of Future does not focus on local production, local trade or short food chains, yet it does focus on fair income and good livelihood for its primary producers.

INITIATIVE N°5 – AGROECOLOGY NETWORK

Agro ecologie Netwerk
Verbindt mens, grond en natuur

https://agroecologie.nl

NETWERK VOOR AGROECOLOGIE EN VOEDSELSOEVEREINITEIT
AGROECOLOGY NETWORK

The Agroecology Network was initiated in 2021. It builds on the ambitions of and the work done by the Federation of Agroecological Farmers. The living lab meetings are organised by representatives of the Federation, researchers from WUR, TNI (TransNational Institute) and representatives from NGOs. It stimulates the participation of farmers, researchers, citizens, NGOs, students, educators and others interested in a stronger and more influential agroecology movement in the Netherlands. The network operates at a national scale.

There are a few key principles that all members agree on: agroecology is a science, a movement and a set of practices that can be used to design, develop and transform the Dutch agricultural and food system, especially the agroecological principles described in the Nyéléni declaration.

KEY FEATURES

- **Main topics:** strategies to strengthen AE in the Netherlands
- **Type of organisation supporting the living lab:** farmers, foundations, and research
- **Type of actor involved:** farmers organisations, researchers, NGO's, and activists
- **Scale of the living lab:** national

The current situation for agroecology in the Netherlands can be described as follows:

1. There is limited interaction between pioneering AE farmers and more "conventional farmers", as well as with research, policy makers, NGOs.
2. The visibility of the agroecological movement in the Netherlands has limited visibility.
3. There are different perceptions on what agroecology is, as the ministry of Agriculture and many researchers are not familiar with the Federation of Agroecological farmers and their vision.
4. There is an increasing sense of urgency for transforming the Dutch agricultural and food system due to the negative impact of current practices, as well as polarisation between farmers' organisations and policy makers due to increased political pressure on farmers to speed up the agricultural transformation.

The main objectives of the network are to strengthen the agroecological movement and support the transition to an agroecological food system in the Netherlands. Specific actions to reach these objectives are establishing and strengthening connections between practitioners, researchers and NGOs, and developing a strategy to deal with the main challenges agroecological farmers and the agroecological movement in the Netherlands are facing. Four working groups were established:

1. Knowledge for agroecology
2. Policy for agroecology
3. Land tenure rights, commons and solidarity economy
4. Movement building

The network meets 4 times a year. Each meeting is 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, activists 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 the creation of a knowledge agenda, interaction with policy makers, the establishment of an "institute for agroecology", and campaigns for land tenure rights and the commons, and participation in climate actions.

There is a large number and variety of organisations participating in the network's Living Lab such as farmers' networks, NGOs, and 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, ECVC, 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. Kapitaloceen, Jade Reforestry, Boerengroep, de Kleine Aarde
3. Wageningen University and Research, University Leiden, University of Twente, Utrecht Universiteit, Maastricht Sustainability Institute & Hogeschool Inholland, HAS, Universiteit Groningen, Louis Bolk Institute.

WHAT CAN WE LEARN?

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

Developing trust and understanding between farmers, NGOs, activists 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.

Picture 8: Meeting of the Agroecology Network. Source: Jan Hassink.

POSITIVE IMPACTS

COOPERATION: The network brings together various stakeholders such as farmers, NGO's, activists and researchers. They learn from each other, for example by developing strategies on how to strengthen the agroecological movement.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Participation within the network is a large time commitment for the coordinators, with limited payment or compensation for the time they invest.

INITIATIVE N°6 – LIVING LAB FRYSLÂN

https://www.livinglabfryslan.frl

LIVINGLAB NATUURINCLUSIEVE LANDBOUW FRYSLÂN
LIVING LAB FRYSLÂN

The Living Lab Fryslân involves farmers, researchers and other actors to enhance agricultural biodiversity and farmers' business models. It formally started in 2016 when the province of Fryslân commissioned the citizens' initiative '*Kening fan 'e Greide*' to further develop their plan for a living lab. These citizens were motivated to encourage the development of solutions for the decrease in biodiversity in the Frysian countryside. A working group was created to develop the living lab, including members of '*Kening fan 'e Greide*', agricultural collectives, nature organisations, '*LTO Noord*' and the Acceleration Agenda Dairy Farming North Netherlands.

KEY FEATURES

- **Main topics:** enhancing biodiversity and farmers' business models
- **Founded in:** 2016
- **Type of organisation supporting the living lab:** government
- **Type of actor involved:** farmers, scientists, educators, and firm
- **Scale of the living lab:** regional

The living lab primarily encourages and supports initiatives and projects that seek to provide nature-inclusive solutions in agriculture, primarily on a regional scale (Figure 4). For this, a programme team, a board, and a core team were set. The programme team takes care of the strategy, handles all activities, and represents the Living Lab, both internally and externally. The board contributes to the strategy and monitors progress. The core team represents a diverse group of actors, from government (Provinsje Fryslân) to farmer and nature collectives (LTO Noord, Agrarische Jongeren Fryslân, Friese Milieu Federatie), as well as knowledge and educational institutes (Hogeschool Van Hall Larenstein, Aeres VMBO and MBO).

The living lab is available to farmers from any sector, but because of its history, it remains oriented towards the dairy sector. Still, it increasingly interacts with arable farmers. The living lab contributes to more aspects than farming through its projects and the LAP (The Agricultural Advisory Pool – see below). For example, food processing with the project 'Veggielab' or local development, as the LAP may help farmers determine if it is appropriate to diversify their business, for example by adding a revenue stream such as camping and agritourism.

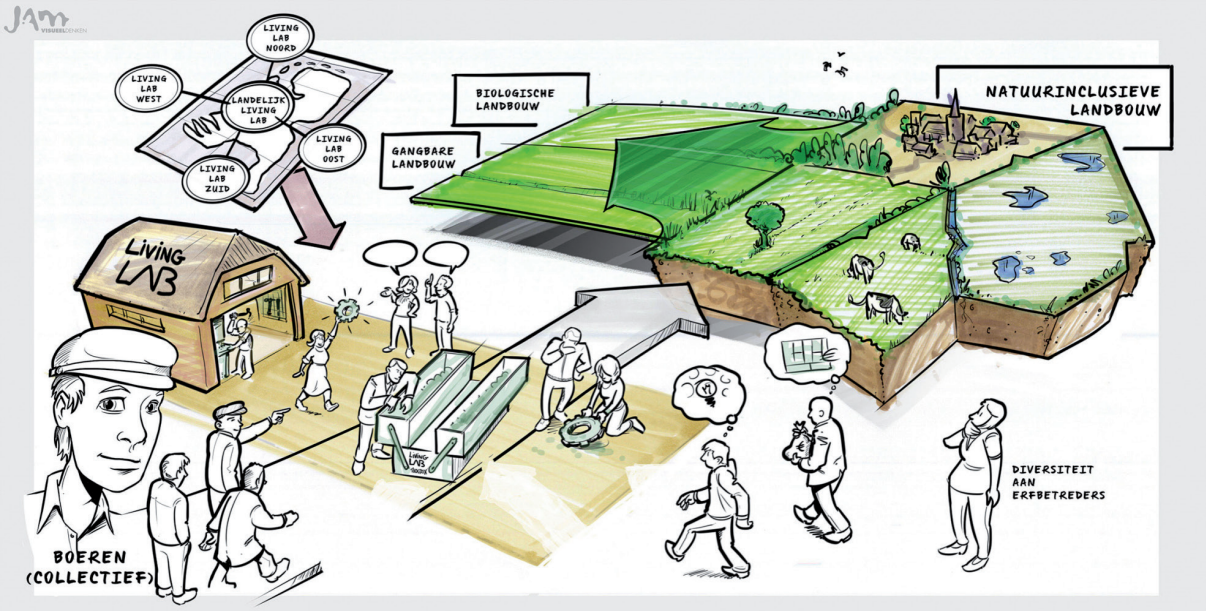
The living lab facilitates knowledge transfer and collective learning in various ways. On their website, they show practice examples of the farmers of the living lab[8]. It also provides an overview of experimental projects related to nature-inclusive agriculture. This is done to create a collective understanding of actors' activities and accelerate translating knowledge into practice. The Agricultural Advisory Pool (LAP) also helps with this. The LAP was initiated by the province of Friesland in cooperation with the living lab. The LAP is a diverse group of about 30 independent advisors who provide actionable advice to involved farmers, such as farmers and participants in area-based projects.

[8] www.livinglabfrysland.frl

The living lab tries to achieve discounted land-lease prices for farmers as a reward for agricultural management that protects soil, and enhances biodiversity and the provision of ecosystem services. The living lab, including PAL, is funded by the province of *Fryslân*. Study groups and seminars organised by the LL are financially supported by the SABE subsidy, which encourages learning about more sustainable agriculture[9].

WHAT CAN WE LEARN?

This living lab was initiated by engaged citizens but practically emerged through a collaboration between a diverse group of stakeholders. The mission and financial support from the government have enabled the LL to attract a team of self-employed professionals who are intrinsically motivated and able to leverage their diverse networks to co-create value.



Picture 9: Visualisation of the living lab and its process to transform agriculture. Source: https://www.livinglabfrys-lan.frl/over-het-living-lab/

POSITIVE IMPACTS

GOVERNANCE: The living lab tries to achieve discounted land-lease prices as a reward for agricultural management that protects soil, enhances biodiversity and the provision of ecosystem services.

COOPERATION: The living lab focuses on developing and maintaining constructive relationships with diverse actors. As such, there is always someone willing and able to help.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Although the living lab creates value for a diverse group of actors, it remains dependent on external funds. For the future developments envisaged by the living lab, continued financial aid is needed. Although the living lab generates revenue, for example through the LAP, this is insufficient for further development.

[9] https://www.rvo.nl/subsidies-financiering/sabe

INITIATIVE N°7 – FEDERATIE VAN AGRO-ECOLOGISCHE BOEREN

FEDERATION OF AGROECOLOGICAL FARMERS

FEDERATIE VAN AGRO-ECOLOGISCHE BOEREN

The Federation of Agroecological Farmers (*Federatie van Agro-Ecologische Boeren* – FAB) stands for farmers who grow in a way in which ecological and social values are just as important as economic ones. They encourage their member to take an active part in local community and ultimately aim to be autonomous. Autonomy means that a farmer can make choices that are in line with a business that takes care of the farmer, the environment and the community, and thus supports the autonomy of the community to shape its environment itself and to bear the responsibility for this.

According to the Federation (FAB), this is reflected by giving attention to biodiversity and natural pest management, closing nutrient cycles and ensuring healthy soils. They aim to create short food chains with direct contact with the consumer, local and national cooperation, as well as the sharing of knowledge. They search for holistic solutions that offer space to the diversity of farmers and consumers (Visser et al. 2020). The Federation has different themes that they focus on. Currently, their focus is on (influencing) policy, practice and knowledge exchange, access to land, short value chains, and solidarity payments.

The Federation of Agroecological Farmers is a formal public federation and consists of 6 farmer associations:

1. Biodynamic Association
2. BioTuinders
3. CSA Network The Netherlands
4. Network Biocyclic Vegan Agriculture
5. ToekomstBoeren
6. Permaculture Farmers The Netherlands

The federation represents farmers of the member organisations and gives them a stronger voice, especially at the national level. The type of actors involved are producers from all farming sectors. The FAB agrees with the definition

Picture 3: www.federatieagroecologischeboeren.nl

KEY FEATURES

- **Main goals:** strengthening the position of agroecological farmers; connecting different parties around agroecology and giving farmers a voice within these parties; representing the interests of agroecological farmers (e.g. access to land, influencing policy); spreading knowledge about the farming practice of agroecology; and strengthening the agroecology movement
- **Founded in:** 2019
- **Type of organisation:** federation
- **Farming sector:** all types / sectors
- **Scale of the living lab:** national

of agroecology as used by Voedsel Anders, which is in line with the international definition that was set out in the Nyéléni statement. The Federation of Agroecological Farmers is part of the Dutch Agroecology Network.

WHAT CAN WE LEARN?

Conneting the networks of agroecological farmers in the federation contributed to their visibility both for policy makers, as well as for research. This helps to influence policies and the allocation of research budgets.

POSITIVE IMPACTS

COOPERATION: Between farmers organisations which helps to increase the visibity of agroecology.

GOVERNANCE: The federation is a grassroot, bottom up, farmers led organisation.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: It requires a large time commitment from the coordinators, without any payment or compensation for their time.

Toekomstboeren

www.toekomstboeren.nl
www.facebook.com/Toekomstboeren
www.twitter.com/Toekomstboeren

INITIATIVE N°8 – TOEKOMSTBOEREN

TOEKOMSTBOEREN
FUTURE-FARMERS

KEY FEATURES

- **Main goals:** to give future farmers a warm place in agricultural policy and society as well as to give every future farmer a place of their own
- **Founded in:** 2016
- **Type of organisation:** association

Farming sector: all sectors

Toekomstboeren is a formal public association that aims to make visible and strengthen the growing and flourishing agroecological movement. Their primary goal is to create a future where sustainable and socially just agriculture is widely supported. Their initiative is by and for farmers, although one can also get involved as a non-farmer.

Toekomstboeren started in 2016. They are only active within the Netherlands, but they do have European partners and projects. In 2020 their members consisted of 20 consumers, 100 farmers and 200 people that want to become farmers (Visser et al. 2020). The consumers do not have a voting right within the association.

The activities of *Toekomstboeren* are driven by the demands and wishes of their members, and are therefore continuously open to change and develop. The organisation currently works on forming alliances with organisations that pursue the same goal. One of their activities is to organise 'farmer-fires' in the spring and autumn. *Toekomstboeren* organises these informal meetings on a farm, with a campfire, where future farmers can meet. The association also organises spaces where new farmers that are enthusiastic about working in agriculture and experienced entrepreneurs can find a space for new initiatives. Toekomstboeren has an active voice through their writings. They want to share inspiring stories with future farmers through the publication of a series of collections, often in collaboration with partners. A focus on knowledge exchange is important for the association. They believe that together they have a wealth of knowledge and experience so they facilitate workshops where farmers can speak and learn from each other. Lastly, there is a focus on advocacy. *Toekomstboeren* sends policy letters to the government and writes opinion articles to make their voices heard, as well as participating in actions that benefit future farmers.

The association is organised through different working groups: commons, 'pacht' (i.e. tenancy), '*werkplaats*' (i.e. workshop), movement building and decolonisation, as well as one for administrative purposes and issues. Lastly, *Toekomstboeren* is also part of international projects such as BAG, COSIYA, AE4EU and member of La Via Campesina.

Toekomstboeren does not focus on any specific farming sector, they aim to focus on community development, new ways of farming, food sovereignty, the link between producer and consumers, lobbying, training, awareness building and access to land.

Toekomstboeren is networking through connection with other organisations. They are active in several networks: Federation of Agroecological Farmers (see initiative 7, Agroecology Network (see initiative 5), La Via Campesina and the BAG network. A core reason *Toekomstboeren* chooses to work with other organisations is to form a broader and bigger counter-movement, knowledge-exchange and mutual support, and organise more successfully for funds. Together with the '*Boerenraad*', *Toekomstboeren* brings visibility to the sustainable agricultural perspective FAB gives *Toekomstboeren* more respectability and makes them feel like they are working in a larger whole and share experience. La Via Campesina on the other hand, allows them to better articulate what they stand for and inspires them (Jansen, 2020).

WHAT CAN WE LEARN?

Since Toekomstboeren is made up of farmers, they are skilled in building an active movement, organising connections between farmers, and their learning processes.

POSITIVE IMPACTS

COOPERATION: Between first generation farmers with strong mutual support

GOVERNANCE: It is a grassroot, bottom up, farmers led organisation.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: It requires a large time commitment from the coordinators, without any payment or compensation for their time.

INITIATIVE N°9 – BOERENRAAD

Boeren Raad

www.boerenraad.nl
www.facebook.com/boerenraad

BOERENRAAD *FARMERS'COUNCIL*

The '*Boerenraad*' aims to transform the current agricultural and food system in the Netherlands and make it environmentally, socially and economically sustainable. It is a collaboration of 11 "nature-based farming" networks, including those belonging to the federation of agroecological farmers.

The formal public network *Boerenraad* started in 2019. The idea was developed in a working group on the transition coalition on food, '*Transitiecoalitie Voedsel*'. Within the working group '*Boerenwijsheid*' (i.e. farmers wisdom) topics were discussed to prepare the way for farmers who wanted to make the switch to sustainable agriculture and to give options and perspective to farmers and the agricultural sector. Its goal is that every farmer can work towards this goal in his or her own way. The *Boerenraad* stemmed from these ideas.

The *Boerenraad* wants a transformation of the system that shifts the current focus on volume, technology and low price into an agricultural and food system in which diversity, an integrated and area-oriented approach, sustainability, health, animal welfare and fair prices are central. The *Boerenraad* stands for agriculture and horticulture which is nature-inclusive, socially connected and economically supported. Their focus is on finding solutions to every-day problems that farmers encounter and hinder them on their way to nature-inclusive agriculture. Challenges addressed by the *Boerenraad* are: restrictive legislation, access to land, access to new knowledge, education and research, financing the transition and a stronger position for farmers in the food chain.

The *Boerenraad* does not use the term agroecology, however, their vision includes many points that link to agroecological concepts, such as trust, honesty and transparency, integral and place-based. They mainly focus is on agricultural and food systems that are nature-inclusive, have social connections and are economically supported.

A core team and a coordinator have been appointed to develop its future oriented vision and activities. *Boerenraad*'s funding is mainly from donations. A part of costs of *Boerenraad* concerns general costs that are necessary for the proper functioning of the network. Farmers who use their knowledge and experience to work for the *Boerenraad*, and who therefore serve the public interest, receive compensation so that they can use this compensation, for example, to pay for a replacement for the work on their own farm.

WHAT CAN WE LEARN?

Connecting diverse nature-based farmer networks is a complicated process which requires leadership but it helps them speak with one voice and influence policies.

KEY FEATURES

- **Main goals:** to give future farmers a warm place in agricultural policy and society as well as to give every future farmer a place of their own
- **Founded in:** 2019
- **Type of organisation:** association

Farming sector: all sectors

POSITIVE IMPACTS

COOPERATION: There is a high level of cooperation between farmers' organisations

LIMITATIONS & CHALLENGES

COOPERATION: Cooperation is sometimes difficult due to the different visions and preferred activities of the member organisations.

INITIATIVE N°10 – VOEDSELANDERS

www.voedselanders.nl
www.facebook.com/voedselanders
www.twitter.com/voedselanders

VOEDSELANDERS
FOODDIFFERENT

'VoedselAnders' aims to strengthen the movement of people in the Netherlands and Flanders who want to work towards a just and sustainable food and agricultural system. The individuals involved in this initiative include a diverse range of stakeholders involved in the food system. VoedselAnders started in 2012 with the aim to create a network that values a sustainable and just food system, with fair prices for both producers and consumers, agroecology, short value chains, farmer-citizen alliances, healthy and tasty food fair trade, limiting the influence of large companies, and building connections between people, stories and movements.

In 2020, the network consisted of over 3000 members: 2000 citizens, 500 farmers, 100 retail centres, 50 networks, 500 students and 100 scientists (Visser et al., 2020). VoedselAnders is concerned with all the different farming sectors and has a large focus on the food system in general.

VoedselAnders uses agroecology and food sovereignty as their guiding principles, with core concepts which include: fair prices for the producers, healthy and tasty food, collaboration with nature, limiting the power and influence of large agrochemical companies, regional food systems, , fair trade, access to land and control of the producer and citizen over food.

VoedselAnders has published a manifesto that has been updated over the years. The manifesto consists of a comprehensive problem analysis and proposals for solutions. The network brings different parties and stakeholders together to facilitate knowledge exchange, strengthen practices and influence policy.The organisation also has ties to activist movements that focus on feminism and climate, amongst others (Jansen, 2020).

KEY FEATURES

- **Main goals:** to strengthen the movement of people in the Netherlands and Flanders (i.e. region of Belgium) who want to work towards a just and sustainable food and agricultural system with responsible management of soils, landscape, biodiversity and water, fair prices and healthy food for everyone
- **Founded in:** 2012
- **Type of organisation:** network
- **Farming sector:** all types / sectors
- **Scale of the organisation:** national

POSITIVE IMPACTS

COOPERATION: It creates cooperation between citizens and farmers organisations, NGO's at the regional, national and international level.

GOVERNANCE: The network is loosely organised with a strong participation of local and regional initiatives.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: It requires a large time commitment from the coordinators, with limited payment or compensation for their time.

WHAT CAN WE LEARN?

The Voedsel Anders network's value rests on its active involvement of citizens and NGOs, as well as its attention to raise awareness for regional food networks and the international component of the Dutch agricultural and food system.

INITIATIVE N°11 – ÚS HÔF ZELFOOGSTTUIN

zelfoogsttuin Ús Hôf (ushof.nl)

ÚS HÔF ZELFOOGSTTUIN
ÚS HÔF FARM

Ús Hôf is an agroecological CSA and permaculture farm based in the province of Friesland, near Sneek. Motivated by the need to create a more resilient food system for their children and the future, the 2 ha farm is co-owned by multiple farmers and hosts over 100 different fruits and vegetables. With a semi-agroforestry system, the farm is laid out in a way where one row mimics a forest edge before moving toward annual crops and repeating the layout. This is to increase biodiversity and host spaces for more insects and pollinators. The farm also owns ducks that they are training to manage pests such as slugs. *Ús Hôf* is a part of the CSA Network 'The Netherlands', an organisation aiming to help educate and provide tools for CSA farms in the country. They are also working on a Participatory Guarantee System (PGS) where this will help farms that are not certified organic to invest in the interaction between consumers and farmers, and match the demand and supply.

KEY FEATURES

- **Main goals:** producer – consumer linkage through short food chains, promotion of ecological agriculture and healthy products
- **Founded in:** 2018
- **Type of organisation:** association
- **Farming sector:** every sector
- **Scale of the organisation:** national

Most of the farm is manually labored since there currently isn't machinery available for their type of soils to help with certain tasks such as preparing the soil and making the beds. The farm is currently able to support labour equal to 1.5 farmers which provides food for 250 members. As a CSA, they have 2 working systems: a pick-your-own (PYO) which costs 275 euros per person, per season, where members can come to pick produce whenever they'd like, or a box scheme where individuals can buy different sized bags ranging from 9.25-18.5 euros. The farm is also linked to a cooperative that provides organic produce for 55 different families and consists of ten different farms and a wholesaler.

The farmers price the PYO at 1 euro a day which they believe is a fair price and affordable to most people since members can come to pick food whenever they'd like. When the farm is running at full capacity, the farmers would earn around 2000 euro per month. Ideally, in the future, they would like to earn 25 euro per hour, which would provide them with a pension as well. Unfortunately, because of their small size, they do not fit within the category that would allow them to receive CAP subsidies, eventhough the farm practices are increasing biodiversity, soil and water quality, and providing healthy food for their members.

When the farm started in 2014, it was one of the first in the area and therefore received a lot of publicity which led to a large number of interested local citizens joining the CSA. Many of them asked about environmental-related practices on the farm before becoming a member. The citizens who are members of Ús Hôf normally live within 10 km from the farm. The majority of the members are retired people and young families. They also host different events such as a midsummer party or seedling sale, in which both members and the larger community can participate. Finally, they host a yearly meeting to talk about administrative components and finances of the farm.

Picture 10: Uf Hof Source: Us Hof. Source: Bregje Hamelynck.

WHAT CAN WE LEARN?

Since *Ús Hôf* is part of a cooperative that works with other farms and distributors of organic products, they are able to provide for all the consumer's needs in one place, away from the conventional supermarket. This way of purchasing food allows for a more resilient and alternative food system that no longer relies on conventional food businesses. In this system, members pay an affordable price to access healthy and local food, while also getting to interact with farmers and other members at different events. This system works very well in rural areas.

POSITIVE IMPACTS

COOPERATION: The collaboration of the farm with a cooperative allows members to buy all of their food needs in one go, creating an efficient alternative to conventional supermarkets within a food system that is healthy and resilient..

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: The cooperative allows their farm to diversify their farm which enables a localised economy which supports other farmers. This also allows members to make decisions on how and where to buy produce from.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The forest hedge concept on the farm allows for more biodiversity and habitats for insects, earthworms, and other animals.

EDUCATION: The workshops they provide for citizens interested in starting a similar farm empower people to begin their own local food system. Their emails to members also inform them on how to harvest and use the ingredients from the farm.

LIMITATIONS & CHALLENGES

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Though very high in biodiversity in general, with an incredible number of earthworms, the farm is still prone to different pests, such as mice and slugs, which have destroyed a large number of crops in previous years.

INITIATIVE N°12 – DE WILDE PEEN

https://wildepeen.nl

TUINDERIJ DE WILDE PEEN

HORTICULTURE GARDEN DE WILDE PEEN

Tuinderij de Wilde Peen is located in Ede (province of Gelderland) and was created by two farmers who had worked together in the past and decided to start a farm together. Both farmers are members of the *Toekomstboere*', an organisation focusing on first generation agroecological farmers in the Netherlands.

The agroecological farm is 0.8 hectares and hosts over 100 different herbs and vegetables. The farm is organic, avoids the use of fossil fuel when possible and has the objective of increasing insect and animal biodiversity through farming. The farm currently has 150 members, whom are called 'harvest sharers'. They can register as a member and receive vegetables from May until December. Members are allowed to visit the farm throughout the week to harvest their food for the week.

KEY FEATURES

- **Type of selling system:** pick-your-own agroecological farm
- **Founded in:** 2018
- **Farming sectors concerned:** fruit, vegetables
- **Lead organisation:** cooperative network, community supported agriculture (CSA) with solidarity payment
- **Types of stakeholders involved:** farmers, consumers
- **Scale of the initiative:** local

Tuinderij De Wilde Peen uses a solidarity payment as a fee system for harvest sharers to join. This is a system where it is requested that members who earn more can contribute more to membership fees and those that earn less can pay less. The aim is that the average membership fee from all members will even out to 16 euros an hour per person, the request wage of the farmers. The concept is completely based on the trust that members will pay what they think they can afford, considering their own level of income. The farmers set the average to 16 euros per hour, per person, using the recommendation by the government of minimum wage for self-employment. This average will hopefully be increased in the future, so that both farmers can also afford insurance and pensions. The first year they used this system was 2022, during which the average payment per member was 300 euros for the season. Generally, members live in the municipality of Ede, including people of different income groups through this new solidarity payment system.

Alongside the solidarity system, the farmers also ask their harvest sharers to sign a contract when they join, asking them to read the weekly emails and to actively participate on the farm. The emails include the location of the produce, how to harvest and links to the website on how to cook the produce with recipes for members to use. Tuinderij De Wilde Peen also sets up events that aim to get the community together, such as get-togethers and workshops, for example on fermentation. Their outreach has mostly consisted of posters in town and 'word of mouth'. While members are very happy with the produce they receive, education can still be increased, as some produce is not harvested in time, which thereby creates some waste.

Picture 11: Large diversity of vegetables growing at Tuinderij De Wilde Peen. Source: de Wilde Peen, Klarien Klingen.

WHAT CAN WE LEARN?

Tuinderij De Wilde Peen is the first in the area to successfully implement the solidarity payment system with their members. While the explanation of the system and convincing their harvest sharers to participate was a lot of work, the farmers are very happy that the solidarity payment results averaged to the wage requested of 16 euros an hour per farmer. In 2023 they hope to explain to their members that increasing the fee could positively impact their living expenses and security. The farm also supplies the widest variety of produce per hectare, compared to any other initiative mentioned in this report.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The farm holds over 100 crops in less than one hectare, creating crop and insect biodiversity.

SOCIETY AND EQUITY: The solidarity payment for citizens allowed a more diverse demographic of consumers to participate in the CSA farm.

LIMITATIONS & CHALLENGES

GOVERNANCE: Harvest sharers are required to actively read emails and keep themselves informed on farm activities and information which is a great way to get members to participate. Furthermore, the encouragement to get members to lead workshops allows them to self-organise within the community.

SUSTAINABLE AND FAIR ECONOMICS: While the solidarity payment system is inclusive for citizens with lower income, a wage of 16€ per hour does not include pension or insurance, and is thereby not sustainable for a job that is both labor and knowledge intensive. While it is very commendable to accept this wage, all farmers should be paid sufficiently to be able to have insurance and pension.

HERENBOEREN
SAMEN DUURZAAM VOEDSEL PRODUCEREN
https://landvanweert.herenboeren.nl

INITIATIVE N°13 – HERENBOEREN

LAND VAN WEERT HERENBOEREN
HERENBOEREN LAND OF WEERT

Herenboeren is a relatively new concept for farming where citizens gather within a community to buy land tenure and build capital to start a farm. Next, citizens need to find land, share ownership of land for a farm, and hire a farmer to work on the farm. The concept of this initiative relies on the observation that about 1.5 farmers can feed up to 500 people. In the starting phase, with around 200 people, the community starts by searching for suitable agricultural land, and at 300 members, the community hires a farmer to start working. Within one to two years, they hope to reach the maximum number of families. There is a one-time membership fee per family (or couple) of 2,000 €. The farm works with a box scheme subscription, where members pay around 10 euros a week per person for their produce. At the moment there are 15 Herenboerderijen with a total of more than 500 members. Herenboeren do not use the term agroecology, but they implement many agroecological principles like the co-creation with and participation of citizens in food production, local embeddeness and sustainable agricultural practices.

KEY FEATURES

- **Founded in:** 2018 (Herenboeren in 2016)
- **Farming sectors concerned:** fruit, vegetables, animal husbandry, and grains
- **Lead organisation:** citizen-owned cooperative network and box-scheme
- **Types of stakeholders involved:** farmers and consumers / citizens
- **Scale of the initiative:** local (12 ha) and national (14 farms)

'Land van Weert' is one of the Herenboeren initiatives. It currently charges 11 € per week, as they currently have 350 members, but they hope that with more members, they will be able to reduce the price. The general demographic of their members is mainly retirees and young families. This farm has 12 ha of land that is divided into annual crops, a fruit orchard, herbs, cereal grain, and nature plots, with a total of around 80 different types of produce (Picture 7). The farm has eight sheep and currently buys eggs from another nearby producer. The members can also subscribe for a meat box, in case they would like to diversify their diet further. A highlight of the farm is that grains can be consumed by the members after milling, as flour. The plan is to expand and brew beer in the future. Land van Weert currently employs one farmer, who manages all of the land.

Because of its size, Land van Weert still heavily relies on member volunteers to help harvest, sort, weed, and seed. Combining the seed funding of 2,000 € per family, and an additional 10 euros per person per week, there is a great basis to purchase machinery, seed, wages (3000 € per month), and land, but manual labor is still crucial. Therefore, a group of around 20 members visits the farm once a week to help with the necessary work. Some of the volunteers are also board members, who meet to discuss farm matters and help with projects, such as applying for subsidies to grow trees on the farm (25,000 €), local food projects (2000 €), or increased biodiversity (7,500 €).

The outreach for members is done by the Herenboeren organisation which aims to find interested community members through word of mouth and eventsabout the concept. When a group of citizens reaches a required amount, they can then begin the farm.

Picture 12: View of the vegetable plot of 'Land van Weert. Source: Herenboerderij Land van Weert.

WHAT CAN WE LEARN?

The unique selling point of 'Herenboeren' is that it is an innovative example of consumer-led initiatives that are increasing and creating a stable wage for farmers without risks of crop failure. However, one farmer working on a large piece of land is very labour intensive. The wage should be in line with the number of working hours. With a buy-in system, many members feel the need to be more engaged. The sense of community is strong and it is a great place to socialise for members. The time investment for farmer participation with members should be considered, especially for meetings on the future of the farm.

POSITIVE IMPACTS

GOVERNANCE: 'Herenboeren' is owned by its members, including their board, which is creating a citizens initiative towards a more local sustainable food system.

COOPERATION: The farm provides a place where members can spend time including their frequent volunteers. This creates a sense of community and connection between farmers and members, as well as helps them to apply for subsidies and engage in other administrational aspects.

SUSTAINABLE AND FAIR ECONOMICS: Farmers get paid a stable wage and do not bear risks such as crop failure on their own, as in other farming systems.

HEALTH: Members see this way of farming as a way to consume more local and healthy food without the use of chemicals. The diversity of crops on the farm is an added value that allows individuals to purchase food in a closed loop.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The labor hours a farmer needs for 12 ha is quite intensive, which does not match a typical working contract. Wages should match these hours correctly and fairly. Having just one farmer also means a heavier reliance on machinery to get everything done due to labour constraints.

SOCIETY AND EQUITY: As the farmer does not own the land, what is his say on how he chooses to grow and plan the crops for the members? How much is the farmer represented on the farm he works on rather than as an employee? Citizens also have to invest a substantial amount of money for their participation, whichlimits its accessibility.

INITIATIVE N°14 – RUIMZICHT

https://boerderijruimzicht.nl

BIOLOGISCH DYNAMISCHE BOERDERIJ RUIMZICHT

BD FARM RUIMZICHT

Ruimzicht is a dairy farm in the eastern part of the Netherlands (province of Gelderland). The farmer transformed the family's traditionaly dairy into a biological and dynamic farm about 20 years ago. Farm activities have been extended through the addition of horticulture, education and healthcare. In previous years, the farmer changed the focus of the farm from producing milk to making cheese. The total number of cows has decreased and a cheese-maker has been built in order to add a new element to the business model. Additional personnel was hired to run the horticulture, education, healthcare and cheese making activities. The overall milk production has decreased due to these transformations.

The products are sold in the farm shop, to restaurants and shops in the region, and in local markets. The farmer is also committed to the creation of additional jobs, and to inspire other farmers and actors. The farm is part of the Caring Farmers network gathering nature based farmers who collectively try to influence policies at a national level.

KEY FEATURES

- **Agroecological practices concerned:** biodynamic farm
- **Founded in:** 1995
- **Farming sectors concerned:** dairy farming, horticulture, cheese making, and education
- **Types of stakeholders involved:** farmers and consumers / citizens
- **Number of stakeholders involved:** 4
- **Scale of the initiative:** local

Agroecology is at the centre of this initiative as it is a biodynamic farm. Animal welfare is key on this farm. For example, the cows are allowed to graze outside and calves are kept with their mothers for longer periods of time than within conventional agriculture. The farmer also built a 'heuvelstal' to house the cows (which also reduces NH3 emissions) allowing them to move around freely. All of the land on the farm is rich in various plants and species, as well as some agroforestry which provides minerals for the cows.

The farm received financial support from the provincial government, as well as European funds. The farmer is active in several networks that work on research, policy and connection amongst farmers.

WHAT CAN WE LEARN?

Ruimzicht is an inspiring example of how the extensification of a dairy farm, as well as the development of a new agricultural business model is possible. The farmer pioneered and developed new sources of income, linkages with other farmers, citizens and local and regional actors, such as restaurants, shops, markets and networks such as the regional slow food movement. Homemade local cheese has become a major pillar of the farms new business model. The farmer is very active in sharing his knowledge and is an inspiration to other farmers within study groups and in many other ways.

[40] https://www.ecocostel.com

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The farm has species rich grasslands and hedges with flowering plants.

COOPERATION: The farm hosts frequent volunteers for many different kinds of activities which creates a space where people can spend time and a sense of community and connection between farmers and citizens.

HEALTH: Customers see this way of farming as a way to consume more locally and healthier without the use of chemicals. The diversity of different types of food on the farm is an added value to getting food in a closed loop.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The farm has found it challenging to receive sufficient financial support for all the steps that are being taken to increase biodiversity, and landscape and soil quality. Their transition to become a nature focussed farm has also caused risks and led to high costs related to animal diseases, due to changes in fodder quality. None of these costs are covered by external parties.

INITIATIVE N°15 – THE REGENERATIVE FARMING PROGRAMME

regenerative farming

https://regenerativefarming.nl/

HET REGENERATIEVE LANDBOUWPROGRAMMA

THE REGENERATIVE FARMING PROGRAMME

The Regenerative Farming Programme is a public-private partnership (PPP) bringing together farmers, researchers, and other types of stakeholders to explore how the Dutch agricultural system can become regenerative, with a positive impact on nature and the living environment, and with healthy farmer business models.

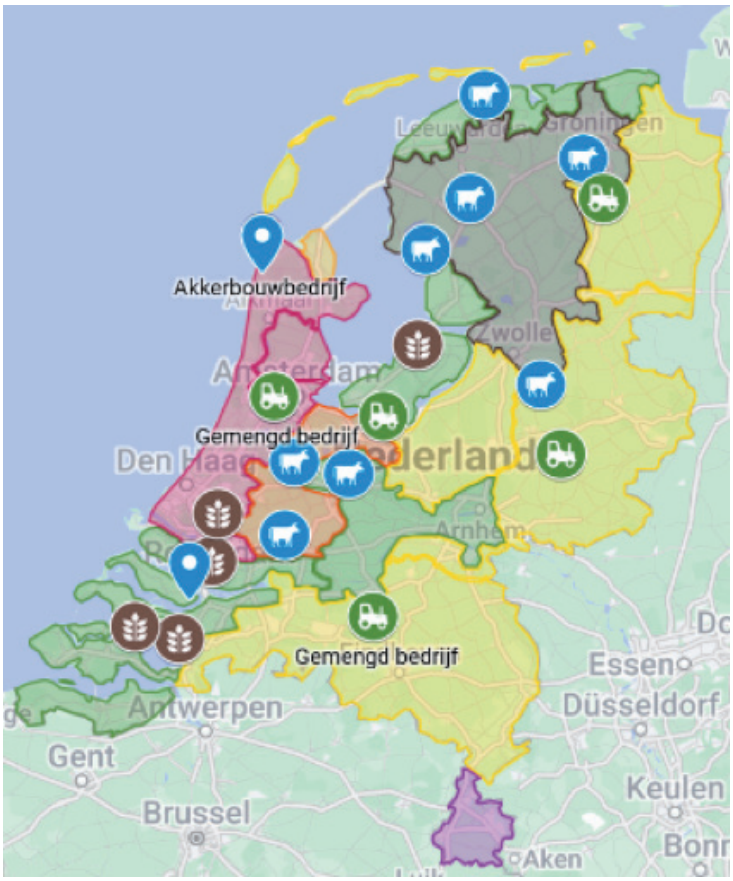
KEY FEATURES

- **Agroecological practices concerned:** for example agroforestry, nodig, stripgrazing, permanent grasslands
- **Founded in:** 2020
- **Farming sectors concerned:** permanent crops
- **Types of stakeholders involved:** arable, livestock an mixed farming systems
- **Scale of the initiative:** national

The initiative started with five organisations: 3 research and knowledge insitutes and 2 agribusiness partners in 2018, and is focussed on a national scale. The initial coalition of researchers from both Wageningen and Utrecht University, and the cooperatives Friesland Campina and Cosun were guided by an initiator working at TiFN Food & Nutrition. Over time, the team grew and currently, TiFN coordinates the collaboration between researchers from the universities of Wageningen, Utrecht and Groningen, and partners Friesland Campina, Cosun, BO Akkerbouw, Rabobank, Wij.land and Het Groene Brein. Together, they address the regional and national scale, and bring together different disciplines such as agronomy, ecology, sociology, and economics. This is possible through funding provided by FrieslandCampina, Cosun, BO Akkerbouw, Rabobank, Topsector Agri & Food and TiFN.

The initiative is not explicitly using the term agroecology, but it is linked to it since the core concept applied is that of 'regenerative agriculture', which in this context is seen as 'an approach to farming that uses soil conservation as the entry point to regenerate and contribute to multiple provisioning, regulating and supporting ecosystem services, with the aspiration that this will enhance not only the environmental, but also the social and economic dimensions of sustainable food production' (Schreefel et al., 2020). In the spin-off of the programme, the social dimension, such as connecting to citizens by participating in regional food networks or providing social services, is more prioritised.

The consortium facilitates the co-creation of knowledge (i.e. principle 8 of agroecology - HLPE 2019) by bringing together an increasing number of farmers in a community of practice (Picture 8). Furthermore, by connecting this community of practicioners to researchers that use biophysical and socio-economic approaches complementary. The farmers adopt regenerative practices like application of composts, reduced or no tillage, and agroforestry.



Picture 13: Community of practice of Dutch farmers that are pioneering regenerative practices. Source: www.regenerativefarming.nl.

WHAT CAN WE LEARN?

Practically, we can learn from a list of agricultural best practices[10] which may contribute to a regenerative system. These practices vary from system approaches in order to create a whole new system, to relatively small adjustments to a current system[11].

POSITIVE IMPACTS

COOPERATION: The initiative facilitated collaboration between researchers and farmers in the Netherlands, enabling the sharing of best practices between practioners. It has also helped researchers to learn from farmers what systemic changes are needed to enable a transition towards regenerative agriculture.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: By identifying, sharing, and monitoring best practices for farmers, the initiative contributed to a farming approach that aims to regenerate natural resources and leverage the potential of biodiversity for sustainable food production.

LIMITATIONS & CHALLENGES

GOVERNANCE: The initiative brought together farmers in a community of practice and created a whatsapp group to facilitate communication among them. This introduced the challenge of engaging all farmers in constructive dialogue, despite their different and sometimes conflicting views and approaches to farming.

[10] https://regenerativefarming.nl [11] https://regenerativefarming.nl/community-of-practise/

INITIATIVE N°16 – AGROFORESTRY

https://www.wur.nl/nl/project/pps-agroforestry.htm

AGROFORESTRY - PPS

AGROFORESTRY

Actors such as farmers, researchers, businesses and policymakers collaborate to explore the potential of agroforestry in the Netherlands. This public-private partnership (PPP) started in January 2019, after multiple actors and initiatives were brought together that had been previously engaged or interested in agroforestry but did not collaborate yet. These include scientists, farmers, advisors (e.g. 'Rombouts Agroecologie'), foundations (e.g. '*Agroforestry Zuid-Nederland*'), associations (e.g. Dutch Nut association), government (Ministry of Agriculture, Nature, and Food Quality) and other policy makers. The scientists expertises' include agronomy, ecology, animal science, plant science, social science, and economics.

KEY FEATURES

- **Main goal:** research of agricultural crops and seeds
- **Founded in:** 1944
- **Main topics:** seed conservation and selection, sustainable agriculture
- **Type of actors involved:** scientists, farmers

Wageningen Plant Research is leading this initiative. Participants and the Ministry of Agriculture, Nature, and Food Quality provided the funding. This allowed the exploration of the potential of agroforestry in the Netherlands in multiple ways.

An inventory of knowledge, 'lock-ins' and barriers related to agroforestry in the Netherlands provided input for learning networks that the PPP developed. Besides this, system designs and scenarios were developed and implemented based on the demands and objectives of the 6 arable farmers that participated in the project. In 2020, these designs were included in the monitoring of biodiversity, disease and pest regulation, and yields. So, they complemented the monitoring programme that had started earlier at WUR's agroforestry test field in Lelystad. The data from this monitoring and literature helps explore how much carbon could be sequestered by upscaling agroforestry in the Netherlands. Insights from these activities are translated into fact sheets, business plans, designs, and policy recommendations that support agroforestry.

Besides this, the initiative developed a national learning network to stimulate agroforestry-related research, development, and co-innovation with public and private partners. Also, it is part of Agroforestry Netherlands, a network of researchers, companies and organisations involved in the development of agroforestry in the Netherlands (https://www.agro-forestry.nl/), and as such the initiative is part of the larger European Agroforestry Federation Network (EURAF).

The initiative provided the basis for two collaborating public-private partnerships that will run from 2022 until 2025; the PPS 'Verdienmodellen Agroforestry' and the PPS 'Agroforestry for climate positive dairy and biodiversity'. Considering the fact that agroforestry is an agroecological practice (Wezel et al., 2014), this initiative clearly supports the development of agroecology in the Netherlands.

[41] https://selectia.md/en/about

WHAT CAN WE LEARN?

Individuals can trigger the creation of initiatives like these and bring together actors with similar interests and activities to collaboratively explore, learn, and further develop agroecological practices such as agroforestry.

POSITIVE IMPACTS

COOPERATION: This initiative brought together various parties that were already actively exploring or interested in the subject of agroforestry in the Netherlands. This collaboration motivated two subsequent PPS's for collaborative efforts to further develop agroforestry.

EDUCATION: The initiative provided educational material, such as factsheets and developed a national learning network to stimulate learning among public and private partners.

LIMITATIONS & CHALLENGES

GOVERNANCE: The speed by which the initiative is governed can be perceived as relatively slow by practitioners. For example, the feedback from researchers to practitioners took much longer than expected by the farmers.

5. CONCLUSION AND FUTURE PERSPECTIVE

Agroecology is developing rapidly in the Netherlands. The number and diversity of agroecological farmers are increasing, networks of agroecological farmers have been established, and connections with researchers, NGOs and policy makers has been made. The challenges that are being experienced by agroecological farmers, such as access to land, restrictments by current legislations and support schemes designed for large-scale and mono-culture, are receiving increasing recognition, from both policymakers and the general public.

A challenge that exists within the country is the existence and use of different approaches of agroecology. Many researchers and policy makers define agroecology as the integration of ecological principles and practices and agricultural production leaving the social, political, food components and transformative aspects out of this definition. The agroecological movement and network has been very active in influencing policies through their focus on the transformative aspects and potential of agroecology.

The Federation of Agroecological Farmers has recently established a strategic alliance with other 'alternative' farmer networks. Together they have written the so-called 'GreenFarmersPlan' (i.e. '*Groenboerenplan*') for the Ministry of Agriculture, Nature, and Food Quality, which was well received. In turn, the plan led to a joint proposal for a research agenda and structure to address the specific needs of 'alternative' and sustainable farmers, and their organisations. Reaching out to, and cooperating with, other farmer networks and the Ministry appears to be an effective approach to actively and effectively increase support for agroecological farmers.

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MAPPING AGROECOLOGY IN PORTUGAL

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More information about the H2020-Agroecology for Europe project can be found here: **www.ae4eu.eu**

PORTUGAL

EXECUTIVE SUMMARY

In this report we analyse the current state of agroecology in Portugal and its recent historical development. The term agroecology is not commonly used by local or national stakeholders, but different initiatives can be included under this umbrella. Twelve key informants were interviewed and six initiatives analysed in more detail. The initiatives analysed not always specifically refers to agroecology, but also, for instance, to organic agriculture, sustainable agriculture or permaculture.

Portuguese education and training programmes related to agroecology are almostly exclusively dedicated to organic agriculture. However, there are also few university programmes or study courses including elements of agroecology. Moreover, more local scale training and education programmes on demonstration gardens in schools or about permaculture also exist.

Living labs in Portugal are present thanks to several collaborations among different actors. Living labs refer mostly to the research initiatives that bridge multiple partnership among citizen, researchers, and municipalities to foster social innovation but also agroecological solutions, mainly related to sustainable farming systems and food sovreignity. Most of the projects seems to be developed in link with a specific territory.

Several agroecology-related movements can be found in Portugal. These initiatives are often small, local initiatives as opposed to national organised movements. The movements presented in this report developed innovative initiatives in the field of agroecology thanks to a well-grounded place in society and a strong network with citizen and local institutions.
In one hand agroecological practices are advanced and diffused in Portugal, as also depicted for several initiatives. On the other hand, they are not known under this term, but more as under sustainable or organic farming practices, permaculture, and regenerative farming. Researchers pointed at silvopastoral systems based on traditional and agroecological practice at the landscape level, mainly in the Montado system. While regenerative practices focused also on soil fertility such as no-till, intercropping, crop rotations, compost making and usage, and animal integration into crop production.

The term agroecology is mostly used in research, compared to other activity categories. Therefore, many research and projects involves faculties of science, agronomy or rural sociology that collaborate with farmers cooperatives and local NGOs. Most of the research focus on agroecological transition and study succesfull agroecological initiatives.

PORTUGAL

EXECUTIVE SUMMARY (IN PORTUGESE)

Neste relatório analisamos a situação atual da agroecologia em Portugal e/o seu desenvolvimento histórico recente. O termo agroecologia não é comummente utilizado pelos actores locais ou nacionais, mas diferentes iniciativas podem ser incluídas neste conceito. Foram entrevistados doze informadores-chave e seis iniciativas foram analisadas em mais pormenor. As iniciativas analisadas nem sempre se referem especificamente à agroecologia, mas também, por exemplo, à agricultura biológica, à agricultura sustentável ou à permacultura.

Os programas portugueses de educação e formação relacionados com a agroecologia são quase exclusivamente dedicados à agricultura biológica. No entanto, existem também poucos programas universitários ou cursos de estudo que incluam elementos de agroecologia. Além disso, existem também programas de formação e educação à escala local sobre hortas de demonstração nas escolas ou sobre permacultura.

Os "Living labs" em Portugal estão presentes graças a várias colaborações entre diferentes actores. Os "Living labs" referem-se sobretudo a iniciativas de investigação que estabelecem parcerias múltiplas entre cidadãos, investigadores e municípios para promover a inovação social, mas também soluções agro-ecológicas, principalmente relacionadas com sistemas agrícolas sustentáveis e a soberania alimentar. A maioria dos projectos parece ser desenvolvida em ligação com um território específico.

Existem vários movimentos relacionados com a agroecologia em Portugal. Estas iniciativas são frequentemente pequenas iniciativas locais, por oposição a movimentos organizados a nível nacional. Os movimentos apresentados neste relatório desenvolveram iniciativas inovadoras no domínio da agroecologia graças a um lugar bem enraizado na sociedade e a uma forte rede com cidadãos e instituições locais.

Por um lado, as práticas agroecológicas estão avançadas e difundidas em Portugal, tal como demonstrado por várias iniciativas. Por outro lado, não são conhecidas sob este termo, mas mais como práticas agrícolas sustentáveis ou orgânicas, permacultura e agricultura regenerativa. Os investigadores apontaram para sistemas silvopastoris baseados em práticas tradicionais e agroecológicas ao nível da paisagem, principalmente no sistema do Montado. As práticas regenerativas centraram-se também na fertilidade do solo, como a rotação de culturas, a produção e utilização de compost e a integração de animais na produção agrícola.

O termo agroecologia é utilizado principalmente na investigação, em comparação com outras categorias de actividades. Por conseguinte, muitos projectos de investigação e projectos envolvem faculdades de ciências, agronomia ou sociologia rural que colaboram com cooperativas de agricultores e ONG locais. A maior parte da investigação centra-se na transição agroecológica e estuda iniciativas agro-ecológicas bem sucedidas.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Portugal are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in Portugal.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	NGO	Food waste	
2	Municipality	Living Lab	
3	Research lab	Food sovreignity	
4	Private company	Soil fertility	
5	Research hub	Landscape approach	
6	Research lab	Sustainable agriculture	
7	Research lab	Rural studies	
8	Farm	Permaculture farm	
9	Research lab	Sustainable agriculture	
10	Research Lab	Sustainable agriculture	
11	Research Lab	Integrated pest management, agricultural practices	
12	Research Lab	Cover crop, water management in agricultural field	

2. CONTEXT

The term "agroecology" is marginally used in Portugal (Trace 2020; PRT-KI-11 & KI-12). It is complex and a recent concept related to sustainable food production, consumption, policy and community, and has creates resistance because it is linked to a transition process (PRT-KI-2, 2021). Currently it is mainly linked to universities and research centres (PRT-KI-2 & KI-4, 2021). While academic researchers cite and elaborate on the concept and approaches of agroecology—in particular related to funding provided by the European Union—the community of farmers, NGOs, and practitioners are not used to this term. However, other concepts and approaches that imply similar underlying premises as agroecology are used, implemented, and developed, particularily organic farming, reducing external inputs, and sustainable agricultural projects together with local communities (Dinis et al. 2015, Cortegano et al. 2021).

While the term agrocology is still in the shadow in Portugal, its principles and practices are very much alive thanks to small and active initiatives that promote a holistic approach to agriculture (Trace 2020).

Portugal count 259 000 of active farms, with approximately 46% of them on less than 2ha and up to 80% of farms that could be consider as family farms (Portugal's CAP Strategic Plan 2022). Clear differences between farm size could be observe between Northern and southern part of Portugal. The south is characterized by larger farms (in average 62 ha) while average farm size in the North is 5,8ha with a national average size of 12ha[2]. As in many other European countries, farm holders are aging with more than 51% having more than 64 years old (Eurostat, 2016[3]). Regarding crop production, Portugese agriculture mainly produce fruit, vegetables, wine and cereals.

The alternative terms that are used instead of agroecology are "Soberania alimentar" (food sovereignty), traditional agriculture, landscape design, regenerative agriculture and/or permaculture.

Agreocology is present through traditional agriculture, which has been seen as having a good potential in contrast to intensification and the abundant use of external inputs such as fossil fuel or pesticides. Reseachers have been developing collaborative participatory projects involving farmers practicing traditional forms of agriculture to share their knoweldge and practices (Dinis et al. 2015, Trace, 2020).

This collaborative participatory environment is well present in the territory thanks to the development of living labs and the active participation of farmers (Cortegano et al. 2021).

While agroecology has not been specifically promoted by policy makers – there is no specific legislation or legal instrument to define or promote it. In contrast, for many stakeholders it is seen as a similar approach of organic agriculture, and its certification and set of norms at national and European level, has found a fertile ground in Portugal since 1994 (Trace 2020). The main producers who started implementing it were foreigners during the 1990s who were mainly producing for themselves in smaller communities, but also for export (Trace 2020). Today there are a total of more than 250 000 ha under organic agriculture in Portugal and more than 4000 farmers involved (DGADR 2019). In their 2022 CAP Strategic Plan, the portugese government did not mentioned the term agroecology but set a goal of 19% of agricultural area farmed organically by 2030[4] with 8.2% in 2019[5].

As the intensification and conventionalisation of organic agricultural systems is progressing and depleting the meaning of the sustainable practices and the social impact that such an approach may have on the consumers (De Wit and Vehoog 2007), the initiatives in link with agroecology in Portugal seem to inspire new generations of agroecology experts. In fact, one of the recurrent activities in Portugal is related to the education and training on agroecology. This novel sector is attracting young generations of Portuguese and foreigners (Saraiva et al. 2017).

[1] https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/portugal_en#observation_letters [2] https://agriculture.gouv.fr/portugal-0 [3] https://ec.europa.eu/eurostat/web/main/home
[4] https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/portugal_en#observation_letters [5] https://www.agencebio.org/ - carnets internationaux de l'agence BIO – édition 2021

3. THE CURRENT STATE OF AGROECOLOGY

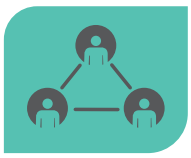
3.1. EDUCATION AND TRAINING

Portuguese education and training programmes related to agroecology are almostly exclusively for organic agriculture. These programmes are led by the "Direcção-Geral da Agricultura e Desenvolvimento Regional" (Directorate General for Agriculture and Regional Development) (DGADR). This institution developed programmes to promote organic agriculture and organic certification scheme. The programmes involve mostly short-term professional education and training for farmer in relation to a more general sustainable agriculture, and specifically for organic agriculture.

Different university programmes or study courses include elements of agroecology. For instance, the University of Coimbra is giving a course on Agroecology and Sustainable Food Systems[6]. In Coimbra as well, the Polytechnic Institute of Coimbra (IPC) propose a master in Organic Agriculture[7]. While the Centre for Ecology, Evolution and Environmental Changes, University of Lisbon developed "The AgroEcology Caravan" that aim to connect students, reserachers, farmers and consumers who works on agroecological practices (see the intiative described below It includes Farmers Opens Days, the Network of Schools with Vegetable Gardens, the Agroecological Routes, the CA Radio Programme, but also the analysis and contribution to policies targeting agroecology.

Nevertheless, two key informants (PRT-KI-11 & KI-12) mentioned that for the moment classical academic agronomic training still face more success than training related to agroecology and/or organic agriculture.

An example of more local scale training and education programmes is conducted by the Mértola Future Lab that developed, together with universities, schools, local farmers and NGOs, a programme with demonstration gardens in schools to illustrate and train on intercropping with multiple crops (PRT-KI-2, 2021). Moreover, the initiative "Projecto Novas Descobertas"[8], provides education and training about permaculture promoting experiential and relational learning.



3.2. LIVING LAB

There are several collaborations among different actors to form living labs in Portugal. Living labs refer mostly to the research initiatives that bridge multiple partnership among citizen, reserachers, and municipalities in order to foster innovation at the territorial level (Cortegano et al. 2021).

One agroecology living lab example is the "Mértola Laboratorio para o futuro" (literal translation: Mértole Laboratory for the future), further presented in the initiatives section (see part 4.2). This living lab developed multiple actions to adapt to desertification and climate change. Doing so, it connected municipalities, universities, NGOs, schools, farmers, and citizens in a common project at the territorial level. It highlights the need for developing common strategies to adapt to climate change and desertification by fostering community leadership (Cortegano et al. 2021). These challenges reinforce the collaboration between

[6] https://apps.uc.pt/courses/EN/programme/8665/2021-2022?id_branch=20761 [7] https://www.ipc.pt/ipc/en/oferta-formativa/master-in-organic-agriculture/
[8] https://www.projectonovasdescobertas.org/en/

stakeholders connecting city and countrysides aiming at re-designing the food supply chain from a farm-to-fork perspective, reduce food waste, develop holistic research projects, and engage citizens in practical activites related to agriculture.

Another example is the Charneca Landscape Observatory living lab. It builds on a high nature value agroforestry production system, including annual crops and animal husbandry (sheeps). Good agriculture practices are applied as organic farming and forest certification FSC, building on ecosystem services. It uses a bottom-up approach involving landscape researchers, practitioners and the local community.

3.3. MOVEMENT

Different agroecology related movements can be found in Portugal, often smaller local initiatives instead of more national organised movements. Nonetheless, local initiatives representing agroecological movements are among the main actors driving the agroecological transition in Portugal (Oliveira & Penha-Lopes 2020). Specifically, the shared principles guiding these movements are landscape regeneration, and local grassroots innovations as permaculture (Oliveira & Penha-Lopes 2020) and circular food systems (Ribeiro et al. 2018).

In this report we describe two initiatives. These movements developed innovative initiatives in the field of agroecology thanks to a well grounded place in society and a strong network with citizen and local institutions. One is "Projecto Novas Descobertas", that has been promoting permaculture and agroecology, including training for this since 1994. This project has been particularly successful and persistent thanks to the connection and presence in the agroecological farm Quinta Vale da Lama.

Another is "Fruta Feia", that connect consumers with farmers for reducing food waste in the city. Fruta Feia developed a service that attracted sustainable-conscious consumers and farmers to reduce food waste, and valorise and (re)use "ugly" fruits not falling into EU market selling categories. This initiative inspired several other initiatives in Europe and foster a new economic model for agroecological projects.

3.4. PRACTICE

Agroecological practices are well developed and diffused in Portugal, as illustrated by several initiatives. However, these practices are not known as "agroecological" but more as sustainable or organic farming and permaculture, as the term agroecology is associated with science (Gallardo-Lopez et al. 2018). Researchers pointed that silvopastoral systems based on traditional and agroecological practice at the landscape level are mainly found in the Montado system (PRT-KI-4, 2021). Other practices are soil fertility maintaining and improving practices to recover the soil biota and diversity for enhanced resilience to water scarcity stress (PRT-KI-3, 2021).

Practices which are mainly related to regenerative agriculture, which are not depleting and could provide farms long-term sustainability, were mention (PRT-KI-10, 2021). Moreover, permaculture practices were stated, and used throught the country, but most of them seems to be applied only on small surfaces and mostly related to smaller initiatives working with homegardens (PRT-KI-10, 2021).

Described in the part 4 of this report, the initiatives called SoilVitae developed, together with farmers, biofertilizers, while the farm "Vale da Lama" applied several of them having a more holistic approach related to permaculture. The "Montado Observatory" developed a unique approach for landscape management connecting researchers, farmers and local institutions. Its projects foster landscape identity and community engagement bridging scientific approaches, arts, and humanities.

3.5. SCIENCE

The term agroecology is mostly used in research, compared to other activy categories. Therefore, many research and projects involves the most important faculties of science, agronomy or rural sociology, as for instance at the universities of Porto, Lisbon and Coimbra that collaborate with farmers cooperatives and local NGOs in multidisciplinary or transdisciplinary research projects. Further, reserachers foster the utilization of this term also because for the need for international collaborations with foreign institutions, but also a recent increase in number of publications on this subject can be stated (Trace 2020). The main research focuses on agroecological transition (Cortegano et al. 2021). Also, some research studied the reason of success of agroecological initiatives as in the case of Fruta Feia, being seen as a sustainable businness to reduce food waste (Ribeiro et al. 2018). Or in the case of the Mertola Future Lab, to transform a territory to adapt to climate change and desertification (Cortegano et al. 2021). Further examples are research related to landscape management in the Montado systems, development of sustainable fertilizers co-design with and tested on farmers' fields.

Research project on soil, water and integrated pest management are already involving different research team in Portugal (PRT-KI-11 & KI-12). More in the food systems domain, the Human Nutrition Lab at the University of Trás-os-Montes e Alto Douro researches on health benefits of local products and the links between local food consumption and its nutritional value, health and food security. More specifically, nutritional sustainability of local traditional food (especially endogenous fruits and vegetables) included in Mediterranean and Atlantic Diet is evaluated, to promote sustainable dietary patterns and local/regional food consumption.

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 2: An overview about initiatives, cases and examples described and analysed.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Mértola Future Lab**	Local/ National	Civil society	Living lab					
2	**Fruta Feia** *Ugly Fruit*	Local/ National	Civil society	Reduce food waste					
3	**Caravana Agroeoclogica** *Agroecology Caravan*	Local/ National	Civil society	Strengthening the relations between producers, consumers and researchers through agroecology					
4	**Vale da lama**	Local	Farmers and civil society	Develop permacultural practices					
5	**Montado observatory**	National	Reserachers, local communities and farmers	Landscape managment					
6	**Soilvitae**	Regional	Startup	Develop solutions to improve soil fertility					

INITIATIVE N°1 – MÉRTOLA FUTURE LAB

Website:
https://www.mertolafuturelab.com

MÉRTOLA FUTURE LAB

Mértola Future Lab is a living lab thats aims to enhance the resilience of a territory developing a wide range of activities and solutions, both at local and regional scale. This project was developed in link with municipality of Mértola that faces different issues: from desertification, hard edaphic condition (soil with low fertility) as well as different socio economic challenges including the lost of population (Cortegano et al. 2021).

KEY FEATURES

- **Type of organisation supporting the living lab:** municipality
- **Founded in:** 2015
- **Main topic:** collaborative governance
- **Type of actors involved:** farmers, scientists, municipality, schools
- **Scale of the living lab:** regional

Is the living lab is located in the municipality of Mértola, South-East Portugal, and was established in 2015. Started thanks to the creation of an association gathering different stakeholders the project had six goals (according to Cortegano et al. 2021):

- Objective 1: To encourage agroecological and regenerative practices that counteract soil degradation (desertification), and promote adaptation to climate change;
- Objective 2: To raise community awareness of the need to change patterns of production and
- consumption;
- Objective 3: To contribute to the acquisition of innovative professional skills appropriate to the extreme climate situation;
- Objective 4: To establish a pilot project, with potential for replication at the level of food challenges, in situations of scarce resources, to influence public policies;
- Objective 5: To test innovative strategies to support the settlement of young people through the regeneration of abandoned agricultural areas to provide a local agri-food system;
- Objective 6: To create a local food network based on direct collaborative relationships and short circuits.

This initiative is supported by a network composed of several actors: municipalities, associations, schools, farmers, a farmer cooperative, the University of Porto, and NGOs. Their vision entails a collaborative governance which is achieved through practices of co-creation and engaging local citizens for collective action. The topics that this living lab deals with include training and education, governance, social and territorial cohesion, rural economy, culture and heritage, and agroecological transition.

Projects developed within the living lab cover many aspects of agroecology, including reduction of food waste with the project "Frescos sobre rodas" (Fresh on wheels), intergenerational solidarity and promotion of traditional local cuisine with the project "A Cozinha da Avo" (Grandma's Kitchen), but also education around sustainable agriculture via a project of implementing school gardens.

Agroecological transition is one of the main focus of this living lab. They aim to connect reseachers and farmers for sharing practices and knowledge. This should be further supported by the Biological Station of Merola which is planned to open in the coming years. Today, farmers are already involved in workshops and seminars to improve agroecological practices such as intercropping, crop rotation, as well as maintain and protect biodiversity. This living lab has been mentioned by Cortegano et al. (2021) as a flag case study for agroecological transition, adaptation to climate change and combat desertification.

WHAT CAN WE LEARN?

Mértola future lab is a living lab that is connecting many different stakeholders and developing actions and projects through a common mission - resilience against desertification. Such initiatives can be exemplary for finding solutions and innovating together, in also developing systems and practices that bring higher resilience for the larger territory level.

Picture 1: Night at the market. Source: Mértola Future Lab.

POSITIVE IMPACTS

COOPERATION: Mértola Future Lab manges to connect a broader diversity of stakeholders, facilitating and reinforcing also knowledge exchange.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The Biological station of Mertola aims to create a centre for studying agroecological practices and preserve and study biodiversity.

INITIATIVE N°2 – FRUTA FEIA

https://frutafeia.pt

FRUTA FEIA
UGLY FRUIT

Fruta feia is the cooperative (cooperation of several NGOs) that has managed to greatly reduce food waste directly at the farm level. Fruta Feia was established in 2013 in the city of Lisbon, while today it is also present in the municipalities of Porto, Amadora, Cascais, Gaia, and Matosinhos. The cooperative has around 15 employees and some volunteers, and currently more than 290 producers and 6800 consumers are involved. Today Fruta Feia is a sustainable business model to reduce food waste (Ribeiro et al. 2018), estabilishing an agroecological platform for food consumption collaboration (Espelt & Moreira 2019). This cooperative directly sources and delivers "ugly" fruits and vegetables from local farmers to consumers below the market price (Ribeiro et al. 2018). Further, its success is also related to an initial fund by a LIFE EU project called LAW4LIFE starting in 2015.

Fruta Feia collects all the produce that does not pass the classical market quality standards at farm gate, and then transports it to one of their pick-up points. Here the fruits and vegetables are sold to consumers through a subscription scheme and weekly basket that could order online. The project now operates in 7 municipalities through different pick-up points and local partnership.

With the main aim of reducing food waste, the project collects organic and non organic product that are rejected by distributors. The cooperative directly buy the produce to farmers.

In synergy with this principal activity, Fruta Feia developed educational workshops for schools, in which they share their experience and knowledge on food waste reduction. Those workshop are achieved for free by Fruta Feia except regarding transportation cost.

The project, currently running without receiving grant would like to developed at the national level and increase its network.

KEY FEATURES

- **Type of organisation:** formal NGO
- **Main goal:** food waste reduction
- **Founded in:** 2013
- **Farming sector:** Fruits and vegetables
- **Scale of the organisation:** local and national

Picture 2: Preparation of the boxes. Source: Fruta Feia.

WHAT CAN WE LEARN?

The story of Fruta Feia inspired many other cooperatives and NGOs in Europe. This project achieved an economical self-sufficient model through which they are able to pay the workers and re-invest in expanding the cooperative at multiple sites. Fruta Feia is seen as having a successful business model and fighting successfully food waste (Ribeiro et al. 2018).

Fruta Feia was also internationally recognized as pioneer in food waste reduction. "Tempting Europe with Ugly Fruit" is the title of an article published by The New York Times in 2014[9], in which they celebrate the success of this initiative one year after its foundation.

POSITIVE IMPACTS

COOPERATION: Fruta Feia is an inspiring initiative and pioneering for reduction of food waste in valorizing already produced food that is not EU market conform regarding quality, but represent edible food which would be otherwise thrown away.

SUSTAINABLE AND FAIR ECONOMICS: Fruta Feia as a very interesting and successful business model to reduce food waste (Ribeiro et al. (2018).

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: Farmers receive higher income for produce which was already produced, but which would be thrown away because not meeting EU quality norms.

[9] https://www.nytimes.com/2014/05/25/world/europe/tempting-europe-with-ugly-fruit.html

CARAVANA AGROECOLÓGICA

https://caravanaagroecologicaen.weebly.com

CARAVANA AGROECOLOGICA

In 2019, a research group at the Centre for Ecology, Evolution and Environmental Changes, Sciences Faculty of the University of Lisbon decided to launch the participatory project Caravana Agroecologica ('agroecology caravan'). The team's intention was to support the transition of sustainable food systems with agroecology. The overall aim of this project is to strengthen the relation between different stakeholders of the food system: farmers, consumers and researchers already willing to promote agroecological approaches.

KEY FEATURES

- **Type of organisation:** formal NGO
- **Main goal:** strengthening the relations between producers, consumers and researchers through agroecology
- **Founded in:** 2019
- **Farming sector:** all sectors, but mainly fruits and vegetables producers involved for the moment
- **Scale of the organisation:** local to national

The project developed five main types of action:

1. Farms Open Days

The first initiative was developed with the aim to gather farmers and consumers to promote sustainable food production and consumption. During different events (on farms or market or other places), farmers show and sell their products with the presence of a restaurant chef who prepares in parallel food with these products. During the events also an exchange is facilitated on agroecological topics to increase the awareness and exchange of knowledge among stakeholders. Targeting general consumers, at the beginning of 2023 five farms open days have already been organised mainly around Lisbon.

2. Agroecological Vegetable Gardens

This action was developed in link with a university project (HortaFCUL) lead by students to promote knowledge exchange among a community of gardeners as well as support education. At first, in the garden of the university, students and other volunteers gathered to work together, planned activities and exchange. Inspired by those activities, they identified other school gardens where they wanted to develop educational activity to increase environmental awareness of children. For the moment this action was mainly conducted within school garden in Lisbon. In the future, the team aims to extend this, also within community gardens to create an agroecological community of gardens that support each other and exchange among different type of stakeholders.

3. Caravan Routes

Inspired by the Agroecological and Cultural Caravans of Brazil the caravan routes aim to organize visits of different agroecological initiatives. The main goal is to promote knowledge exchange among various group of stakeholders through those visits. Recently, the project started to organised specific routes for consumers to visit agroecological farms within a 15 km radius in their neighbourhood and understand how they operate and act with sustainable practices (including e.g. biodiversity conservation, waste management).

4. Caravana na Radio

Started in 2020 with already more than 70 podcasts available[10] the radio programme aims to promote different initiatives and create debate on agroecological topics. The different shows are also an opportunity to identify multiple initiatives and stakeholders in link to agroecology.

5. Public policies

Recently the project started a public policies analysis through a participatory process. Gathering different stakeholders (farmers, NGO, activist and researcher), they already published an analysis regarding the Common Agricultural Policy Strategic Plan of Portugal.

[9] https://www.nytimes.com/2014/05/25/world/europe/tempting-europe-with-ugly-fruit.html

This participatory project explicitly aims to promote agroecology and its principles. The different activities are possible through the involvement of volunteers as well as funding through different European projects. Currently the entity is involved in two: "Med Caravan" an educational project aiming to collect, valorise and share local and innovative knowledge about agroecological practices as well as "Zero routes" created to promotes sustainable food consumption.

The initiative now has one temporary staff supported by a core team of about 10 people mainly from the Centre for Ecology, Evolution and Environmental Changes, Sciences Faculty of the University of Lisbon.

Picture 3: Illustration of a stakeholder exchange organised during a caravan route (left), and a farmers open day event (right). Source: website of Caravana Agroecologica.

WHAT CAN WE LEARN?

The variety of events organised by the initiative is made possible thanks to a large network of initiative initiators. This network of farmers, municipalities and other stakeholders as allowed the development of multiple initiatives leading to many concrete actions.

POSITIVE IMPACTS

COOPERATION: Through their different actions, this initiative aims to promote and developed synergies and collaboration between a range of different stakeholders. The project now have a network of more than 500 persons.

EDUCATION: Oriented to a diversity of public (from general public to children or gardener/ farmer), different actions aim to increase the awareness and implementation of agroecology.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: With involvement of various actors, the project promotes the consumption of local, sustainable and fair product to consumers.

LIMITATIONS & CHALLENGES

COOPERATION: The team started to work with local farmers, municipalities and stakeholders already interested by agroecology and sustainable food systems. Now, they want to enlarge the network and involve farmers/ stakeholders that are not yet engage into agroecological approaches.

SUSTAINABLE AND FAIR ECONOMICS: Thanks to an efficient and dynamic team, the initiative had the capacity to hire one staff members. Nevertheless, finding funds through project calls is time consuming and for the moment lead to insufficient human resources. The project will need to find more longer lasting funding resources to continue its action.

INITIATIVE N°4 – QUINTA VALE DA LAMA

www.valedalama.net

QUINTA VALE DA LAMA

Quinta Vale da Lama is a farm specialized in regenerative agriculture, permaculture and landscape design, which combines a wide array of agroecological practices established in the year 2000. It is located in the Southern part of Portugal in the Algarve region close to the municipality of Vale da Lama. It extends on 43 hectars and it integrates natural forest to agricultural land in anenvironment with little water availability. The farm has a strong collaboration with a local NGO named "Projecto novas descobertas" (New Discoveries Project). Together they engage youth and adult citizens as well as farmers in learning and experimenting with agroecological practices. In particular, they developed agricultural training and education with local schools, on permaculture, but also providing facilitator courses and sustainable tourism courses.

KEY FEATURES

- **Leading organisation:** farm
- **Founded in:** 2000
- **Farming sectors:** community supported agriculture
- **Scale of the initiative:** local
- **Stakeholder involved:** one farm and an NGO

The concept of regenerative agriculture is the fundament for the model of the farm. In fact, this farm is in an area which lack of water availability and that needs regenerative practices focused on soil fertility such as: no-till, compost making and usage, and animal integration into crop production. The farm system is characterized by high agrobiodiversity, encompassing vegetables gardens and agroforestry, but also by a sustainable grazing rotation, mainly with cattle, chickens, sheep and donkeys. Also, the product transformation is made in situ and then sold on the local market or directly for agritourism on the farm.

The practices developed at "Quinta vale dalama" also include activities and experiences that are primarily intended for tourists or other visitors. Their agritourism offers an array of events and experiences, including meditation and yoga retreats.

WHAT CAN WE LEARN?

"Quinta vale do lama" is a hub for learning and practicing regenerative agriculture. It's openness to different activities can be seen as indispendable for developing sustainable and agroecological business in an area that increasingly suffers drought and desertification.

Picture 4: Aerial view of the farm. Source: Quinta Vale da Lama.

POSITIVE IMPACTS

EDUCATION: The collaboration between the farm and the NGO foster training and recreational activities in relation to agroecology.

SUSTAINABLE AND FAIR ECONOMICS: The combination of agricultural production and agrotourism activities allows Quinta Vale da Lama to be a social, ecological and economical sustainable model of regenerative farm.

LIMITATIONS & CHALLENGES

COOPERATION: Need to foster the cooperation among farmers for developing common plan to fight desertification and developing sustainable food supply chain.

Observatório da Paisagem da Charneca

https://opc-paisagem.pt

INITIATIVE N°5 – CHARNECA MONTADO LANDSCAPE OBSERVATORY

CHARNECA MONTADO LANDSCAPE OBSERVATORY

The **Charneca Landscape Observatory** is a local initiative starting in 2015 with a group of researchers from Lisbon University aiming to connect academia, farmers and artists in the Montado region. Their objective is to monitor the sustainability of the landscape and to foster local participation for developing common projects. This area is very well known for cork production, and it is recognized by UNESCO as a cultural landscape in the World Heritage List.

KEY FEATURES

- **Main goal:** landscape management
- **Main topics:** landscape research and management
- **Leading organisation:** university of Lisbon
- **Type of actors involved:** researchers, farmers, artists
- **Funded by:** Chamusca municipality, Tècnico Lisboa
- **Founded in:** 2015

The University of Lisbon has been conducting participatory research studies concerning ecosystem services and cultural services regarding the Montado system (da Graça Saraiva et al. 2018). Knowledge exchange is of large importance for the observatory in exchanging on academic social and ecological knowledge, with traditional knowledge of local and regional stakeholders. Scientific research is studying the biodiversity and the practices that belong to the Montado landscape such as tree and scrub management on pasture land, use acorns from the cork oaks as feed for pigs. Further the observatory collaborates with local communities, artists, and farmer cooperatives in a dialogue about the maintenance and the future perspecties and development of this specific cultural landscape. Artist are involved in the project as communication facilitator between the different stakeholders.

The observatory functions as a bridge among different actors of the territory. Its activities includes to promote the knowledge about the Montado landscape of the Charneca do Tejo and its management, and its dissemination. Other activities develop participation and living actions based on the landscape, foster the cultural heritage and the territorial identities and the co-production of technical and scientific knowledge.

WHAT CAN WE LEARN?

Montado landscape observatory presents a landscape approach for investigating a its different component fostering its maintenance and development by combining researchers, farmers. and artists. This initiative may inspire other landscape observatories around Europe. It also shows the importance of conducting research in a participatory ways, involving local actors directly in the development of the project since the beginning and constantly working together. This project's positive influence is set in its long term vision and engagement with multiple stakeholders. This approach well align with the transition to agroecology, suggesting long term goals and an iterative processes. However, this approach may demand significant resources, and maintaining enthusiasm and participation could be a limitation.

Picture 5: Montado sylvo-pastoral system. Photo provided by Charneca Montado Landscape Observatory.

INITIATIVE N°6 – SOILVITAE

https://soilvitae.com

SOILVITAE

SoilVitae is a startup incubated at the University of Lisbon in the innovation centre Tec Labs, founded in 2014. The team is composed of a small group of multidisciplinary researchers specialized in plant nutrition, microbiology, and soil science. SoilVitae designs and produces bioproducts for agriculture by introducing novel technologies related to enhanced plant and microbiome interactions and focus on plant-microbe-soil associations to revitalize soils and foster sustainable production.

Education and training components are of crucial importance for the work of SoilVitae. Research objectives are developed together with farmers who are passionate about soil and sustainable ways of farming and agroecology. Every potential solution or technology is developed, tested, and shared together with farmers. The education and training mainly occur in the form of sharing knowledge about the soil functions, and on proper use of the bioproducts in the field, optimizing the timing of application and thus reducing potential resource and biofertilizer waste. For the latter, training is provided, and experimentation conducted directly on farms to assess the effectiveness and comparison of organic and non-organic feritlizers. Biofertilizers are developed first in the lab, and after tested in field trials, products are sold to farmers.

KEY FEATURES

- **Type of education and training:** biofertilizer development and field experimentation
- **Type of legal entity:** university –startup
- **Main topic:** soil fertility
- **Members:** reserchers and farmers
- **Training duration:** prototype testing and field trials vary

Picture 6: Field and plot trials exploring the mode of action of microbial products. Photo provided by Soilvitae.

WHAT CAN WE LEARN?

The SoilVitae examples shows the importance to work together with farmers in the long term. Therefore, connecting reserachers and farmers in co-designed farm experimentations through field trials and training reinforces the relation and trust among these actors, and might lead to higher rates of implementation by other farmers. SoilVitae showcases farmers actively engaging in research, merging theory and practice. Co-designing farm experiments and providing training strengthens researcher-farmer relationships, potentially incresing adoption. However, scalability poses a challenge, as widespread implementation may need further research and collaborations.

5. CONCLUSION AND FUTURE PERSPECTIVE

In this report we explored the ongoing development of agroecology in Portugal. The term "agroecology" is marginally used in this country.

Portuguese education and training programmes related to agroecology are almostly exclusively for organic agriculture, demonstration gardens in schools and permaculture. Indeed, there are few university programmes or study courses including elements of agroecology. Living labs in Portugal are present and seems to be mostly link to reserach initiatives that bridge multiple partnership among citizen, researchers, and municipalities. Agroecology movements are present and often small local initiatives instead of more national organised movements. The ones we found are well-grounded place in society and a strong network with citizen and local institutions.

Agroecological practices are advanced and diffused in Portugal but thery are known more as under sustainable or organic farming practices, permaculture, and regenerative farming. Most of the practices showed are related to traditional system and practices to maintain and promote soil fertility such as no-till, intercroppig, crop rotations, compost making and usage, and animal integration into crop production. In the research activity category, the term agroecology is more commonly used compared to other activity categories. Novel research projects involve academia, farmers cooperatives and local NGOs through a transdisciplinary lenses. Most of this research focus on agroecological transition and studying succesfull agroecological initiatives.

Agroecology if for the moment not commonly used in Portugal. This overview of some initiates link to agroecology as well as the different actions existing in the activity categories highlight the growing demand and need for sustainable food production and distribution. The lack of clear public policy, sustainable funding scheme and the lack of strong agroecological network were the most cited barriers by key informants (PRT-KI-all).

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MAPPING AGROECOLOGY IN SLOVENIA

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SLOVENIA

EXECUTIVE SUMMARY

This report has gathered information from key informants and literature on the awareness and use of the concept of agroecology in Slovenia, as well as to map agroecology-related initiatives. Slovenia's geographical situation and topography are very diverse and therefore, so is its farming. Taking this into account and the historical political situation up until 1991, has meant that it has been slow in developing 'modern' farming methods and organic farming.

While there are quite a few organisations that provide important information to farmers through professional classes and training that encourage sustainable use of soil and educate on organic, biodynamic farming and permaculture; as well as inform consumers about the importance of buying local produce and enhancing sustainable relationships to nature, most of these organisations do not use the word agroecology. Different examples of agroecological practices in Slovenia can be found that implement traditional ways of producing food, without the use of synthetic substances; conserve biodiversity and value landscapes; build on short food supply chains, foster knowledge exchange; and value coexisting with nature and imitating it.

The term agroecology is more commonly used among educators, mostly teachers, mentors, researchers and university professors who teach agriculture and sustainable farming practices, although farmers and other professionals are familiar with it. The link between practice and science could be stronger, which would therefore speed up the modernization process based on agroecological approaches. Different initiatives regarding education and training, movements, practices and the science of agroecology in Slovenia have been identified and are presented in this report.

SLOVENIA

EXECUTIVE SUMMARY (IN SLOVENIAN)

To poročilo zajema informacije ključnih anketirancev in literaturo o ozaveščenosti in uporabi koncepta agroekologije v Sloveniji ter načrtovanja pobud, povezanih z agroekologijo. Kot je raznolik slovenski relief je tudi raznoliko tukajšnje kmetijstvo, kar je poleg političnega stanja vplivalo na njegov razvoj. Z letom 1991 pa so se počasi začele razvijati moderne metode kmetovanja, kot so trajnostno oz. ekološko kmetijstvo, ki jih je podpirala skupna kmetijska politika.

Čeprav obstaja kar nekaj organizacij, ki kmetom posredujejo pomembne informacije preko strokovnih tečajev in usposabljanj, ki spodbujajo trajnostno rabo tal in izobražujejo o ekološkem, biodinamičnem kmetovanju in permakulturi; kot tudi obveščanje potrošnikov o pomenu nakupa lokalnih proizvodov in krepitvi trajnostnega odnosa do narave, večina teh organizacij ne uporablja izraza agroekologija. Naleteli smo tudi na kar nekaj primerov izvajanja agroekoloških praks, ki implementirajo naravne načine proizvodnje živil – brez uporabe sintetičnih snovi, z ohranjanjem biotske raznovrstnosti in krajine z višjo dodano vrednostjo, vzdržujejo kratke dobavne verige in tradicionalno pridelavo pridelkov, spodbujajo izmenjavo znanja in sobivanje z naravo ter njeno posnemanje; torej vse elemente agroekologije.

Izraz agroekologija se pogosteje uporablja med pedagogi, večinoma učitelji, mentorji, raziskovalci in univerzitetni profesorji, ki poučujejo kmetijstvo in sonaravne kmetijske prakse, čeprav ga poznajo tudi kmetje in drugi strokovnjaki. Povezava med prakso in znanostjo bi lahko bila močnejša, kar bi pospešilo proces modernizacije na podlagi agroekoloških pristopov. Opisane so različne iniciative v zvezi z izobraževanjem in usposabljanjem, gibanji, praksami in znanostjo agroekologije v Sloveniji, ki so predstavljene v tem poročilu.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Slovenia are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in Slovenia.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	Chamber of Agriculture and Forestry Slovenia	Agriculture and forestry – education of farmers	
2	Chamber of Agriculture and Forestry Slovenia	Agriculture and forestry – organic farming	
3	Consumer Association	Food	
4	NGO	Hay milk and meat production	
5	Integrated farm	Milk production	
6	Institute of Agriculture	Agriculture	
7	University	Economics of Agriculture	
8	University	Agroecology and Rural Development	
9	University	Agroecology and Agroecosystem	

2. CONTEXT

Slovenia was, until 1991, the most Western part of the multinational Balkan state of Yugoslavia. Geographically, it is a part of the West Balkans and has an advantageous geostrategic logistical position, having easy access to the western and southeastern European markets[1].

Its agricultural development in the 20th century was entirely dependent on the Yugoslavian socialist policy of collective ownership. After independence in 1991, the national agricultural policy started to reform, which after 2004, evolved further as Slovenia joined the EU, and thus became part of the rules and guidance under the Common Agricultural Policy (CAP).

The Yugoslavian economic policy of accelerated industrialization and collective ownership of farmland has affected the progress and development of agriculture, and thus the social and economic position of the rural population (Seremesic, 2021). At the same time, agriculture in the middle of the 20th century began a process of intensification that gradually decreased reliance on natural processes (and resources) and traditional methods of production.

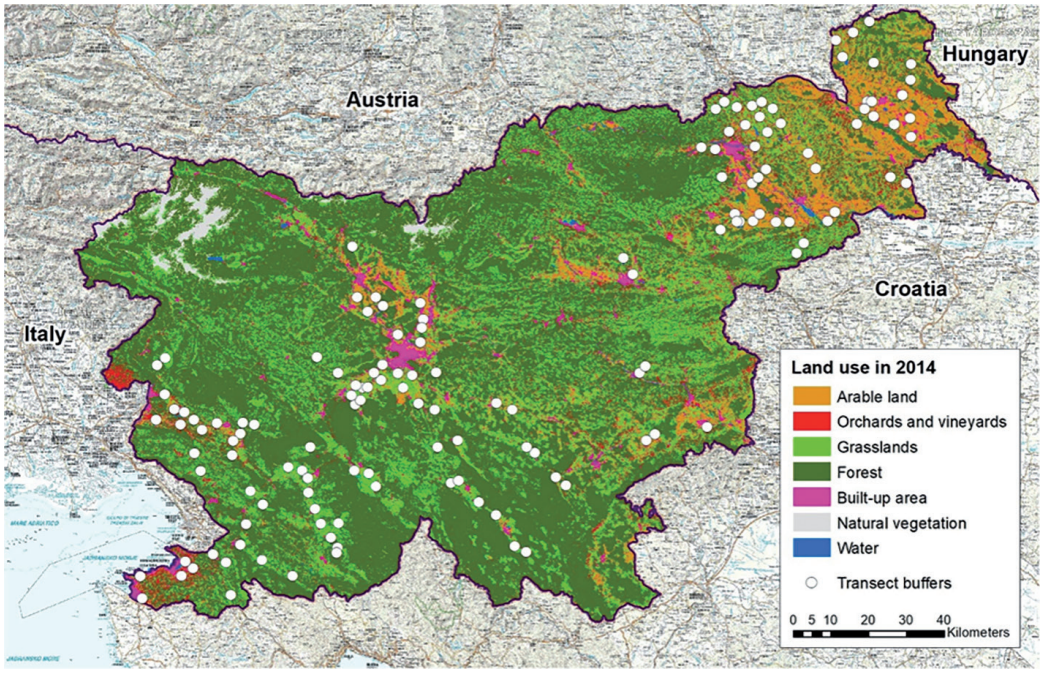
Slovenia's farming sector has faced a lot of challenges, due to specific structural factors including the diverse terrain, associated climatic conditions and soil type, unfavourable age structure of the population on farms, lack of technical assistance and information skills, low profitability, and lack of financial stimulus (national subsidies) for farms following agri-environmental approaches. Because of those difficult conditions, there is a considerable amount of abandonment of cultivated land and natural forest re-growth where the number of farms is dropping constantly.

At the same time, Slovenia has a varied natural endowment, with different types of landscapes and lush landscaping specifications, with a large proportion of the mountain uplands of farms and other areas of less-favoured agricultural activity, which represent good opportunities for further and accelerated development of more nature-friendly forms of farming. Such practices contribute significantly to the provision of public goods, the preservation of the cultural landscape, the conservation or improvement of agricultural biodiversity, the protection of drinking water resources, and the protection of the whole environment.

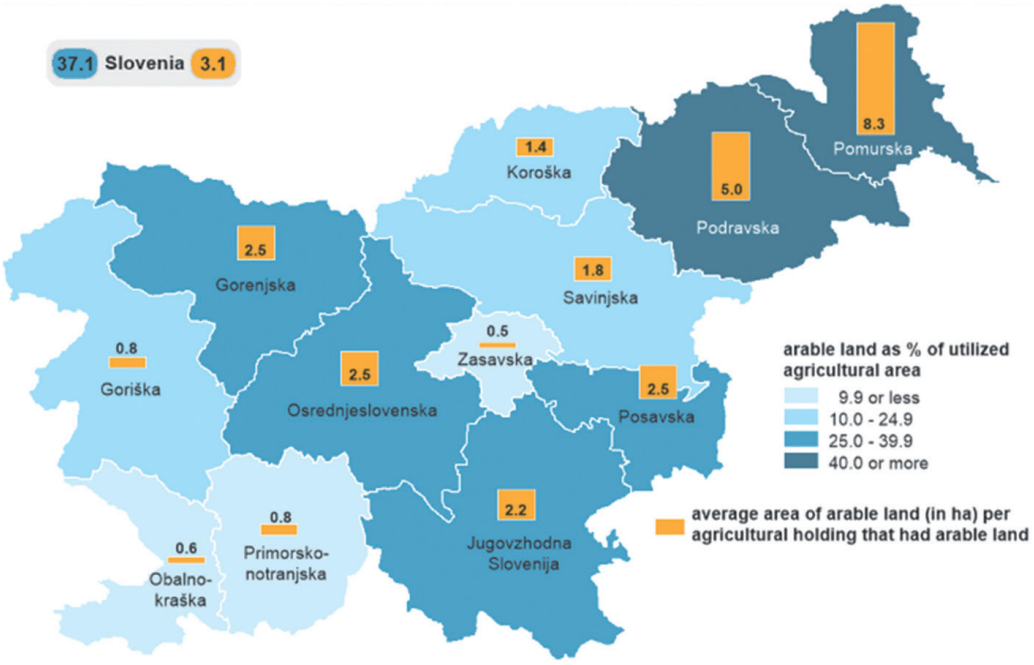
Slovenia is a small state but has a high diversity of landscapes (Perko et al. 2020). In the West, karstified plateaus can be found, with the warm Mediterranean to the Southwest and the steep mountains and deep valleys of the Alps to the northwest. The Southeast holds intermediate uplands of the Dinaric Alps and the continental Pannonian basin leads us to the Northeast.

In Slovenia, as much as 86.9 % of the total area of the country is categorised as less-favoured areas[2], which represent 76.2 % of all cultivated farmland[3]. In 2020, 23% of all Slovenian land was used for agricultural production (473,989 ha, common pastures not included). Out of this utilised agricultural land, 37% represents arable land with 175,913 ha (see Picture 3). The share of arable land is the highest in the Pomurska region (the northeast, Pannonia plains). The biggest farms can be found in the Pomurska and Podravska regions in the northeast, in the Pannonian basin. Sixty six percent of all Slovenian agricultural holdings are in breeding livestock.

[1] http://www.berlin.embassy.si/index.php?id=235
[2] Those are, by definition, uplands and highlands with limited agricultural uses. Because of the higher altitudes, the vegetation period is limited and the selection of crops is narrow. The tilted terrain of farmland constrais the use of the standard mechanization. https://www.govedo.si/files/janezj2/OMD_2010/Kriteriji_za_opredelitev_OMD.pdf
[3] https://www.kgzs.si/novica/reforma-omd-uspesno-zakljucena-sledijo-spremembe-v-sistemu-tockovanja-gerk-ov-v-omd-2019-03-20



Picture 1: Land use of Slovenia in 2014. Source: Šumrada et al., (2021).



Picture 2: Arable land and agricultural holdings in 2020 in different regions of Slovenia. Source: Republic of Slovenia, (2020)[4].

[4] https://www.stat.si/StatWeb/en/News/Index/9883

The most widely known agroecology-related elements in Slovenia are organic farming, as well as sustainable farming practices in general. Organic farming was only introduced to Slovenia after the government was fully reformed.

Academic institutions can be credited with the appearance and expansion of the concept of agroecology in the West Balkans in the middle of the 20th century, including in Slovenia (Seremesic et al., 2021). The more visible progress of agroecology started at the beginning of 1990. While farmers did not know of or use the concept of agroecology, seminars organised by The Chamber of Agriculture and Forestry of Slovenia (KGZS) and NGOs, have made the concept more familiar. Still, it has taken time for agroecology to be implemented in practice by farmers and professional institutions, and to become a future vision in agriculture. It is only recently that the expansion of agroecology and the acknowledgement of its role in aiding ecological disturbances and healthy food consumption has occurred.

One of the biggest milestones for agroecology could be the role of the EU Common Agricultural Policy (CAP) which creates incentives for sustainable agriculture, reduction of negative impacts on the environment, preservation of biodiversity and traditional cultural landscape, maintenance of protected areas, and training, with special attention given to the network Natura 2000, which aims to ensure the long-term survival of Europe's most valuable and endangered species and habitats, listed under both the Birds Directive (Directive 2009/147/EC) and the Habitats Directive (Habitats Directive 92/43/EEC). The territory under Natura 2000 covers currently about 37% of Slovenia, and special agroecological measures to protect nature are obligatory for farmers as well[5].

Slovenia now has a long-term strategic course for agriculture to encourage and financially support environmentally friendly agricultural practices and sustainable farming, in particular integrated production and organic farming (Vovk Korže, 2016). They meant to present the interdependent and balanced development of the environmental, economic and social aspects of agriculture. Slovenia also promotes the introduction of sustainable agricultural practices through encouraged education and nationally funded projects (SLO-KI-2, Table 1).

The conditions for the development of agriculture in Slovenia are challenging because of the diverse landscape with diverse terrains, climatic conditions and soil types, as well as many regions with higher altitudes and difficult accessibility. Obstacles are also represented by ageing farmer pagination, the lack of certain professional skills by farm holders, little technical assistance and information to farmers and consumers, the prevalence of farming as a secondary job due to the low income of farming, abandonment of agricultural land, and the continuous loss of farms (Vovk Korže, 2016).

As mentioned above, the implementation of agroecological approaches and practices is only just beginning, with a small percentage of organic farms or farms in conversion, although organic farming has been present in the country since the early 1990s (Vovk Korze, 2016). In 1998, there were only 41 organic farms however; the number is growing into 3,049 farms in 2014. Since 2001, organic farming has been regulated at the national level with the rules for organic production and processing, which is coordinated with the European regulation on organic farming (Vovk Korze, 2016).

The term agroecology in Slovenia is limited to the understanding of the importance of ecology in agriculture (Vovk Korze, 2016). In the country context, Vovk Korže and Korže (2018) tried to define it as the "use of sustainable practices based on traditional and local farmers' knowledge,

[5] http://www.natura2000.si/natura-2000/natura-2000-v-sloveniji/

consistent with the characteristics of the local environment and conservation of the biodiversity and cultural landscape". According to these authors, many non-governmental and non-state institutions, especially on the regional level by small family farms, implement this mode of thinking application agroecological principles although it is not called or defined as agroecology. Similarly, a key informant stated that different organisations that support sustainable development are involved in the promotion and expansion of agroecology (SLO-KI-1, Table 1). Another key informant explains that agricultural practices in Slovenia focus on extensive smallholder farming which in several cases apply agroecological practices such as conservation tillage practices, mixed crops and organic farming (SLO-KI-9). Different groups of producers in integrated, organic, biodynamic, permaculture or sustainable agriculture, reached different levels of success in different aspects of agroecological changes. These diverse non-governmental initiatives are especially important for bringing changes in agroecological situations (Basile et. al., 2016, Seremesic et al., 2021). However, the approaches that are developed in practice and related to agroecology, are still limited to a single segment of agroecology.

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

The term agroecology is well known within Slovenian universities. For example, at the Faculty of Mathematics, Natural Sciences, and Information Technology in Koper, the programme Protection of the Environment[6] educates the essential knowledge and skills in the field of nature and environment protection, which are agroecology-related topics. The Biotechnical Faculty in Ljubljana teaches about agronomy, biology, microbiology, natural heritage protection, animal sciences and agri-food sectors, which, each in its own ways, implements agroecological ideas and transfer the theoretical side of them to the students. While there is no specific agroecology course, its objectives are incorporated into other courses and subjects. Further, there are many other higher education programmes to gain knowledge in the field of agriculture and sustainable development. For example, Technical School Centre Nova Gorica, Biotechnical Educational Centre Ljubljana, and the Educational Centre Pyramid Maribor, which are located at the Biotechnical Centre Naklo, emphasize the importance of sustainable, environmentally friendly and economically beneficial farming, which are important elements of agroecology.

Within the country, many organisations engage in non-formal education and training of farmers through individual professional classes or courses that are not part of an accredited programme ending in a degree or a title. The United Chamber of Agriculture and Forestry (CAF), the Ministry of Agriculture, Forestry and Food (MAFF), the Union of Farmers Cooperatives, the Chamber of Commerce of Slovenia, and the Institute established these for example for Control and the Certification in Agriculture and Forestry Maribor. All these organisations offer services to educate and train in integrated, organic, and biodynamic farming, vegan production, and others. They also organise different excursions for farmers to organic farms, producers of reproductive materials (seedlings, seeds, etc.), or producers of agricultural machinery.

If a farmer is a member of any of the above organisations, they usually get access to free seminars conducted by that organisation. Further, the Chamber and Ministry have some obligatory seminars, for example when participating in different calls for funding. Educational centres like RIS Rakičan, BIC Ljubljana and BIC Naklo also hold a lot of different seminars and conferences on topics such as organic farming, sustainable agriculture, consumer behaviour, ecology and sustainable tourism.

Most of the actors working in the field of informal education and training of the farmers are not familiar with the term agroecology, although they are active in different agroecological fields, as seen from the conducted interviews and scientific literature on the topic.

[6] Masters faculty programme Protection of the environment. https://www.famnit.upr.si/sl/izobrazevanje/podiplomski-magistrski-studij/varstvo-narave

3.2. LIVING LAB

The only initiative identified that fulfils some of the components of an agroecological living lab is the "Learning Centre for Self-sufficiency" in Dole, West Slovenia, whose main goal is sustainability in agriculture. The Institute designed the lab for the Promotion of Environmental Protection and the Faculty of Philosophy in Maribor. Its programme combines different disciplines such as different aspects of sustainable living (ranging from sustainable housing to renewable energy sources), the progress and development of which are closely monitored and evaluated. It is described in more detail later in the report (see initiatives section). Within the living lab, the term agroecology is commonly used and agroecological practices are implemented.

There are quite a few other living labs in Slovenia, but mainly focused on building sustainable houses from wood, which are not designed in a multidisciplinary way.

3.3. MOVEMENT

There are quite a few movements in Slovenia that encourage sustainable use of soil; educate about permaculture and organic and biodynamic farming; inform consumers about the importance of buying local produce; try to involve more sustainable relationships with nature, as well as associations on expanding grass-fed milk and meat production, rural youth, agritourism, a union of winegrowers, and various consumer organisations. These organisations operate throughout the country and appear to share similar sustainability goals, whether it is for food production, being a responsible consumer, and/or preservation of the cultural landscape. Nevertheless, the term is not widely by these organisations to describe their activities.

The association of organic growers 'Deteljica' is the main organisation that can be considered to be working towards agroecology in Slovenia although it mainly focuses on organic farming and its development and legislative implementation. It was established in 1999 to connect organic farmers (See Initiative 4.4). The main idea of the association that can be directly connected to the term agroecology is the importance of ecology in agriculture.

Another NGO, the Union of Slovenian Organic Farmers - USOFA ('Zveza društev ekoloških kmetov Slovenije' – ZDEKS[7]) founded in 2017 also focuses on important topics for agroecology, such as producing safe and healthy food, animal welfare, environmental protection and biodiversity, although the term agroecology is not used.

The association for farmers that produce grass-fed beef meat and milk, Seneno[8], aims to increase the number of farms with grass-fed livestock. They work with educational organisations to help provide information on the advantages of grass-fed beef, as well as marketing and technological advances. They provide discounts for members on packaging, machinery and certification, and help them find marketing channels. They also encourage hay production based on traditional methods that include exclusively non-fermented and GMO-free feed[9].

[7] Zveza društev ekoloških kmetov Slovenije – ZDEKS; https://www.zdeks.si
[8] Hay produce association https://seneno.info
[9] Hay produce certificate: https://seneno.info/wp-content/uploads/2021/12/ZTPcertificiranje.pdf

The Consumers Association of Slovenia[10] is concerned with raising awareness of sustainable consumer behaviour, including encouraging the purchase of healthy and locally produced food, with as few additives as possible, no GMOs, and even the sustainable use of water and energy. They also fight for consumer rights, produce articles about food consumption that are published through their social media networks, educate public institutions about buying local and organic food, and manage projects on the food system.

3.4. PRACTICE

Slovenian farmers are not familiar with the term agroecology (SLO-KI-3 & KI-2) but they understand the concept of agroecological practices very well. Often they describe them as a "natural way of producing food without the use of synthetic substances, that favour knowledge exchange, coexisting with nature, biodiversity conservation, rural development, short food supply chains, higher added value and landscape conservation" (SLO-KI-1 & KI-2). These are, however, perceived as part of their farming objectives, but not as agroecology. Moreover, these aforementioned agroecological practices are mostly seen on smaller farms.

There are several organisations, mostly NGOs, which connect farmers or groups of farmers to knowledge on various types of farming systems, treating various pests and diseases, good practices being implemented on other farms, and new policies and regulations. These organisations mostly operate at the regional level. Some examples are 'Demeter Združenje biodinamičnih kmetov' (Association of Biodynamic Farmers), 'Združenje ekologov' (Organic Farmers Association), 'Izbrana kakovost' (Selected Quality; farmers who produce certified food of higher quality), and 'Zveza društev vinogradnikov Dolenjske' (Winegrowers Association). There are several cooperatives in different regions of the country which are owned by farmers, such as 'Kmetijska zadruga Metlika', Sevnica, 'Trebnje-Krka', and 'Loška zadruga'. These cooperatives sell within their stores raw agricultural products, reproductive materials, fertilizers or plant protection products, which they have either grown themselves or bought locally. They also have their wine production, buy animals collectively, process and sell meat, buy and process milk or buy and re-sell cereals. Based on the information provided by key informants and found on the organisations' websites, these associations are aware of the importance of some of the agroecological practices in farming, even if they do not prescribe the exact term. One of the most common agroecological practices, which was found in multiple farmers, is the processing of their raw materials and selling them through short, local supply chains that often involve the entire family. Many of these farmers focus on the added value of raw materials to enhance the economic profitability of the farm.

3.5. SCIENCE

The term agroecology is most commonly used among educators, mentors, researchers and university professors who teach agriculture and sustainable farming practices (SLO-KI-1, KI-2, & KI-9). Maribor has a program in organic farming that includes lectures where agroecology is specifically mentioned (SLO-KI-9). The expert interviews conducted show that agroecology is well known by many, especially university professors, some of whom have even written books and articles on the topic and use the term often (SLO-KI-8

[10] The Consumers association of Slovenia https://www.zps.si

& KI-9). Some universities, especially agricultural universities, although did not directly use the term "agroecology", emphasise achieving a higher level of self-sufficiency, where graduates gain extensive theoretical and practical knowledge of technology and business-organisational solutions.

Some of the most recognised agricultural research institutions in Slovenia are the Farming Institute of Slovenia ('Kmetijski inštitut Slovenija' – KIS[11]), the Institute for Control and Certification in Agriculture, Maribor ('Inštitut za kontrolo in certifikacijo v kmetijstvu in gozdarstvu Maribor' – KON-CERT[12], and the Institute for the Promotion of Environmental Protection ('Inštitut za promocijo varstva okolja' – IPVO[13].

IPVO, for example, maintains an approach that focuses on implementing and promoting innovative, healthy, responsible and sustainable lifestyles, as well as creating "green work opportunities" (such as more jobs in organic farming or research on sustainability), as important elements of the agroecological approach. Again, the term agroecology itself is not often used, but the implementation of its ideas and constructs is evident nonetheless. IPVO is the institution that introduced the only living lab found in Slovenia – the Dole Learning Centre, as well as the Ekomale project (see Initiative 4.1).

[11] https://www.kis.si [12] http://www.kon-cert.si [13] http://www.ipvo.si

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 2: An overview about initiatives, cases and examples described and analysed.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Inštitut za promocijo varstva okolja – projekt EKOMALE** *Institute for the Promotion of Environmental Protection – project EKOMALE*	Local/ National	Private Institute	Improving the economic performance of farms					
2	**Kmetijsko gozdarska zbornica Slovenije** *Chamber of Agriculture and Forestry Slovenia*	National	Chamber of Agriculture	Education and workshops for farmers					
3	**Učni poligon za samooskrbo Dole** *Learning Centre for Self-sufficiency, Dole*	Inter-national	Private Institute	Education and demonstration of practices					
4	**Združenje ekoloških pridelovalcev in predelovalcev Deteljica** *Association of organic growers and processors Deteljica*	National	Association/ NGO	Promote regional, fair, and organic food supply					
5	**Ekološka kmetija Kastelic** *Kastelic organic farm*	Local	Farm	Joint market presence					

Table 3: Additional initiatives, cases and examples in the country

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Centre for Vital Life	Inter-national	Local farm	Strengthening self-sufficiency innovatively, providing green jobs					✓
Društvo za permakulturo Slovenije *Permaculture Association* https://permakultura.si	National	French cheese factory	Permaculture education and support to individuals and organisations in setting up permaculture systems	✓		✓		
Inštitut Za Trajnostni Razvoj *Institute for Sustainable Development* http://www.itr.si/ https://www.facebook.com/InstitutZaTrajnostniRazvoj/?ref=page_internal	National	Media project	Integration of the principles of sustainable development into practice and strategic development documents			✓		
Združenje Demeter Slovenija *Demeter*	National	Private firm	Certification for biodynamic farming	✓		✓	✓	
Center za ekoremediacije (ERM) *Centre for Eco-remediation*	Inter-national	Public Association	Revitalization of the natural and social environment					✓
Kmetijsko gozdarska *Cooperative in Škofja Loka zadruga z.o.o. Škofja Loka*	Regional	Not-for profit membership organisation	Acceleration of economic benefits for its members	✓		✓	✓	

EDUCATION SCIENCE PRACTICE MOVEMENT LIVING LAB

INITIATIVE N°1 – INŠTITUT ZA PROMOCIJO VARSTVA OKOLJA

http://www.ipvo.si
http://www.ihps.si/rastline-tla-in-okolje/pilotni-projekt-ekomale/

INŠTITUT ZA PROMOCIJO VARSTVA OKOLJA
INSTITUTE FOR PROMOTION OF ENVIRONMENTAL PROTECTION (IPVO) – PROJECT EKOMALE

The main goals of the institute are to implement experimental educational strategies, concentrating on practice, with a focus on the responsible use and management of natural resources such as soil, water and biodiversity; practical training for "green professions"; establishing local self-sufficiency by creating local markets; and assistance with project and subsidy applications. IPVO is a private institute that operates at the national level, whose activities focus on professional approaches to reduce inputs and rely on the use of natural resources soil, water and plants for sustainable methods of production and processing. They operate according to the principles of agroecology, permaculture, biodynamics and ecoremediation. They also provide a wide range of services for farmers such as the design of permaculture arrangements (planning and implementation), soil analysis (physical and chemical) and water analysis.

KEY FEATURES
- **Type of education and training:** experimental education
- **Main topics:** improving the economic performance of farms
- **Training duration:** 1 day
- **Course language:** Slovenian
- **Accessible to:** IPVO and project partner

The institute is currently involved in "Ekomale - innovative practices and products of sustainable production on small farms in a time of climate change" project. They collaborated with the Institute of Hops and Brewing Slovenia, the Chamber of Agriculture and Forestry, the Biotechnical Faculty of the University of Ljubljana and four small conventional farms from different areas of Slovenia that are in transition to either organic or biodynamic farming. To ensure the success of the transfer, they rely on a system of 'mentor farms' for dissemination activities at fairs and on farms, with lectures given by the participating partners, and professional publications.

This project is trying to introduce new technological management procedures and innovative approaches on the farm, adapted to the geographical location and resources and knowledge available. The project focuses on smart management of natural resources, access to knowledge, and making farms more sustainable and competitive.

The project started in 2019 and will last for three years. It is funded by the 'Agencija RS za kmetijstvo in razvoj podeželja' – ARSKTRP (The Agency of the Republic of Slovenia for Farming and Rural Development[14]).

Picture 3: Herbal permaculture garden for education at Turšič farm. Source: http://www.ihps.si/rastline-tla-in-okolje/pilotni-projekt-ekomale/.

[14] https://www.bf.uni-lj.si/sl/organiziranost/agronomija/raziskave/raziskovalni-projekti/147/inovativne-prakse-in-proizvodi-sonaravnega-pridelovanja-na-malih-kmetijah-v-casu-podnebnih-sprememb-ekomale

WHAT CAN WE LEARN?

This project covers important elements to meet the future challenges of the agricultural sector: climate change, care for the environment, innovation in agriculture, sustainable approaches to food production, and development of new technologies and services that add value and improve the economy on farms. Waste reduction and the establishment of a bio-circular economy model will be developed for the participating farms. The goal is to serve as an example of good practice and a model for other farms. Moreover, it is expected, that farmers gain knowledge, information and new ideas, while also being mindful of agroecological approaches.

Kmetijsko gozdarska zbornica Slovenije

https://www.kgzs.si

INITIATIVE N°2 – CHAMBER OF AGRICULTURE AND FORESTRY SLOVENIA

KMETIJSKO GOZDARSKA ZBORNICA SLOVENIJE

CHAMBER OF AGRICULTURE AND FORESTRY SLOVENIA

The Chamber of Agriculture and Forestry of Slovenia (KGZS) was established 20 years ago as a legal entity. Membership for farmers is mandatory and linked to cadastral income – the presumptive income of farms. Currently, the organisation has 105.665 members, 104.163 individuals and 1.502 legal entities.

KGZS was established to protect the interests of agriculture, forestry and fisheries, and performs this function by giving recommendations on legislation and political debates. It provides agricultural public services and other activities for the advancement of agriculture and development in rural areas. KGZS is an organisation that conducts a series of training for farmers from very different fields on a broad range of topics and disciplines.

KEY FEATURES

- **Type of education and training:** workshops and activities for farmers
- **Main topics:** agriculture and forestry in general
- **Training duration:** depending on the type of education, mainly 1 day
- **Accessible to:** farmers – mandatory membership

One of the areas they focus on is organic farming. They understand organic farming as creating a balance within the soil-plant-animal-human system, which ensures the cycling of nutrients. Within their educational training for farmers, farmer's unions and farmer's associations, an emphasis is put on the knowledge of farmers and exchange to create trust. Moreover, they provide free professional materials to increase the knowledge of current or future organic farmers.

KGZS often organises events for farmers such as demonstrations of good practices, innovative and new agricultural machinery, and in some cases, open house events on farms that are successful in their approach to sustainability. They also provide advice on how to solve current problems and adapt to current conditions.

They have created a website to promote locally grown food that acts as a marketplace[15], where any farmer can add their produce and promote it. One of their long-term plans is to bring quality and local food to consumers.

Picture 4: Participants in the project. Source: https://www.kgzs.si/novica/projekt-opolnomocen-kmet-2019-06-18.

[15] Naša super hrana: https://www.nasasuperhrana.si

They recently developed a project called "Our Great Food", where they educate consumers on the advantages, importance and value of buying locally grown food, rather than. They also encourage and simplify public procurement, which is fairly lacking in Slovenia.

Another project carried out by KGZS in collaboration with the Association of Slovenian Rural Youth is "OpolnoMOČEN kmet, translated as "fully powerful farmer". The project's goal is to empower young farmers to engage in dialogue with stakeholders and to represent their interests, as well as those of young people living in rural areas. The project includes practical meetings with informal education methods. Young people thus gain concrete and real experience, while engaging in dialogue with stakeholders at the end of the meetings, where they can test their newly acquired knowledge. These workshops take place at agricultural high schools all over the country. Publications are planned that will describe the different challenges and problems of young farmers, and suggestions for future solutions.

WHAT CAN WE LEARN?

The education KGZS provides to farmers, especially young farmers, can help support the transition to sustainable farming by teaching those skills that save water resources, use soils sustainably, keep the air clean, conserve natural biodiversity, contribute to reducing climate change and manage waste wisely in the long term.

The project 'Our Great Food' also takes into account the reality that Slovenian farms are mostly small and family-run, and tries to create an online marketplace for short supply chains of local produce and food. All of these are important agroecological elements, even though the term itself is not used in the projects.

INITIATIVE N°3 – LEARNING CENTRE FOR SELF-SUFFICIENCY

http://www.ipvo.si/poligon-dole

UČNI POLIGON ZA SAMOOSKRBO DOLE
LEARNING CENTRE FOR SELF-SUFFICIENCY, DOLE

The Learning Centre, run by 'Inštitut za promocijo varstva okolja' (Institute for Promotion of Environmental Protection), started in 2010 with the idea of establishing a place for research and learning about self-sufficiency. The idea stemmed from the need for experimental and practical research, and learning. In the area of Poljčane, on approximately 1.5 ha, they have created a classroom in nature, on an originally non-functional and infertile site. In this 'classroom' they learn how to harvest rainwater, use solar energy, grow plants for food, build sustainable housing (such as a Mongolian house (yurt) or a dugout), and plant perennials (trees and shrubs). The centre was founded with personal resources and partly with the profits from the farm estate, which owns the land they use. They process the food they grow and sell it at farmer's markets. Some of the income made from markets is also used to fund the centre.

KEY FEATURES

- **Main topics:** experimental and practical research and learning of agroecological practices
- **Founded in:** 2010
- **Type of organisation supporting the living lab:** NGO
- **Type of actor involved:** scientists, farmers, students, food industry, environmental organisations and citizens
- **Scale of the living lab:** local, state, and international

Various projects are occurring in different parts of the terrain. On the flat parts, they made vegetable beds (or cardboard, raised, with biomass, growing bed) for soil and sediment research while the higher parts are engaged in research for ecoremediation, which supports soil health and biodiversity through revitalization. The concept of ecoremediation is used to protect and restore the environment and nature with natural and sustainable systems through prevention and cure (protection, restoration, and an ecosystem). The upper part of the terrain also includes a rainwater pond, which can irrigate the plants in the greenhouse. A water reservoir has been created for drinking water and irrigating beds since they are not connected to the public water supply network. They also have renewable solar energy sources, making them a great example of self-sufficiency.

The guiding principles for their research are permaculture, natural farming and the biointensive method[16]. Although these principles differ, their common application is to mimic the rhythm of nature and not to introduce anything into the soil that would interfere with natural processes.

The centre is innovative in terms of implementing practical knowledge and experience through experimental educational activities and open learning environments.

[16] The biointensive method stems from the need for self-sufficiency. It supports dense planting of plants that protect microorganisms in the soil and reduce water evaporation, thus increasing yields.
[17] http://www.socialneinovacije.si/biti-samooskrben-na-enem-hektarju-ucni-poligon-za-samooskrbo-dole-poljcane/

Picture 5: Visitors in Dole (left) and overview of Dole (right). Source: Ana Vovk Korže.

The centre uses a multidisciplinary approach where they implement research, conduct educational activities and work together with the community[17]. Moreover, the centre participates in an international network of ecovillages, which is supporting the development of ecovillages in Slovenia. In addition, they are involved in various associations where they exchange information on field operations to implement improvements on the training ground, mostly in education. Through a project on local sustainable food systems, they enable the cooperation of farmers and actors in developing the food supply chain, marketing local produce and enhancing food safety. The participating actors in the centre are environmental organisations that use the centre for professional excursions and demonstrations of a variety of new equipment and tools. The centre also hosts meetings or seminars of farmer unions, schools, ministries and municipalities.

Picture 6: Beds/patches at Dole. Source: Ana Vovk Korže.

WHAT CAN WE LEARN?

The centre is a learning place to develop and share with the public new scientific topics in practice, namely ecoremediation, green technologies, permaculture, biodynamic farming and agroecology - as innovative approaches to self-sufficiency.

POSITIVE IMPACTS

COOPERATION: The centre cooperates with many different actors (environmental organisations, the union of farmers, the food industry, etc.).

EDUCATION: Many different actors are involved in activities where they share experiences and apply knowledge in practice. They largely pass on their knowledge to young people and promote living in a sustainable environment. The initiative has also created a classroom in nature.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: They use natural resources efficiently as the whole centre is energy self-sufficient. The diversity of microhabitats created allows for higher resilience of the ecosystem.

INITIATIVE N°4 – DETELJICA

http://www.ekodeteljica.si

ZDRUŽENJE EKOLOŠKIH PRIDELOVALCEV IN PREDELOVALCEV DETELJICA

ASSOCIATION OF ORGANIC GROWERS AND PROCESSORS DETELJICA

EcoLocal Deteljica is a nationwide association of organic growers and processors founded in 1999 in Celje. The association was established to connect organic farmers and ensure faster circulation of information between farmers and assistance in sales, information and promotion. They currently have 175 farmers as members. The association also receives funds from the EU.

The main goals of the association are the following:

- Education of farmers who want to get involved in organic production.
- Training on specific topics for organic farmers.
- Production of educational material and awareness raising for the public on organic production.
- Marketing assistance for farmer members, including finding markets for surpluses.
- Joint actions with the Association of Organic Farmers of Slovenia in various places nationally and abroad.
- Participation in public events such as fairs and exhibitions.
- Professional assistance to farmers in adapting their farms to the requirements of the guidelines for organic farming.
- Establish links between organic producers and consumers.

The members of the association are either farmers (primarily engaged in animal husbandry and breeding, with a smaller percentage growing fruits and vegetables) who produce organic food or consumers who are interested in buying organic food. The association's website allows consumers to buy directly from farmers, but most farmers also sell their products at local markets. The concepts of agroecology they are working with are mostly based on organic farming, to establish a closer link between farmers and consumers.

KEY FEATURES

- **Main goal:** joint market presence
- **Founded in:** 1999
- **Type of organisation:** NGO
- **Farming sector:** mostly livestock raising, but also fruit and vegetables growing
- **Scale of the organisation:** national

Picture 7: Members of Deteljica association on the local market. Source: http://www.ekodeteljica.si/domov/.

WHAT CAN WE LEARN?

Deteljica enables its members to have a wider range of markets for their products, especially by marketing their produce jointly and/or strengthening direct sales.

POSITIVE IMPACTS

SUSTAINABLE AND FAIR ECONOMICS: By entering the market together, farmers attain fairer prices and stabler incomes.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: Commercialisation of new products is easier for the farmers because of the direct connection between the associations and the consumers (website, public events, etc.).

LIMITATIONS & CHALLENGES

COOPERATION: The association currently has limited cooperation with related organisations but they would like to change this in future.

[37] https://www.thegef.org [38] https://www.helvetas.org/en/switzerland/how-you-can-help/follow-us/blog/inclusive-systems/Navigating-Moldova

INITIATIVE N°5 – KASTELIC ORGANIC FARM

EKOLOŠKA KMETIJA KASTELIC

https://kmetijakastelic.si

KASTELIC ORGANIC FARM

Farm Kastelic is an organic farm from the Dolenjska area, located in Mali Vrh, Mirna Peč (southeast of Slovenia). The farm is engaged in several activities including raising cattle (in collaboration with two other organic farms), the production and processing of cereals (flours, porridges, pasta) and their main activity, growing fruit. They dry their apples or process them into juice, vinegar or chips. The entire Kastelic family works on the farm, along with three full-time employees.

Today, the farm is made up of 6 ha of forest and 29 ha of arable land, 4 ha of orchards, 17 ha of fields and just under 8 ha of meadows. In 2019, they received a grant from the Rural Development Programme, which co-financed large-scale investments in fruit growing. With these funds, they were able to create two greenhouses orchards that are protected from frost, drought and hail. In the future, they plan to upgrade some of the apple orchards with an irrigation system of anti-hail nets and partly with micro-irrigation, which protects apple trees from frost. They have also built a large buried meteor water reservoir where rainwater is stored, which can be used for irrigation in case of drought.

KEY FEATURES

- **Agroecological practices concerned:** link to organic farming
- **Founded in:** several generations back
- **Farming sectors concerned:** fruit growing
- **Lead organisation:** organic farm
- **Number of stakeholders involved:** 2 for innovative product – yogurt, 6 for apple brand
- **Scale of the initiative:** several organic farmers

A range of agroecological practices they implement are ensuring and improving soil health and fertility. One of those practices is increasing the biological activity of the soil by increasing the amount of organic matter, improving positive ecological interactions and synergies between different components of the agroecosystem and providing economic diversification. All these methods are approved by strict organic farming standards. All these methods are at the root of their vision of organic farming and thus their understanding of agroecology. They believe that to live off nature for generations, you have to understand it, respect it and work by its rules.
The farm also collaborates with five other organic farms that produce apples and apple products under the same brand name of "Bio s kmetije" ("bio" from the farm) and sell their products through the association of the Group of Organic Fruit Producers. Their apples and apple juices are sold to schools, kindergartens and other public kitchens. Since last year, they have also set up an online store on their website where consumers can buy all of their products. They even offer home delivery and/or the consumers can stop by their farms to buy their products there.

The farm works closely with one other organic farm, Kukenberger, whose main activity is milk production and processing. These two farms created a yoghurt named "domače jabolko" (homemade apple) that consists of yoghurt from Kukenberger and apple puree from Kastelic apples. The product got a prize for innovative foods, which is given by the Institute of Nutrition in Slovenia.

They fund their business by reinvesting the surplus profit and have applied for EU funding for young farmers, which offers non-refundable funds, as well as some other state or municipality calls for farmers.

WHAT CAN WE LEARN?

They are a good example to show the advantage of collaboration between farmers for product creation and marketing including the optimization of supply routes with more favourable offers due to optimised supply, lower purchase prices of raw materials and greater bargaining power.

Getting farmers into producer organisations and groups improves their negotiating position and enables the integration of farmers for joint planning and marketing of crops, which indirectly affects the income performance of each member of the organisation or group, and will have a direct impact on the establishment of local markets. One goal is to increase connectivity and market orientation through organised sales and joint market presence.

Picture 8: Jaka and Toni with award-winning organic fruit yoghurt. Source: Jaka Kastelic, 2021.

POSITIVE IMPACTS

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: Collective market entry, through cooperation between actors.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Supporting fair trade for all actors in the food system, ensuring connectivity between producers and consumers.

5. CONCLUSION AND FUTURE PERSPECTIVE

Educators and researchers still have a lot of work to do in Slovenia to reach policymakers and assist in the development and understanding of the concept of agroecology. An initial step for this expansion can be taken by educating young people who are interested in agriculture and will eventually be employees in the agricultural sector and work on relevant policies. While additional educational opportunities were found on relevant topics, the lack of recognition of the term agroecology amongst key informants can be linked to the disconnection between scientific discoveries and practising farmers. Therefore, the expansion of agroecology could be increased by connecting such data with farmers who can learn how certain practices damage soil and their yields.

Farmers would be more confident in transitioning if knew more about the advantages and opportunities of implementing agroecological practices. Furthermore, farmers are aware of agroecological practices but do not implement them because they are not perceived as economically viable. Moreover, as Vovk Korže (2016) concludes, there is great potential for development in agroecology in Slovenia, with the educational actors playing a big part in educating young people, as long as funding and policy facilitate this.

Strengthening organic and biodynamic agriculture, good CAP policy measures for the implementation and protection of habitats, integration into short chains, and the ability of farmers to sell directly are perceived by the key informants as opportunities and perspectives within agroecology in Slovenia. Based on the market review, the connection between farmers who apply agroecological principles and agricultural associations would be of great importance to have a shorter and sufficient supply chain.

Often, agroecology is perceived as the implementation of organic farming practices. At the national level, organic farming was recognised as an opportunity for Slovenian farmers to provide safe and quality food to consumers, thus it is gaining increasing importance. Indeed, the Action Plan emphasizes the importance of organic farming in Slovenia for the Development of Organic Agriculture in Slovenia.

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MAPPING AGROECOLOGY IN SPAIN

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SPAIN

EXECUTIVE SUMMARY

As part of the Agroecology for Europe (AE4EU) project financed by Horizon 2020, this report draws from eighteen interviews carried out in 2021 to provide an overview of the current development of agroecology in Spain. The report reflects the insights provided by twelve key informants and six initiative representatives from diverse agroecological backgrounds in science, movement, and practice. The Andalusian agroecology movement is reviewed to demonstrate how agroecology was established in Spain as an interdisciplinary approach that continues to evolve with a food systems perspective in line with food sovereignty. Although the report focuses on initiatives that advocate this interpretation of agroecology, attention is also given to research and training initiatives contributing through more specific scientific fields.

Recurring themes among the informants were the precariousness and general lack of institutional support in the agroecology sector. Commonly mentioned challenges included generational renewal in rural areas, as well as access to land, training, project funding, and markets. While innovative food hubs and sales outlets for agroecological produce are developing in several regions, many smaller-scale farming projects still struggle to become economically viable. The few instances of institutional support generally come from city governments, oftentimes in collaboration with NGOs and foundations, in an attempt to upscale agroecology, typically through local organic production. Whereas select public procurement initiatives secure demand for local production, particularly in school cafeterias, increasing consumer demand remains a challenge to upscaling agroecological production. This challenge is magnified by the rise of the conventional organic sector, as relatively few consumers are willing to engage in the food activism necessary to support small-scale farmers managing biodiverse farms.

Throughout the report, numerous agroecological initiatives are mentioned under the following categories: Education and training, Movement, Practice, and Science. Additionally, a "Living Lab" initiative that combines elements from these four categories is presented. The mapping also showcases six initiatives in further detail. These include an agrarian union that offers training based on food sovereignty; one of the country's leading seed networks; a national network empowering women livestock farmers; a federation of organic consumers and producers; a consortium fostering local agroecological policy development including the right to food; and a research group promoting family farming and alternative food systems. Although Andalusia's agroecology movement has displayed an exemplary development for two decades, informants perceived that most agroecological activity currently takes place in Basque Country, Valencia, and Catalunya. The different types of structures and actors involved in these regions demonstrate that there is no single model that can be applied to every region and that fomenting agroecology must take into account the unique social and environmental characteristics of each territory.

SPAIN

EXECUTIVE SUMMARY (IN SPANISH)

Como parte del proyecto Agroecología para Europa (AE4EU) financiado por Horizon 2020, este informe se basa en dieciocho entrevistas realizadas en 2021 y presenta un resumen del desarrollo actual de la agroecología en España. La publicación refleja las ideas aportadas por doce informantes y seis representantes de iniciativas, ambos de diversas procedencias agroecológicas en ciencia, movimiento y práctica. Se revisa el movimiento agroecológico andaluz para demostrar cómo la agroecología se estableció en España con un enfoque interdisciplinario, el cual sigue evolucionando bajo una perspectiva de sistemas alimentarios acorde con la soberanía alimentaria. Aunque el informe se centra en iniciativas que defienden esta interpretación de la agroecología, también se presta atención a las iniciativas de investigación y formación que contribuyen a través de campos científicos más específicos.

La precariedad y la falta general de apoyo institucional en el sector agroecológico fueron temas recurrentes entre los informantes. Los obstáculos mencionados frecuentemente incluyeron el relevo generacional en las áreas rurales, así como el acceso a la tierra, capacitación, financiación de proyectos, y mercados. Si bien se están desarrollando centros logísticos y puntos de venta innovadores para productos agroecológicos en varias regiones, muchos proyectos agrícolas de pequeña escala siguen luchando por conseguir viabilidad económica. Los pocos casos de apoyo institucional generalmente provienen de gobiernos municipales, muchas veces en colaboración con ONGs y fundaciones, en un intento de elevar la agroecología a una mayor escala, generalmente a través de la producción ecológica local. Ciertas iniciativas de contratación pública aseguran la demanda para la producción local, particularmente por los comedores escolares. A nivel del consumo general, aumentar la demanda de los consumidores sigue siendo un desafío para incrementar la producción agroecológica. Este desafío se ve magnificado por el auge del sector ecológico convencional, con pocos consumidores dispuestos a participar en el activismo alimentario necesario para apoyar pequeños agricultores que gestionan granjas biodiversas.

A lo largo del informe, se mencionan numerosas iniciativas agroecológicas bajo las siguientes categorías: Educación y formación, Movimiento, Práctica y Ciencia. Adicionalmente, se presenta una iniciativa "Living Lab" que combina elementos de estas cuatro categorías. El mapeo también muestra seis iniciativas con mayor detalle. Estos incluyen un sindicato agrario que ofrece formaciones basadas en la soberanía alimentaria; una de las redes de semillas líderes en el país; una red nacional que empodera a las mujeres ganaderas; una federación de consumidores y productores ecológicos; un consorcio que fomenta el desarrollo de políticas agroecológicas locales, incluido el derecho a la alimentación; y un grupo de investigación que promueve la agricultura familiar y los sistemas alimentarios alternativos. Bien que el movimiento agroecológico de Andalucía se desarrolló de forma ejemplar durante dos décadas, los informantes percibieron que la mayor parte de la actividad agroecológica se desarrolla actualmente en el País Vasco, Valencia y Cataluña. Los diferentes tipos de estructuras y actores involucrados en estas regiones demuestran que no existe un modelo único que se pueda aplicar a todas las regiones, y que el fomento de la agroecología debe tener en cuenta las características sociales y ambientales específicas de cada territorio.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Spain is summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in Spain.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	Research - University	Food sovereignty	
2	Farmer - farmers organisation	Training	
3	NGO	Technical consultancy	
4	NGO	Livestock/permanent grasslands	
5	Government - Policymaker	Research	
6	NGO	Technical consultancy	
7	Research - University	Research and Education	
8	Research - University	Permanent crops and forestry	
9	Farmer - farmers organisation	Market coordination and certification	
10	Research - University	Socio-economic research	
11	Research - University	Livestock/permanent grasslands	
12	NGO	Technical consultancy	

2. CONTEXT

Agroecological practices have long existed in Spain through traditional agricultural systems managed by peasants throughout the country (Sánchez Taboada et al., 2020). However, since the Green Revolution and subsequent processes of agricultural modernisation, traditional peasant knowledge and culture on natural resource management quickly eroded as it became more and more economically unviable (Migliorini et al., 2018). Beyond the environmental implications of technological innovations in Spanish agriculture, soaring unemployment was the most immediate consequence affecting agrarian regions, particularly Andalusia. As an alternative to the increasingly globalised and industrialised food system, Spain's agroecology movement emerged in Andalusia with a strong socio-political orientation (González de Molina and Guzmán, 2016). In the process of developing activities to empower jobless farm labourers in Andalusian farmer cooperatives as of the late 1980s, university researchers adopted the term 'agroecology' based on Altieri and Gliessman's initial publications, looking to build on the concept of agroecology through the social sciences (González de Molina and Guzmán, 2016). The Andalusian agroecology movement also supported the development of organic agriculture which had been developing in Spain through the 1980s with organic associations emerging in several regions (Gonzálvez and Martín, 2009). Today, various productive experiences fall under agroecology. These are not necessarily certified organic, and the farmers do not necessarily identify with the term 'agroecology'. This term is poorly known among the general public, although its use is becoming more common in a minor proportion of the population, that usually understands agroecology as a grassroots social movement upholding the principles of food sovereignty (Sánchez Taboada et al., 2020).

Spain currently has around a million farms, 93.4% registered by operators ("natural persons") who average over sixty years of age. The remaining 6.6% are registered under a company name ("legal persons") and represent 42% of the total production value (Miguel, 2021). From farm inputs to food commercialisation, farmers are losing autonomy and increasingly becoming price-takers in value chains with increasing integration and oligopolistic tendencies (COAG, 2019). Family agriculture and rural populations are progressively replaced with larger farms and speculative investments that fit the global economic framework. While the surface area dedicated to horticulture and fruit production grew by over 130,000 ha from 2007-2016, the number of farm operators shrunk from 215,000 to 172,000 (COAG, 2019). Whereas Spain had nearly 250,000 cow dairy farms in 1988, there were under 15,000 by 2019 (COAG, 2019). Contributing to Spain's trade balance, the growing agricultural business based on economies of scale is backed by strong lobbies at the national (ESP-KI-2, Sánchez Taboada et al., 2020) and regional (ESP-KI-12) levels. This industrial production model has come at a strong social and environmental cost, thereby sparking a movement that persists decades later.

As of the late 1950s, the intense industrialisation of agriculture in Spain resulted in a continuous loss of the rural labour force, substituted by machines and chemical processes. Following the death of Franco in 1975, another intense period of technological change and mechanization coincided with an economic crisis increasingly impacting agrarian regions. As the industrial and service sectors were unable to absorb the new wave of workers driven off the fields, an Andalusian protest movement rose against unemployment and in favour of agrarian reform (González de Molina and Guzmán, 2016). By the early 1980s, protests in Andalusia involved farm occupations, sit-ins, and hunger strikes. These protests, in which the agrarian labour union Sindicato de Obreros del Campo (SOC) played a leading role, received much media coverage. Meanwhile, researchers from the University of Córdoba's Institute of Sociology and Peasant Studies (ISEC) were heavily involved in the labourers' movement[1], participating in assemblies and protests, collaborating

[1] Translated from "movimiento jornalero", existing English translations have included "landless peasant movement" and "laborers' movement". Although the literal translation would be "day laborers' movement", the author has chosen "laborers' movement" as used in the previous 2020 mapping report. It is worth noting that the "movimiento jornalero" of the 1980s formed part of a larger peasant movement, not exclusively made up of day laborers.

through agrarian policy analysis, and initiating a process of technical assistance (González de Molina and Guzmán, 2016).

By the mid-1980s, the environmental and labourers' movements converged in Andalusia with plans to combine environmental protection and rural employment. While the labourers' movement continued occupying lands to help jobless labourers return to work, emerging cooperatives had to prove their productive capacity in comparison to the high-yielding industrial agriculture adopted in large estates. In an attempt to justify sustainable production while promoting job creation, SOC turned to its ally ISEC that began assisting these cooperatives in their agroecological transition as of the late 1980s, with both organic technical support and local marketing arrangements[2] (González de Molina and Guzmán, 2016). By the mid-1990s, organic producer-consumer associations operated in several Andalusian cities united under the Andalusian Federation of Organic Consumers and Producers (FACPE), and postgraduate agroecology programmes were established at Andalusian universities. Shortly after the Socialist Party-Andalusian Green Party coalition began governing the region, a €93,8 million organic agriculture plan was approved for 2002-2006 and carried out with an agroecological perspective. As a result, the Department of Agriculture's Directorate General of Organic Farming boosted local production and consumption of organic products, developing composting programmes, providing training, supporting producer-consumer associations as well as local markets and fairs, and initiating massive public procurement for cafeterias in schools and public hospitals (González de Molina and Guzmán, 2016).

The power dynamics over land highlight the inevitable political dimension of agroecology, with different implications among Spanish regions. Andalusia's large farms and relatively few landowners provided the conditions facilitating the social movement powered by landless labourers. Contrarily, the northern region of Galicia is characterized by smaller farms with more landowners, along with higher productivity linked to the cooperative use of the land also used for self-consumption vegetables. Moreover, the Galician forestry law (the Lei del Monte), stipulates that "annual assemblies take the decisions about land use management and how the benefits derived from projects and activities are to be reinvested and distributed. By law, at least 40% of the annual turnover has to be reinvested in land management and improvement" (Dominguez Garcia et al., 2017). The horizontal governing structure in Galician law allows communities to reevaluate the role of communal herds, not only with an economic rationale but also based on the management of local resources, to avoid negative externalities, in this case to prevent forest fires. The first two Galician communities to register as Indigenous and Community Conserved Areas (ICCA Registry[3]) in 2017, Santiago de Covelo and the Froxán Common Woodlands, are both implementing forest fire prevention strategies[4]. In the past years, particularly since the 2017 forest fires, indicators show new trends in an increasing number of animals, while in some places human populations are rising where they were constantly decreasing before (ESP-KI-8).

As of the 21st century, agroecological transition processes have been promoted to resist land grabbing and speculation threatening agricultural land surrounding large cities (Migliorini et al., 2018). The years following the 2008 financial crisis, marked by high unemployment rates and massive protests against the austerity measures, also triggered grassroots agroecological initiatives. The "intensity of citizen mobilizations (e.g. 15M, PAH, Mareas, etc.) stimulated the emergence of numerous urban (grupos de consumo, urban gardens, etc.) and neo-rural (i.e. young people returning to the countryside to undertake productive projects) agroecological initiatives" (Sánchez Taboada et al., 2020). While this movement contributed to a rise in agroecological initiatives during the 2011-2015 period (Pérez-Sanchez et al., 2022), it also led civil society groups to form and

[2] The development of organic agriculture at the European level contributed to the implementation of agroecology in Andalusia. Tierra y Libertad was the first cooperative to receive counselling in organic practices in a joint effort from both ISEC and researchers from the University of Wageningen. The second cooperative, La Verde, adopted an organic approach incorporating the recovery of traditional crop varieties alongside ISEC agronomists within a European Union research project focusing on ancient Cucurbitaceae varieties. In the third cooperative, El Romeral, ISEC agronomists engaged in a redesign of the agroecosystem within another European Union research project focusing on the role of livestock and agroforestry in organic farming systems. In this third initiative, ISEC developed short distribution channels to strengthen ties with urban social movements, thereby creating organic producer-consumer associations, which to this day are coordinated under the Andalusian Federation of Organic Consumers and Producers (FACPE) (González de Molina and Guzmán, 2016).

[3] https://www.iccaregistry.org/en/explore/Spain [4] https://www.iccaregistry.org/en/explore/Spain

eventually permeate city councils in 2015 (ESP-KI-7). The 2015 wave of electoral change in city governments across the country was favourable to agroecological development at the local level, leading cities to join the Milan Urban Food Policy Pact among other initiatives.

Nearly all informants differentiated agroecology from organic agriculture based on agroecology's wider, multidimensional approach. While organic agriculture still provides an agronomic foundation for the growth of agroecology in Spain, the degree of importance given to certified organic agriculture within agroecology varied among informants. Many of them criticized organic regulations (or lack of) based on agronomic[4] (ESP-KI-2, KI-3, KI-4, KI-6, KI-7 & KI-12) and social/commercial[5] (ESP-KI-1, KI-2, KI-3, KI-4, KI-7, KI-9, & KI-12) aspects, both associated with a "conventionalised" organic sector. There was a strong consensus among informants and initiative representatives that organic input-substitution and organic export models are not agroecology. Nonetheless, elements of organic input substitution can be present among farmers initiating an agroecological transition, and consumer groups often include certain products from outside their region. Informants described the Spanish agroecology movement as deeply rooted in the socio-politics of food sovereignty, and as a framework fostering social justice, circular economy, rural populations and generational renewal in the agrarian sector.

Strategies promoting agroecology vary and have different starting points. One only considers productive initiatives born with a high standard of agroecological intentions, while another has a step-by-step approach to reach a wider farmer base. For the latter, conventional producers and livestock farmers can be reached, e.g., with composting and pest management courses (ESP-KI-12). Whereas attracting conventional farmers is critical to upscaling agroecology, convincing farmers also depends on the existence of market structures that facilitate their transition. Meanwhile, a major obstacle that many landless agroecology enthusiasts face is access to land (ESP-KI-2, KI-3, KI-4, & KI-7).

Although agroecological perspectives vary and some divisions exist within the movement, economic barriers appear to be the greatest challenge to its expansion. In agroecological production, new projects that find an alternative to the neoliberal model often assume a work overload to address the situation of precariousness, while a lack of articulation and excessive isolation further aggravates economic viability (Sánchez Taboada et al., 2020). Several informants described agroecological production as excessively fragmented, with many small initiatives failing primarily due to a deficit in distribution and commercialization (ESP-KI-1, KI-2, KI-3, KI-5, KI-6, & KI-12). Meanwhile, a fear of cooptation has led more holistic or pure agroecological initiatives to not participate in certain upscaling platforms (ESP-KI-12). Within livestock farming organisations, disagreement exists over the measures necessary to protect livestock from wild predators, with added tension from animal rights advocates defending coexistence while criticizing meat consumption (ESP-KI-1). Regarding access to agroecological food, although initiatives focus on the right to food, informants stressed that physical and economic access is limited for many consumers.

The current economic model is often seen as an underlying obstacle to developing agroecology (ESP-KI-6, KI-8, & KI-10), particularly as negative externalities (e.g., social and environmental costs) are neither internalized in food prices nor visible to the wider population. Whereas boosting agroecological production depends on consumer support, expanding agroecological demand is hindered by the unbalanced competitive relationship with the dominant (and subsidised) agricultural model that prioritises economies of scale over environmental and social impact on local communities.

[4] Including a critique of "input-substitution" organic agriculture, limitations regarding traditional seed use and sale, derogations allowing use of (untreated) conventional seed and seedlings, use of processed manure from certain conventional factory farms, lack of vegetation cover under fruit trees

[5] Including a critique of supermarket organic products often citing export-orientation, with two KIs adding lack of social justice involving worker exploitation

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

Although there is no undergraduate university degree in agroecology in Spain, initial postgraduate degrees grew out of the Andalusian agroecology movement at the Institute of Sociology and Peasant Studies (ISEC). In 1991, the Doctorate programme "Agroecology, Sociology and Sustainable Rural Development" was launched with strong ties to the Latin American agroecology movement, followed by a Master´s programme in 1996 in collaboration with the International University of Andalusia (UNIA). The University of Pablo de Olavide (UPO) is now a collaborator in this Master´s programme with the support of its Agro-Ecosystems History Laboratory. Between UNIA and UPO, the Master's Degree in Organic Agriculture and Livestock complements the original Master's with a professional orientation centred more on productive activities.

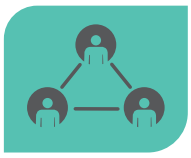
Today, several regions offer postgraduate programmes in agroecology, covering a diverse set of disciplines and perspectives. In Catalunya, a Local Agroecological Dynamization course is offered by the Autonomous University of Barcelona (UAB) and its Institute of Government and Public Policy (IGOP), while the University of Barcelona (UB) offers a Master's Degree in Organic Agriculture that also features a variety of agroecological experts. In the region of Valencia, the University of Miguel Hernández (UMH) has a Master's Degree in Agroecology, Rural Development and Agro-Tourism. In recent years, the University of La Laguna (ULL) from the Canary Islands started a Master's Degree in Agroecology, Food Sovereignty, Urban Ecology and Rural Development Cooperation. In Galicia, the Universidad de Santiago de Compostela is currently in the process of approving a new Master's Degree in Agroecology. In Aragón, the University of Zaragoza offers a 1-ECTS credit course called "Agroecology, Political Ecology and Rural Development". Other postgraduate programmes focus on the global environmental crisis from various outlooks and address agroecology among other similar approaches. The Autonomous University of Madrid (UAM) has a new Master's Degree in Ecological Humanities, Sustainability and Ecosocial Transition (MHESTE) that allows students to earn half of their credits by completing the Diploma of Specialization in Sustainability, Ecological Ethics and Environmental Education (DESEEEA) held at the Polytechnic University of Valencia (UPV).

Public vocational training schools are increasingly adopting agroecology. The Escola Agrària de Manresa in Catalunya has offered a formal training course in agroecology since 2010, and the Spanish Society of Organic Farming (SEAE) is now working with the Ministry of Education to complement it with an advanced ("ciclo superior") course (ESP-KI-10). In Extremadura, the agrarian training school in Navalmoral de la Mata helps organise and finance training that covers deficiencies identified by local associations. For example, given the difficulties that women experience engaging in jobs that traditionally have been assigned to men, the training school provided a course on the use of agricultural machinery for and by women (ESP-KI-11).

Over the past decades, union organisations tied to La Via Campesina have offered agronomic and political training in agroecology, emphasizing the principles of food sovereignty. Certain members of the National Coordination of Farming Organisations (COAG), particularly EH-NE-Bizkaia in the Basque country and the Sindicato Labrego in Galicia are among the few unions that persistently offer training in agroecology. COAG also has an itinerant training school called Escuela de Acción Campesina that changes location after each training period.

Hands-on training in extensive livestock farming is held in shepherd schools throughout the country, with 4-6 month programmes based in several regions. These schools include Artzain Eskola (Basque country, since 1997), Escola de Pastors (Catalunya, parts of the Pyrenees in Aragón and France), INLAND - Campo Adentro (Cantabrian Coast and Sierra Norte of Madrid), IFAPA's Escuela de Pastores under the regional government (Andalusia, parts of Extremadura or Murcia), Escuela de Pastoreo de Aragón 'La Estiva' (municipal project based in San Juan Plan, Aragón), and Coopradro Foundation backed by provincial and regional institutions (Tajo-Salor-Almonte area of Extremadura). Shepherd schools based in Castuera (Extremadura) and Elche (Valencia) offer shorter training programmes, with the support of their regional governments (Plataforma por la ganadería extensiva y el pastoralismo, 2019).

Several organisations, primarily non-profits, offer various theoretical and practical courses for producers, as well as for local officials in municipalities implementing agroecological policies. Such organisations include SEAE[6], Ecologistas en Acción[7], Entretantos[8], CERAI[9], FIAES[10], Justicia Alimentaria[11], and Germinando[12]. The National Network of AgroEcological Reserve Territories (Red TERRAE) operates in municipalities that have engaged in an agroecological transition, training elected council members and a team of local technicians.



3.2. LIVING LAB

Living labs conduct experiments in farms within local or regional groups engaging both researchers and farmers. A multi-stakeholder engagement is maintained indefinitely in the co-creation of innovations that may involve both social and technical aspects. Living labs can embody governance solutions, accelerating the transition towards sustainable climate and environment-friendly farming practices (European Commission, 2019). Adopting ecological practices and adapting agricultural production to climate change is a global challenge requiring innovative place-based solutions. In response to long-existing regulations threatening critical ecosystem services, groups have formed in defence of biodiversity, leading to a nationally coordinated network of living lab projects, the Spanish seed network called Red de Semillas "Resembrando e intercambiando" (RdS).

Managing agrobiodiversity with open-pollinated heterogeneous seeds, farmers hold a critical position in agroecological research, given that autochthonous varieties of crops possess information flows that are adapted to local agro-environmental conditions (Sanz-Cañada et al., 2021). This adaptation to changing weather patterns is ongoing in local varieties as long as farmers continue to select, conserve, and re-use their seeds. While this practice has been illegitimated with the rise of high-yielding and high input-dependent commercial varieties (in conformity with uniformity and stability requirements), genetic erosion and the associated loss of traditional knowledge have accelerated. Engaging farmers, technicians, researchers, unions, and consumers, the regional seed networks and cooperatives under the RdS are leading a movement to save remaining local varieties from extinction, allowing them to evolve with climate change and be subject to consumer appraisal.

RdS and its members work in collaboration with public seed banks, university researchers, and farmers to recover and characterize local varieties. As an intermediary between seed banks (either institutional or community-based) and farmers' field trials, the seed networks and collectives under RdS engage in participative research projects typically focusing on the description and evaluation of local varieties. Given the loss of varieties over the past

[6] https://www.agroecologia.net/ [7] https://www.ecologistasenaccion.org/ [8] https://www.entretantos.org/ [9] https://cerai.org/ [10] https://multiversidad.es/
[11] https://justiciaalimentaria.org/ [12] https://germinando.es/

decades, access to local seeds can depend on public seed banks, such as the National Centre of Plant Genetic Resources (CRF-INIA), the germplasm bank of the Valencian Institute of Conservation and Improvement of Agrodiversity (COMAV-UPV), the germplasm bank of the Centro de Investigaciones Agrarias de Mabegondo in La Coruña, or Zaragoza's Horticultural Germplasm Bank (BGHZ-CITA). However, as public seed banks often lack detailed descriptions of older rescued varieties, missing information on the traits traditionally associated with a variety can jeopardize the seed selection process when comes time to renew a batch. As in-house multiplications often cannot apply the selective pressure routinely performed by farmers harvesting farm-saved seed, the genetic balance of seed banks' harvested seed can easily drift away from the variety's forgotten desired traits. In an attempt to document, share, and protect traditional ecological knowledge, a citizen science project called CONECT-e has been co-designed by RdS and an interdisciplinary scientific team (Benyei et al., 2021).

3.3. MOVEMENT

Spain's agroecology movement is carried out by a variety of local grassroots organisations, seed networks, unions, NGOs, and researchers all assisting producers throughout the food chain. Their efforts are receiving support from a growing number of local and sometimes regional governments, as well as foundations, leading efforts to upscale agroecology. Core activities take place under a food sovereignty framework and develop under several approaches including feminism as well as the social and solidarity economy (Sánchez Taboada et al., 2020). While a small list of unions under the National Coordination of Farming Organisations (COAG) are active in the food sovereignty movement, other unions are also contributing to agroecology. Similar to Agroecology Europe Youth Network's 2020 mapping report (Sánchez Taboada et al., 2020), informants identified regions with greater agroecological initiatives more or less in the following order: the Basque Country, Valencia, Catalunya, Andalusia, Madrid, Navarra and Galicia, although agroecological initiatives are present in all regions.

While the agroecological movement is highly dependent on civil society involvement, institutional support, although oftentimes temporary, gives alternative food systems much-needed space to grow. Social movements in Catalunya and the Basque country were often cited by informants, some of whom associated social activism in these regions with a strong cultural identity tied to peasant agriculture. Whereas Catalunya stands out with numerous small consumer groups, the Basque country is recognized for its development in community-supported agriculture and union support (Urgenci, 2016; ESP-KI-2 & KI-7). Informants often referred to Valencia as the new model to follow given its institutional support at local and regional levels (López-Garcia et al., 2020; ESP-KI-3, KI-5, KI-9, KI-10, & KI-12). Other regional governments providing support include both the Balearic and Canary Islands (Sánchez Taboada et al., 2020; KI-ESP-10; ESP-KI-10 & KI-12) and Navarra (López-Garcia et al., 2019). It was noted that many traditional farming experiences throughout the country practice agroecology without necessarily using the term, such as in Galicia or Asturias.

The marketing of agroecological produce often revolves around consumer groups and farmer markets. Organic markets called 'ecomercados' are increasingly common, some of which accept alternative organic certifications such as Participatory Guarantee Systems (PGS). Although less common, social markets associated with the National Alternative and Solidarity Economies Network (REAS) are also present in certain regions. Some markets have adopted the term agroecology, providing platforms that host a mix of official organic certification, PGS, REAS, or other labels. Agroecological farmers without any form of certification generally cannot access

such platforms, although this can depend on the judgement of market managers. Direct farm sales or consumer groups can provide an alternative for such farmers, particularly in local contexts where farmers have credibility in the community. Several initiatives are currently expanding sales outlets for agroecological produce beyond the limited reach of consumer groups and farmer markets, including supermarket cooperatives that have emerged in Valencia, Madrid, Zaragoza, Manresa, and most recently Barcelona.

The 2015 Milan Urban Food Policy Pact marked a new era of municipal action supporting agroecology, with over 25 Spanish municipalities having joined by 2019. With the electoral changes among local governments in 2015, the Milan Pact gave way to the creation of the Agroecological Cities Network[13] in 2017, which included 19 member cities by 2019 (López-Garcia et al., 2020). This institutional movement has been developed through many projects led by academia and NGOs with funding from foundations. One example is the Comprehensive Agroecology Group on Territorialized Food Systems (GIASAT), which is developing logistics for several food hubs, defined as "associative centres of small producers, processors and retailers of local and organic food"[14] (Sanz-Cañada et al., 2021). A wide variety of food hubs are involved in the GIASAT project, including Ekoalde (Navarra), Vallaecolid (Valladolid), Ecotira (Valencia), Subbetica Ecológica (Córdoba), Valle y vega (Granada), Tierra y libertad (Huelva), Ecojerte and a mountain cooperative (Extremadura), La ruta de productoras Mincha d'aquí (Aragón), the Ecocomedores (Canary Islands), and various hubs supplying preschools (Galicia). Several local (and some regional) governments are supporting local organic farms through public procurement initiatives, primarily serving school cafeterias. European Union-funded innovation projects have also contributed, such as the MARES project in Madrid, developing supermarket cooperatives, a food hub, and the organisation of farmers within associations and cooperatives (ESP-KI-5).

Although local public policies involving agroecology are generally initiated by left-wing political parties, following a change in government, some right-wing governments have maintained initiatives. In Aragón, where the right gained control of Zaragoza in 2019, the three right-wing parties governing the coalition that forms Zaragoza's city council have maintained their presidency in the Agroecology Cities Network. The city council has therefore maintained ties with an NGO that still trains local officials on criteria for public procurement, as well as on food systems and the right to food (ESP-KI-12). In Madrid, where the right also gained control of the city in 2019, there remain initiatives started by the previous government, such as the legislated local organic cafeterias reaching nearly 60 pre-schools (ESP-KI-5). Other success stories have been short-lived. After hosting the TERRAE Network's first training project in Extremadura, the community-based town hall of Carcaboso put in place an agroecology knowledge centre and seed bank. This was all dismantled once the new government came into power (ESP-KI-11).

The feminist movement is contributing to agroecology in Spain through a variety of initiatives. Following the 2018 VII International Congress of Agroecology in Córdoba, an informal network of over 100 women from around the country was formed to address agroecology and food sovereignty from a feminist perspective (ESP-KI-4 & KI-6). Members of this network initiated the campaign SOS Campesinado, demanding concrete measures to protect local economies and small-scale food production, which led to a dialogue with the Ministry of Agriculture. Reaching an alliance of over 700 organisations, this campaign applied much-needed pressure to reopen markets during the COVID crisis (Soberanía Alimentaria, 2020). Besides such gender-neutral initiatives, work is still being done to improve the implementation of the shared ownership law (Ley 35/2011) concerning agrarian farms in the rural sector (ESP-KI-11). Moreover, several feminist (including ecofeminist) initiatives are strengthening agroecological production, such as Ganaderas en Red[15] (ESP-KI-3, KI-6, KI-7, & KI-11) or Ribereigas[16] in Galicia (ESP-KI-8).

[15] http://www.ganaderasenred.org/ [16] https://www.facebook.com/ribeiregas/

3.4. PRACTICE

Nearly all informants stated that agroecological practices are not yet very much implemented in Spain. Among these practices, extensive livestock farming was mentioned (ESP-KI-4, KI-8, KI-9, KI-11, & KI-12), at times as the most common practice. The use of local livestock breeds and their integration into various agroforestry systems were stated as exemplary agroecological practices, with hundreds of years of practice where silvoarable and silvopasture practices are spatially and timely integrated. Other practices mentioned include the use of traditional varieties, various composting techniques, mulching, crop rotations, crop associations, hedges, and dry farming or minimal irrigation depending on the crop and region. Cover crops and their incorporation as green manure have been reported as increasing, particularly among organic farmers in Spain's northern climates (Migliorini et al., 2018; Sánchez Taboada et al., 2020). Other documented practices in Spain include traditional terraces, such as in olive or almond plantations in mountain areas (Migliorini et al., 2018). All these production practices fit within a common vision of conserving biodiversity and improving soil conditions while reducing tillage and the use of commercial inputs as much as possible (Sánchez Taboada et al., 2020).

Although the principles of agroecology are not always followed in certified organic agriculture, agroecology was mainly developed in Spain under organic farming and often depends on organic certification to access sufficient local and regional market outlets. A nationwide study by the Spanish Society of Organic Farming (SEAE) identified small and medium-certified organic farmers as those who implement the vast majority of agroecological practices, primarily linked to soil fertilization through compost and other organic materials (Migliorini et al., 2018). Many farmers without livestock either transport manure from nearby livestock farms or use commercial organic fertilizers (Sánchez Taboada et al., 2020). Advanced agroecological practices are autonomous at the landscape or regional scale, promoting basic environmental services from within agroecosystems. In practice, restoration of soil fertility, control of pests and diseases, or conservation of genetic diversity, are generally provided from outside the system (Sanz-Cañada et al., 2021).

Several informants addressed the conservation of genetic diversity, expressing concern over limitations in using and selling traditional seeds in both conventional and organic agriculture. The use of traditional and local seeds in Spain is extremely low, and their development is obstructed by Spanish seed laws. Despite farmers' growing interest, these seeds are not officially acknowledged as a "variety" (Bruszik et al., 2019), except for a few cases, including species that can be registered as 'conservation varieties' or 'varieties with no intrinsic value'. Yet, registration of these varieties remains costly and limits both the amount of seed that can be sold, and commercialization within a specific region. Whereas Spain transfers registration competencies to its autonomous regions, few have made room for traditional varieties (Aceituno-Mata et al., 2017). The use of farm-saved seed among organic farmers in Spain is estimated at 1% or less, also due to the fact that organic farmers must prove their (obligatory) use of certified seeds in order to receive European subsidies (Bruszik et al., 2019). Given the limited amount of certified organic seeds in Spain, most of which are produced in other countries, organic farmers easily get their derogations approved to use untreated conventional seeds (Bruszik et al., 2019). Meanwhile, private seed companies (some of which identify as agroecological) continue appropriating traditional varieties, registering them as new hybrid versions, at times under their original name (Aceituno-Mata et al., 2017).

Informants described producers for consumer groups, and those in Participatory Guarantee Systems (PGS), as most likely to adopt complex agroecological practices, closing nutrient

cycles, using their compost and farm-saved traditional seeds, as well as elaborate crop rotations and associations. The range of purity or strictness varies among consumer groups, as each group agrees on their criteria, emphasizing specific agroecological pillars according to the imperfect realities of their territory. In the case of PGS, not only do their members agree on a common set of criteria, but they also engage in the evaluation of farmer practices through participatory farm visits. PGS are carried out in several regions, including El Encinar[17], La Ortiga[18], La Borraja[19], RAC[20], Red Alpujarreña[21], Red Sevilla EcoArteSana[22] and Como de Granada in Andalusia, Ecollaures[23] and SPG+BO (Xarxa Llauradora)[24] in Valencia, Vecinos Campesinos[25] in Murcia, SAES[26] in Madrid, Mercado da terra and A Gavela in Galicia, and EHKOlektiboa[27] in the Basque country.

3.5. SCIENCE

In Spain, the scientific dimension of agroecology (as a multidisciplinary approach) emerged in the late 1980s within the Institute of Sociology and Peasant Studies (ISEC). As of the early 1990s, Antonio Bello Pérez led agroecological (agronomic) research in the Spanish National Research Council (CSIC), heading the Department of Agroecology in the Centre of Environmental Sciences (CCMA) (Delgado et al., 2010). Founded in 1992, the Spanish Society of Organic Farming (SEAE) is a private organisation that has presented agroecological research in its biannual congresses since 1994 (Migliorini et al., 2018). Since the removal of Bello's Department of Agroecology in 2010, no public research institute or department specialized in agroecology exists at the national level (Sanz-Cañada et al., 2021). Under the CSIC, members of the Institute of Economy, Geography and Demography (IEGD) conduct research in agroecology, as do many researchers in universities, institutes, and non-profit organisations, all of which are increasingly collaborating in networks throughout the country.

Following in the footsteps of ISEC, universities in several regions have established interdisciplinary research groups specialized in agroecology. Since 2010, the Agro-ecosystems History Laboratory based at the University of Pablo de Olavide (UPO) is a research group with members from several Andalusian universities. In Galicia, the University of Vigo's Research Group on Ecological Economy and Agroecology has a long tradition of organising an International Congress of Agroecology every other year. In 2015, the Universitat de Vic-Universitat Central de Catalunya's Agroecology and Food Systems Chair was created, as was the University of La Laguna's Chair of Agroecology Antonio Bello in the Canary Islands. In 2022, the University of Santiago de Compostela developed the research program on Agroecology and agroforestry integrated by professors of geography, artificial intelligence, agronomy and forest disciplines led by Professor María Rosa Mosquera-Losada[28].

Universities throughout the country have research initiatives focusing on specific agroecological topics. In Galicia, the University of Santiago de Compostela (USC) coordinated the European agroforestry project AFINET, which gave rise to the Galician Agroforestry Innovation Network. This network is also associated with the AF4EU project to evaluate the value chains associated with Agroforestry Systems. The University of Extremadura has an institute that specializes in agroforestry research in the context of the Dehesa (INDEHESA), as well as researchers currently evaluating the environmental services provided by autochthonous breeds of sheep in northern Cáceres (ESP-KI-11). The Polytechnic University of Valencia (UPV) hosts the Valencian Institute of Conservation and Improvement of Agrodiversity (COMAV), which has integrated a research group from SEAE (ESP-KI-10). In Catalunya, agroecology is addressed under various disciplines,

[17] https://asociacionelencinar.org/ [18] https://laortiga.com/ [19] https://laborrajadesanlucar.blogspot.com/ [20] http://redagroecologicadecadiz.org/ [21] https://agroalpujarra.wordpress.com/
[22] https://sevillaecoartesana.wordpress.com/ [23] https://ecollaures.org/ [24] https://www.xarxallauradora.net/spgbo/ [25] https://spgmurcia.wordpress.com/ [26] https://selloagroecosocial.wordpress.com/
[27] https://ehkolektiboa.eus/ [28] The Spanish ministry is supporting the flagship on agroecology and agroforestry associated with the Global Research Alliance (GRA) that integrates 67 countries around the world.

within the Institute of Government and Public Policy (IGOP) under the Autonomous University of Barcelona (UAB) or in the more recent Biodiversity Research Institute (IRBio) at the University of Barcelona (UB).

In the region of Madrid, an agroecological revival following the political change in 2015 brought about many research initiatives, including several 'operative group' projects financed through the European Union's Rural Development Programmes. The Madrid Institute for Rural Development, Agricultural and Food Research (IMIDRA) played a leading role in many of these projects, which covered topics such as public policy, training initiatives, agrarian parks, community composting, and short distribution channels. Among these projects, AgroecologiCAM has linked diverse actors to advance local food systems in the region, with the aim of institutionalizing agroecology in the public sector (ESP-KI-6). In recent years, the Autonomous University of Madrid (UAM) has initiated its mapping project at the national level called SAVIA (Sowing Agroecological Innovation AlternatiVes)[29] as well as the AgroLab, which combines research with practical training to reactivate Madrid's agrarian sector.

Several informants emphasized that initiatives that are not necessarily focused on agroecology can make important contributions. Gaindegia, the Basque country's Observatory for Economic and Social Development, has collaborated with EHNE-Bizkaia in a study to identify the productive capacity of the land available in a specific territory, considering various parameters such as its fertility, orientation, and water accessibility. By determining the number of hectares that must be secured to feed the population of the five municipalities in this area, the study is now being taken into account in their urban and rural municipal development plans. Among the five municipalities, some are adopting new criteria in their plans to protect local resources, such as high-value soils (ESP-KI-2).

[29] https://www.uam.es/uam/en/cibc/investigacion/proyectos/savia

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 2: An overview of initiatives, cases and examples described and analysed in Spain.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**EHNE-Bizkaia** *Solidarity among Basque Farmers-Bizkaia*	Regional	Agrarian union	To reconstruct food systems towards food sovereignty					
2	**FACPE (The Andalusian Federation of Organic Consumers and Producers)**	Regional	Civil Society/ Association	To support and promote local, small-scale organic and artisanal production					
3	**Alimentando Córdoba** *Feeding Córdoba*	Provincial	Consortium	To design a sustainable food system in Córdoba					
4	**Red Andaluza de Semillas** *Andalusian Seed Network "Cultivating Biodiversity"*	Regional	Civil Society/ Association	To collectively manage cultivated biodiversity, recovering local varieties and traditional peasant knowledge					
5	**Ganaderas en Red** *Network of Women Ranchers*	National	Collective	To improve the recognition and viability of women in extensive livestock farming					
6	**University of Vic - Chair on Agroecology and Food Systems for Social Transformation**	Regional	University Chair	To create and spread knowledge on alternative food systems in line with food sovereignty					

INITIATIVE N°1 – EHNE-BIZKAIA

http://www.ehnebizkaia.eus/
Social media:
https://www.facebook.com/ehnebizkaia/
https://twitter.com/EHNEBizkaia

EHNE-BIZKAIA
SOLIDARITY AMONG BASQUE FARMERS-BIZKAIA

EHNE-Bizkaia's primary objective is to reconstruct food systems towards food sovereignty. It currently has six full-time employees and one part-time, and its official members amount to nearly 1000 productive family units[30]. The union has decided to also assist the workers contracted by their members, such as through legal advice, mediation, or general information. There is a larger social mass that benefits from the union's services, particularly their training courses, which are generally provided free of cost, or at very affordable prices. Before the COVID pandemic, around 400-500 people benefitted from these courses each year. Since the pandemic, EHNE-Bizkaia has integrated a virtual training format, and posts audiovisual productions on YouTube.

KEY FEATURES

- **Type of organisation**: agrarian union
- **Main goal:** food sovereignty
- **Founded in:** 1976
- **Farming sector:** horticulture, livestock, arable crops, permanent crops, etc.
- **Scale of organisation:** regional

EHNE-Bizkaia was born in 1976, legally registering as a union the following year. By the 1980s, it had joined forces with other provincial unions in the Basque region to form the EHNE (Union of Basque Farmers) confederation. However, it officially parted from the confederation in 2010 for several reasons. For the most part, EHNE-Bizkaia held a more committed stance in favour of agroecology, and frustration grew among its members who felt the confederation's strong food sovereignty discourse was not accompanied by actions and policy demands aimed at transforming the industrial agricultural model (Calvário et al., 2020). Since 1993, EHNE-Bizkaia initiated its transition towards more sustainable models, as reflected in its training courses. The food sovereignty proposal launched by the Vía Campesina in 1996 was adopted in the union's training courses, particularly as of 1999 through its Rural Self-employment Project. Over the years, this project has developed an increasingly comprehensive agroecological approach. Beginning in spring, this 3-4 month training is now based on four blocks:

1. Agroecological production (soil management and fertility, biological pest control, etc.)
2. Diversification (Diversifying farm activities and income sources)
3. Professionalization (administrative, legal, and fiscal requirements, social security, potential subsidies, needed infrastructures, designing farms to launch a food basket business, etc.)
4. Politics (Food sovereignty and Vía Campesina, agroecological dimensions, gender, history of Basque agriculture, etc.)

Although the union has not provided any training in conventional practices since initiating this project, it has not mandated agroecological practices to its members. Once EHNE-Bizkaia adopted agroecology, tension rose among its members with conventional practices, but the union clarified that members are free to initiate the agroecological transition as best they can. Members still practising conventional farming are typically lifelong farmers over 50 years of age that choose to maintain intensive models because they perceive great difficulties in conducting structural changes in their farms (Calvário et al., 2020). In many cases, members mix conventional and agroecological practices.

In 2007, EHNE-Bizkaia launched Nekasarea, a network of community-supported agriculture groups in which consumers commit to securing peasants' income. After a three-month trial, consumers sign a one-year contract to purchase weekly agroecological food baskets at a pre-agreed price (Calvário et al., 2020). By 2016, there were around 200 producers involved in the network of 60 consumer-producer groups (Álvarez Vispo and Romero-Niño, 2020). The union currently represents around 65% of farmers in the Basque province of Bizkaia.

[30] Totaling over 1000 individual members as each family unit has at least one person

EHNE-Bizkaia has three primary funding sources: (1) membership fees, (2) externally-funded projects from the municipal to the European level, and (3) a series of additional services, including car, tractor, and home insurance, legal and tax services, and maintenance of milking facilities. As the union is legally registered as an association, it also receives an annual subsidy from the Basque government.

EHNE-Bizkaia views agroecology as a path towards reaching its political objective of food sovereignty, but also as a lifestyle. In line with the Vía Campesina, EHNE-Bizkaia's interpretation of agroecology highlights peasants' commitment to advancing towards an agricultural model with increased quality, autonomy, and sustainability. As the union understands agroecology as a non-exclusionary process, it works with farmers using phytosanitary products, precisely to encourage their transition towards more sustainable and agroecological models. The union promotes interventions that work with biodiversity, helping farmers to find methods that improve plant resistance to diseases and to understand what is happening in their soil. Although EHNE-Bizkaia provides training in organic agriculture, it prioritises agroecological principles over certain dimensions of organic regulations. For example, it continues to support and develop local organic producer-consumer groups but does not associate organic input substitution or the organic export model with agroecology. Reflecting its interpretation of agroecology, the union provides training courses in composting techniques such as bokashi, efficient microorganisms, plant rotations and associations, and follows up on farmers' questions long after the training period.

EHNE-Bizkaia participates in the national agrarian union COAG and is active within the European Coordination of the Vía Campesina. EHNE-Bizkaia is also one of the organisations associated with the Basque Charter of Social Rights. The union collaborates with universities, such as the Basque University's Institute on International Development and Cooperation Studies (Hegoa) and with NGOs, such as Mundabat, Bizilur, Medicusmundi and Veterinarians Without Borders. It also collaborates with the Basque seed network Euskalherriko Hazien Sarea, participates in the national coalition Plataforma Rural, and is a member of the Alternative and Solidarity Economy Network (REAS).

EHNE-Bizkaia has played a leading role in creating its regional networks. Alongside its close ally ELB (the Basque branch of the Confédération Paysanne in France) and other entities in the region, EHNE-Bizkaia launched a food sovereignty movement in 2011 called Etxalde. This social movement is active in both the Spanish and French Basque Country, as well as in the Spanish region of Navarra, and publishes its magazine called Etxalde. Members of EHNE-Bizkaia also organise the collective Etxaldeko Emakumeak, established as a space of debate, analysis and mutual aid that works to empower women (Calvário et al., 2020).

Picture 1: Training session. Source: Unai Aranguren.

WHAT CAN WE LEARN?

EHNE-Bizkaia has established itself as the leader of the agroecology movement in the Basque region. Most remarkably, it initiated the producer-consumer groups and organic consumer associations, which have led to Spain's strongest example of community-supported agriculture within the Nekasarea network. Moreover, the union has launched agro-assemblies in each district ('comarca') of the region, supporting generational renewal among the peasant youth. The union has raised awareness of agroecology and food sovereignty in both rural and urban settings, which is also carried out by the Etxalde movement.

POSITIVE IMPACTS

COOPERATION: EHNE-Bizkaia played a leading role in the creation of the Vía Campesina in 1993. The union has remained active in the food sovereignty movement from the local to international level and engages in peasant-to-peasant learning processes with Vía Campesina organisations from around the world. Locally, there is much collaboration among peasant producers in Nekasarea, such as through sharing knowledge, seeds and farming tools, or helping each other fill food baskets and cover supply deficits when necessary (Calvário et al., 2020).

EDUCATION: EHNE-Bizkaia's various training courses are made available to all, not just to those who pay the union's membership fee. Depending on demand or the union's current strategy, training can last from one day to several months, covering livestock, horticulture, fruit growing, and forest management, among others. These courses have different objectives, such as making self-employment a reality for small-scale farmers, integrating consumers in food basket initiatives, or linking immigrants with locals.

SOCIETY AND EQUITY: EHNE-Bizkaia believes agriculture can play a role in the social integration of immigrant populations since many were peasants before having to migrate due to several factors, such as the destruction of local economies and food systems resulting from land grabbing, the biofuel conglomerate, or free trade agreements (Calvário et al., 2020). In the small rural town of Artea in Bizkaia, the union collaborates in the Artea Project, which provides immigrants and refugees with accommodation, a weekly agroecological food basket, and work. These jobs include managing a restaurant, agricultural jobs and food processing, among others (Calvário et al., 2020).

LIMITATIONS & CHALLENGES

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: While the union aims to produce food for the entire population, given the current political context, food sovereignty models cannot always compete with market-based, mass distribution. Whereas peasant farmers depend on product differentiation to make a decent living, much confusion exists around food labels.

facpe
Federación Andaluza de Consumidores y Productores Ecológicos

https://www.facpe.org/
Facebook: https://www.facebook.com/facpe.consumoecologico/

INITIATIVE N°2 – FACPE

THE ANDALUSIAN FEDERATION OF ORGANIC CONSUMERS AND PRODUCERS (FACPE)

The Andalusian Federation of Organic Consumers and Producers (FACPE) came into existence through a movement of organic short-food supply chains, which grew out of Andalusia's agroecology movement. As farmers began initiating social gatherings and marketing groups, ties were strengthened between rural and urban social movements throughout the region, and several entities were born in the early-mid 1990s in Andalusia's main cities. It is in this context that producer and consumer groups decided to support each other by creating FACPE in 1995. From the beginning, a core group of three organisations led the way, including La Ortiga in Sevilla, Almocafre in Córdoba, and El Encinar in Granada.

KEY FEATURES

- **Type of organisation:** Association
- **Main goal:** Support and awareness of local organic production and consumption, food sovereignty
- **Founded in:** 1995
- **Farming sector:** Not any specific sector: Horticulture, Livestock, Arable crops Permanent crops, etc.
- **Scale of the organisation:** Regional

FACPE is a non-profit, civil society initiative managed and led by consumers and producers, which is legally registered as an association. It operates internally as a support network for its member organisations and functions externally to raise awareness and promote responsible consumption of local, small-scale organic and artisanal products. Active member organisations currently include La Ortiga, El Encinar, Almocafre, Guadalhorce Ecológico, Subbética Ecológica, the Agroecological Network of Granada (RAG), and the Agroecological Network of Cádiz (RAC). Each organisation must have at least one representative on FACPE's governing board, which currently consists of around 15 people who develop activities and reach agreements for the federation. External activities can include conferences, roundtable discussions, workshops, publications and media presence. Internal activities are directed towards the hundreds of farmers and food processors in member organisations, or towards commercial endeavours, such as the shopkeeper groups that meet periodically to exchange experiences and techniques.

FACPE has its own production and distribution criteria to guarantee the quality of its organic products. Although most farmers under the FACPE umbrella have opted for third-party organic certification to secure market access[31], they must still conform to FACPE's model of organic agriculture, which goes beyond European organic regulations on several fronts, including production, transport, and social aspects. With regards to production, biodiversity is a critical element evaluated in farm visits, as are the efforts to limit (and find alternatives to) the use of external, certified organic inputs for fertilization or pest and disease control. Member organisations also foster the use of traditional varieties. Regardless of their type of certification, all producers must abide by FACPE's open-door transparency principle.

FACPE organisations perform two types of farm visits. On one hand, there are technical visits to evaluate the production methods. The participants in such visits can come from various backgrounds, allowing fellow producers to exchange experiences and recommendations, and other actors to contribute according to their expertise, curiosity or concerns. On the other hand, there are social visits specifically meant to give consumers closer contact with producers. The social dynamics of the current member organisations are particularly strong, reflecting a close-knit community that shares common values with years of tradition. The trust among established participants also makes it easier to call out any suspicious activity among newcomers.

[31] FACPE producers do not necessarily sell all their products through FACPE sales outlets

FACPE's funding comes primarily from membership fees paid by its member organisations to sustain the initiative. From around 2006 to 2012, FACPE used to receive annual funding from the regional government, primarily to organise events promoting the consumption of local organic products, but also used to coordinate outreach sessions and publish several editions of the FACPE magazine. Nowadays, public funding is rare and generally limited to specific projects, such as European projects. These funds do not necessarily go through FACPE as they may be administered directly to member organisations.

Picture 2: FACPE participants. Source: FACPE.

WHAT CAN WE LEARN?

FACPE has been developing an Andalusian PGS network since 2010. This alternative organic certification system allows the sale of agroecological products based on a common vision between the producers and consumers within each PGS. FACPE currently has three member organisations that function through PGS: La Ortiga, El Encinar, and La Borraja. Within these three organisations, some producers have third-party organic certification in addition to the PGS certification.

POSITIVE IMPACTS

EDUCATION: FACPE raises awareness through various outreach activities, covering topics such as peasant lifestyles in the rural sector, food sovereignty, social economy, fair trade, organic farming, GMOs, ecological footprint, and sustainable development. Its member organisations also engage in various educational projects, such as Subbética Ecológica's local collaboration agreements with universities such as the University of Córdoba, or with the secondary school Felipe Solís in their professional agroecology training course.

SUSTAINABLE AND FAIR ECONOMICS: FACPE is a member of REAS, the Spanish network of alternative and solidarity economies. Member organisations La Ortiga and Almocafre are also REAS members, and Subbética Ecológica was audited by Economía del Bien Común ('Welfare Economy').

TRADITIONAL FOOD AND HERITAGE CONSERVATION: FACPE fosters the dissemination of traditional knowledge and local varieties through informative posters, leaflets and other documentation. Considering the difficulty of finding traditional varieties, the identification of these products is much appreciated by FACPE consumers, whether in stores, outdoor markets or other distribution schemes. La Verde, the pioneer in recovering traditional varieties in the Andalusian agroecology movement, operates as a producer for La Ortiga.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Economic viability is one of FACPE's main challenges. Although short distribution channels give FACPE organisations an advantage in the commercialization of fresh produce, processed organic products in supermarkets are significantly cheaper due to their economies of scale and the contract terms imposed on suppliers. Helping consumers understand the difference between an agroecological product and the certified organic product sold in supermarkets is part of FACPE's outreach activities, and critical to strengthening food sovereignty in the region.

GOVERNANCE: FACPE once had a close relationship with the Regional Department of Agriculture (Consejería de Agricultura y Pesca de la Junta de Andalucía) and currently has members that work for this agency, but the support received by public institutions is scarce. Although FACPE participates in the Consejería's Council of Organic Production (Consejo Andaluz de la Producción Ecológica), the current regional government does not share FACPE's agroecological vision, as it primarily views the growing organic sector as an export opportunity.

INITIATIVE N°3 – ALIMENTANDO CÓRDOBA

ALIMENTANDO CÓRDOBA
Alimentación Sostenible, Saludable y Equitativa

alimentandocordoba.es
Social media:
https://www.facebook.com/alimentandocordoba
https://www.instagram.com/alimentandocordoba/
https://twitter.com/AlimentandoCor

ALIMENTANDO CÓRDOBA
FEEDING CÓRDOBA

Alimentando Córdoba is a consortium that aims to design a sustainable food system in Córdoba, through agroecological transitions at productive, social and cultural levels. Alimentando Córdoba develops these goals through various pilot projects, and lobbies for local policies to support its four main lines of work: Production, Distribution, Local commerce, and the Right to food. The consortium is led by the Institute of Sociology and Peasant Studies (ISEC) and its association (AISEC), with the collaboration of diverse actors including an NGO, producers, retailers, schools, associations, food banks, a foundation, organic and wholesale markets, Córdoba's city hall and it's environmental delegation.

Following the 2015 Milan Urban Food Policy Pact, ISEC and the NGO Justicia Alimentaria began encouraging Córdoba's city hall to join the Pact. This goal became a reality in November 2016. By 2017, the city's environmental delegation began to summon various collectives and the city's social services to engage in participatory working sessions facilitated by ISEC.

KEY FEATURES

- **Type of organisation:** consortium
- **Main goal:** local agroecological policy development, food sovereignty
- **Founded in:** 2017
- **Farming sector:** horticulture, arable crops, permanent crops, livestock (primarily for eggs and cheese).
- **Scale of the organisation:** provincial

Although the initiative and its core entities are based in the Andalusian city of Córdoba, the producers involved come from municipalities all over the Cordoban province. Most of the producers are listed in a 2017 diagnostic assessment[32] of the current and potential local food system and are generally certified in organic agriculture, although some practice agroecology without certification. The consortium has provided farmers with training on the joint planning of crop production, looking to organise them according to local demand. So far, Alimentando Córdoba's producer collective has served a food bank and provides several school kitchens with fresh produce.

While the consortium involves several participants paid through the public sector, the coordinators adapt to sporadic funding sources to carry out pilot projects. The Daniel and Nina Carasso Foundation has been a key contributor in all three phases of the project. Córdoba's city hall has also contributed to funding projects from 2017 to 2020. All members of the consortium mentioned below (in the 1st phase) have contributed through in-kind funding, providing their personnel or infrastructure to enable several project activities.

1st Phase: The 2017 diagnostic assessment called 'Alimentando Córdoba' was carried out by ISEC, providing the first results and basis for developing the initiative. This diagnostic analysed (i) production in the province, paying special attention to the potential of organic production and crop diversification (ii) food distribution in Córdoba (iii) the city's hotel, restaurant and catering services (iv) the consumption of organic products, and (v) the city's public policies that could develop into sustainable food policies. These areas were all analyzed under the framework of the Milan Pact and the participatory process of co-design taking place in the city. Consequently, a project design was established, and an initial consortium was formed among the entities promoting and engaging in the core activities. This group consists of ISEC, AISEC, Justicia Alimentaria, the city hall of Córdoba, the city's wholesale market MercaCórdoba, and the association of organic retailers EcoCórdoba.

[32] https://www.osala-agroecologia.org/alimentando-cordoba-diagnostico-2017

2nd Phase: The second phase consisted of launching and implementing the Diagnostic project design, to lay the foundations of an agroecological food system in Córdoba. This included creating a local commerce group, as well as a producers association with producers from the local organic farmers market 'ecomercado', among others. A plan to create a collection centre for local agroecological production exclusively for social food aid was also developed with MercaCórdoba. The pilot projects carried out in this phase focused on agroecological food banks and the transition to new school menus.

Picture 3: The paper bag used in participating stores. Source: Alimentando Córdoba.

In 2018, an alliance was established between Alimentando Córdoba and the hospital San Juan de Dios' food bank, which is subsidised by Córdoba's city hall[33]. Combining the city's funds with additional funding from San Juan de Dios' social program, an agreement was made to purchase food baskets from Alimentando Córdoba's producer group, thereby creating a sales channel dedicated to agroecological food aid. Nonetheless, a year and a half into the pilot project, the March 2020 COVID confinement resulted in massive lay-offs and at the most critical moment requiring food aid, the food bank decided to no longer use their resources for agroecological food aid.

During this crisis period, a collective system of mutual support emerged from Córdoba's agroecological movement. Involving community members, the social market La Tejedora, EcoCórdoba, and a core group of Alimentando Córdoba with its associated producer group, a food distribution arrangement was launched in CEIP[34] Albolafia, located in the southern section of Córdoba in a neighbourhood classified amongst the poorest of the country. The economic support provided by the city's agroecological community enabled purchases from the producers, allowing the pilot project to feed 50 families during the 3-month confinement period.

Another line of work developed around school cafeterias and the cultural adaptation of healthy and locally procured diets. This began with a pilot project led by Justicia Alimentaria and ISEC, who invited 11 kitchen-equipped schools to participate in a transitional school menu and dietary improvement programme. The first school to respond was CEIP Albolafia, where a training programme was developed in 2019, with the participation of teachers, cafeteria monitors, and kitchen staff. Subsequently, a nutritionist trained in agroecology was hired to develop the menus alongside school cooks, and this program would serve as a model for new schools joining the project.

3rd Phase: Soon after a second school, CEIP Algafequi, signed up for the menu transition project, the third phase began, focusing on engaging families and the entire school community. This third and ongoing phase was developed as of November 2020 through the "Food Dignity in School Communities" programme. Consequently, the programme has adopted several approaches, including art and theatre, farm visits and meetings with farmers, and cooking workshops for family members, all allowing children to pick up good eating habits from a young age. Although participating schools have not received any regional funding, parts of the school budget have been dedicated to begin purchasing local organic produce. Most recently, a third school, CEIP López Diéguez, also initiated the menu transition engaging the school community.

[33] A subsidy that typically goes to charities such as Red Cross or Caritas [34] CEIP: Public institution providing preschool and elementary school education

WHAT CAN WE LEARN?

The sustainable food strategy developed by Alimentando Córdoba supports agroecological production that values Córdoba's cultural and historical heritage, landscapes, soil fertility, local economy, and quality of life. Moreover, it fosters territorial alternatives to the global food system, favouring initiatives with horizontal governance in line with the social and solidarity economy. Organising producers has been critical to collectively meeting the demand linked to public procurement, and the creation of a local commerce group has led to collaborations among participating stores. In an ongoing attempt to upscale agroecological production, the consortium develops collective strategies with actors throughout the supply chain, fostering dialogue among the diverse actors under the Milan Pact's Coordination Board in Córdoba, including agents from the city's social and environmental services, hospital and school staff, and food producers, among others.

POSITIVE IMPACTS

COOPERATION: Alimentando Córdoba's network has given civil society representatives a chance to interact and create alliances with actors from the public sector within the Milan Pact's Coordination Board in Córdoba. The diverse actors in the consortium have facilitated access to an extended network of participants, and allow the coordinators to better manage short food supply chains.

SOCIETY AND EQUITY: Alimentando Córdoba develops the right to food, and involves both urban and rural disenfranchised populations within its pilot projects. In times of (COVID) crisis, ISEC has improvised alternative solutions for project participants, such as organising a community-backed food bank. When farmer markets were cancelled and basket producers lost access to their sales outlets during the COVID confinement, Alimentando Córdoba began organising the distribution of their produce with the collaboration of the social market La Tejedora.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: ISEC has supported the development of neighbourhood commerce, organising meetings with the local shops selling agroecological produce. The stores participating in Alimentando Córdoba's local commerce group have planned on initiating joint purchases from producers, and eventually marketing their produce under a common name, but this remains a work in progress.

LIMITATIONS & CHALLENGES

GOVERNANCE: Whereas Alimentando Córdoba advocates for local and sustainable public procurement for school cafeterias and food banks, such policies depend on a strong commitment from public administrations. Although project coordinators initiate and facilitate many proposals, these efforts are made with no guarantee of the final impact, particularly on public policies. One of Alimenando Córdoba's aims is to reclaim the public role of the government-subsidized wholesale market MercaCórdoba, thereby facilitating the logistics of small farmers' agroecological produce destined for 'social consumption'. For this purpose, the University of Córdoba and MercaCórdoba signed an agreement to build a small cold storage unit.

INITIATIVE N°4 – RED ANDALUZA DE SEMILLAS

www.redandaluzadesemillas.org
Social media:
https://www.facebook.com/Red.Andaluza.Semillas.Cultivando.Biodiversidad/
https://twitter.com/cultivandobio

RED ANDALUZA DE SEMILLAS

ANDALUSIAN SEED NETWORK "CULTIVATING BIODIVERSITY"

The **Andalusian Seed Network** (RAS) is a grassroots organisation contributing to the recovery of local crop varieties and traditional peasant knowledge while promoting the collective management of cultivated biodiversity. RAS has around 200 members, half of whom pay the annual fee, and the other half, instead of paying a fee, donate their seeds to RAS' community seed bank. Approximately 500 people participate in their activities each year. The core group that coordinates RAS is made up of around 10 people, all of whom participate on a volunteer basis, as the association does not have the means to hire anyone.

KEY FEATURES

- **Type of organisation:** seed association
- **Main goal:** conservation of traditional seeds and peasant knowledge, Food sovereignty
- **Founded in:** 2003
- **Farming sector:** horticulture, arable crops and permanent crops.
- **Scale of the organisation:** regional

The origins of the Andalusian Seed Network (RAS) trace back to the collaboration between the landless peasant movement (tied to the agrarian union SOC) and the University of Córdoba's Institute of Sociology and Peasant Studies (ISEC). Once the landless day labourers acquired land, one of the problems they faced in the management of their newly formed farm cooperatives was the use of seeds. SOC thus reached out to its ally ISEC, who provided seed assistance to these cooperatives as of 1994, beginning with La Verde and then El Indiano, both in the province of Cádiz, as well as with El Romeral (now called Repla) in the province of Málaga.

RAS receives funding from its membership fees and through projects. The decision to register as a non-profit association in December of 2003 was made primarily to become eligible for public funding. Project funding is sporadic and can come from various sources, such as the regional government, the European Union, or foundations.

For RAS, agroecology is about self-sufficiency and respecting the environment. Considering Andalusia's diverse agroecosystems, including mountain, desert, and coastal climates, agroecological farming must adapt to the conditions and dynamics of local pedo-climatic ecosystems. Although RAS does not equate agroecology with certified organic agriculture, it acknowledges that some certified organic farming experiences do fall under agroecology. RAS recognizes the political component of agroecology as experiences committed to social change in line with food sovereignty. RAS also acts in solidarity with the landless peasant and ecofeminist movements.

RAS has a close affinity with several organisations in the region, although collaborations are sporadic and generally depend on project funding. This is the case with ISEC or with FACPE and several of its member organisations. Plataforma Rural is another entity whose close collaboration with RAS in the late 1990s led to the creation of the national seed network "Resembrando e intercambiando".

RAS has collaboration agreements with public seed banks such as Andalusia's Plant Germplasm Bank (BGVA) in Córdoba and the National Centre of Plant Genetic Resources (CRF-INIA) in Madrid. The collaboration with such seed banks is bi-directional in the sense that RAS provides them with seeds to conserve, and the seed banks provide RAS with seeds to cultivate.[35] Other public germplasm banks have also provided RAS with seeds, such as the Valencian Institute of Conservation and Improvement of Agrodiversity (COMAV-UPV).

Beyond its region, RAS has ties to the European Seed Coordination "Let's Liberate Diversity" as well as with agroecology entities in Latin America, including the Latin American and Caribbean Agroecology Movement (MAELA).

Picture 4: RAS Assembly. Source: Andalusian Seed Network.

A label called "100% Local Variety" is currently under construction, and an initial protocol regarding its use has been developed. Beyond the traditional varieties already forming part of the local cultural heritage, the label intends to include all seeds in the public domain, including 'exchange varieties', as well as certain commercial and discontinued varieties, as long as they are obtained locally through traditional selection methods. Other areas that RAS is looking to develop include further research on the nutraceutical properties of local varieties, as well as establishing media alliances with chefs that promote their use (Vara et al., 2020).

WHAT CAN WE LEARN?

In a recent project led by RAS and ISEC addressing the production, commercialization and consumption of local varieties, 21 Andalusian producers of local varieties were interviewed. The productive context of these varieties was associated with small- and medium-scale farms with diverse production connected to short-distribution channels. While 57% of the producers declared having learned traditional seed production by themselves, 47% learned through family tradition, and 14% through specialized technical training[36]. For 38% of these farmers, local varieties represented over 50% of their cultivated varieties, whereas a third of them cultivated between 10-50% of local varieties, and 14% of them cultivated less than 10%[37]. Half of the producers stated that their clients requested local varieties from them, and it was indicated that consumer group members were most informed and able to identify these varieties due to the educational efforts carried out in their consumer groups. Moreover, the tomato stands out with the most diverse set of local Andalusian varieties, and producers signalled local tomato varieties as the most solicited by consumers (Vara et al., 2020).

[35] The agreement with both of the above mentioned seed banks establishes that RAS must authorize the transfer of their stored seeds to any third-party. RAS generally authorizes the transfer of their seeds to university projects based in participatory research involving farmers and traditional peasant knowledge
[36] With several producers choosing more than one option
[37] The remaining farmers did not provide a precise proportion of the local varieties they cultivate

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: One of RAS' primary activities is guaranteeing local seed exchange among Andalusian farmers, facilitated through its community seed bank. RAS raises awareness of the importance of conserving and increasing biodiversity through various outreach activities. Its initial members began proposing traditional Andalusian varieties for registration as of the year 2000. Given the greater capacity of open-pollinated heterogeneous seeds to adapt to local environmental conditions, RAS encourages farmers to apply the selective pressure needed to maintain the genetic balance of varieties that are easily cross-pollinated.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: The Resowing and Exchange Network is a community seed bank managed by RAS since 2007. It is made up of an open and multidisciplinary group including amateur and professional producers, as well as organic agriculture associations, technicians, and school gardens, among others. The list of local varieties available in the bank can be accessed on the RAS webpage, and annual reports provide further documentation, including which varieties have been exchanged and between whom.

EDUCATION: RAS raises awareness of local varieties through its participation in workshops, conferences, tasting events, and fairs, such as the annual Andalusian Fair on Agricultural Biodiversity (FABA). It also publishes a variety of informational material, including reports, production guides, and seed fact sheets, which can be accessed in its resource centre, both online and at its headquarters. The association tries to document all its work on the official webpage and publish without intellectual property rights.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The membership fee is very small, yet not all members can pay it. Members generally have low purchasing power, as is the case of most traditional farmers, students, and others with unstable employment situations. These funding issues also limit the organisation's working capacity, as active members generally participate on a volunteer basis and have significant time constraints.

GOVERNANCE: While RAS has long dealt with legislative limitations regarding the registration and appropriation of traditional varieties, it is particularly concerned with the administrative authorization required to legally produce and commercialize these seeds. The fact that farmers are not allowed to sell their seeds is the biggest obstacle to conserving biodiversity. Based on industrial seed production, the legal requirements to register as a seed producer are beyond the reach of small-scale farmers, particularly in the case of Andalusia.

INITIATIVE N°5 – GANADERAS EN RED

http://www.ganaderasenred.org
Facebook: https://www.facebook.com/GanaderasenRed/

GANADERAS EN RED
NETWORK OF WOMEN RANCHERS

Ganaderas en Red (GeR) is a collective of 200 women livestock farmers all practising extensive livestock farming. GeR is not a formal collective and does not have a board of directors, nor is it registered as an association. To enter the network, candidates must fill in a questionnaire, and a welcoming team carries out interviews and the onboarding process for each new farmer who is provided with a mentor from the network. GeR comprises all types of livestock producers including beekeepers. Products include a large variety of meats, cheeses, eggs and honey. Although GeR only includes Spanish farmers, the network has an international working group that develops action plans with other European collectives. Two non-farmer women from Entretantos make up the 'support group' that maintains communication with GeR farmers.

KEY FEATURES

- **Leading organisation:** no leading organisation, leadership is horizontal among participating members
- **Founded in:** 2016
- **Agroecological practices:** extensive livestock farming
- **Farming sector:** livestock
- **Scale of the organisation:** national
- **Number of stakeholder involved:** 200 ranchers and 2 coordinators from Entretantos Foundation

The network aims at improving the recognition and visibility of women in farming to find solutions to their problems: "Invisible alone, invincible together". GeR collects, exchanges, and disseminates knowledge and experiences among women (including with other female collectives and individual farmers) to provide a gender approach to livestock production and management. GeR aims at improving their viability, such as through the identification of alternative commercialization channels, differentiation of sustainable products, and better access to slaughterhouses. Finally, they try to impact the political agenda by providing knowledge and visibility to a profession that has been largely abandoned by policy, so that policymakers take into account the needs of extensive livestock farming.

In 2015 a national meeting on "herded territories" took place with numerous farmers from all over Spain, yet female representation was limited to only four shepherdesses. These four farmers began to organise, and with encouragement from the Entretantos Foundation, an initial online meeting was held in 2016. In this meeting, approximately 30 female farmers from around the country began to detect the problems they had in common. In 2017, the first on-site meeting took place in Madrid, allowing GeR to start managing the network, reviewing objectives, network operations, and their lines of work.
GeR receives a small subsidy from the Spanish Ministry for Ecological Transition and the Demographic Challenge (MITECO) managed by Entretantos, which covers management tasks and the transport costs to gather all farmers at the annual on-site meeting.

GeR considers itself an agroecological initiative due to its extensive livestock farming practices, as well as its horizontal decision–making process. It does not necessarily identify with organic agriculture because a minority of the farmers are certified organic.

GeR members also form part of related organisations and associations, including those that manage specific livestock breeds. GeR participates in events with organisations that promote extensive livestock farming, such as Red Terrae, Por Otra PAC, WWF, Intervegas, Plataforma por la ganadería extensive y el pastoralismo ('Extensive Livestock and Grazing Platform') and Fundación Entretantos.

GeR plans to continue influencing the policy agenda in favour of extensive livestock farming and will participate in the gender group for the International Year of Rangelands and Pastoralists 2026 initiative. An international group of European extensive livestock collectives has been created, from which a European union of women farmers could be formed.

Picture 5: La Jara farm in Tenerife, Canary Islands. Source: Pilar Carballo (GeR member).

WHAT CAN WE LEARN?

GeR functions as a support network with a daily exchange of knowledge and experiences. This mutual support provides a platform for addressing a large variety of doubts and problems regarding livestock practices, veterinary treatments, commercialization, or paperwork. There is always a farmer from GeR ready to help in urgent cases, and members also provide each other with emotional support, for which a specific channel exists on the GeR online Slack application. Moreover, members benefit from a variety of opportunities, courses, and other news shared within the collective. GeR has engaged in dialogue with various entities to share its perspective on extensive farming, such as the national Congress of Deputies, Parliament of Navarra and the region's environmental management agency, WWF, COP25, and Territorios Pastoreados.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: GeR's livestock grazing regenerates territories and soil health, while preventing forest fires. GeR members protect not only landscapes but a profession and culture in decline.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: GeR foments and sells products from traditional breeds. The collective is dedicated to maintaining traditional knowledge related to the extensive farming profession.

SOCIETY AND EQUITY: GeR functions through horizontal and participatory decision-making, in which all opinions are taken into account. Meetings take place every month, and once per year in person, and majority voting is carried out among all members present at a meeting. When controversial issues arise, emergency meetings are organised online.

LIMITATIONS & CHALLENGES

GOVERNANCE: Current policies and legislations do not sufficiently support the agrarian management that protects soils and improves biodiversity and ecosystem services. National and regional laws at times contradict each other, some of which prohibit grazing. Some certified organic GeR farmers have been unable to sell their lamb as organic, and have had to sell it as conventional meat. Depending on the area, there can be limited access to certified organic slaughterhouses. Many GeR ranchers who would like to be certified in organic do not find the certification procedure worthwhile given their circumstances. A label exclusively honouring extensive farming would help many GeR ranchers overcome the lack of recognition and the inability to differentiate their products.

SOCIETY AND EQUITY: Whereas women have increasing responsibility at the professional level, traditional gender roles within the family structure often maintain an uneven workload at home. As women's role in decision-making positions has only recently gained acceptance, there is still much progress to be made in equitable gender representation. In mixed-gender farmer associations, it has always seemed as though male perspectives prevailed.

SUSTAINABLE AND FAIR ECONOMICS: Farmers' incomes do not always allow for saving money or reinvesting in farming activities. Due to a widespread inability of differentiating their extensive farming products, farmers often end up selling their products below their production cost. Many farmers have had to find additional jobs to make a living.

Càtedra d'Agroecologia i Sistemes Alimentaris

https://mon.uvic.cat/catedra-agroecologia/es/
https://www.uvic.cat/es/catedra-de-agroecologia-y-sistemas-alimentarios

AGROECOLOGY AND FOOD SYSTEMS CHAIR OF THE UNIVERSITY OF VIC

The **Chair on Agroecology and Food Systems for Social Transformation** aims to create and spread knowledge on alternative food systems in line with food sovereignty. It aspires to emerge as a meeting point fomenting social innovations and the co-creation of knowledge among diverse actors from civil society to high-ranked professionals, where researchers interact with collectives, companies, farmers, and other individuals. The Chair advocates for policies and research initiatives that promote environmental sustainability, short food supply chains and consumer awareness, as well as social justice, the right to food and the solidarity economy.

KEY FEATURES

- **Main goal:** encourage family farming as well as promote fair and sustainable alternative food systems
- **Main topics:** multidisciplinary research and education
- **Leading organisation:** Universitat de Vic-Universitat Central de Catalunya
- **Type of actors involved:** research
- **Funded by:** Universitat de Vic-Universitat Central de Catalunya
- **Founded in:** 2015

In the context of the 2014 International Year of Family Farming and the role of agroecology in improving global food security and the ongoing social, environmental, and economic crisis, the Chair was approved by the University of Vic in 2015. Under the leadership of Marta Rivera, a multidisciplinary group of academics was formalized, including researchers who do not necessarily work for the university. The research team is currently made up of five members and another three collaborating researchers. Whereas the Chair works with collectives and institutions at the local and regional scale, much of its research and outreach activities take a national and international approach. The Chair addresses agroecology from various angles, developing its three dimensions based on movements, science, and practice. Nonetheless, most of its work relates to ecology and the social sciences, while the agricultural sectors most examined include horticulture and livestock.

Among others, the Chair's lines of work cover local traditional knowledge as a sustainable development tool, adaptation to climate change and food security, the role of women and young people in agroecology as well as the contributions of ecofeminism to agroecology, the creation of networks that support social collectives and entrepreneurs, the development and application of innovative communication and research methodologies, the study and promotion of rural heritage including agrarian landscapes, and how agroecology relates to food security, food sovereignty and the commons.

The University of Vic's Chair on Agroecology receives a certain number of paid hours per year from the university. These hours are counted within the contract of professors who work for the university and simultaneously coordinate the Chair. Chair members and collaborators depend on additional funding from projects, such as European projects.

The Chair collaborates with various entities in its region, such as the Food Sovereignty Network of Central Catalonia (XaSACC), the Catalonian Sheperd School, and the imperfect food company Espigoladors.

At the national level, the Chair has collaborated with the National Coordination of Farming Organisations (COAG) and the Artisanal Cheese Producer Network (QueRed).

Researchers from the Chair have contributed to different post-graduate programmes: the Andalusian Master in Agroecology based at UNIA, the Local Agroecologial Dynamization course based at UAB, the Master in Organic Farming based at UB, and the Master in Agroecology and Food Sovereignty based at the University of Gastronomic Sciences of Pollenzo, Italy.

Picture 6: Group picture. Source: Marina Di Masso/Feliu López Gelats.

WHAT CAN WE LEARN?

The Chair for Agroecology and Food Systems is one of the very few university institutions in Europe that research food sovereignty, food security and gender issues, all from a food systems perspective.

5. CONCLUSION AND FUTURE PERSPECTIVE

Spain's agroecology movement develops around a food systems approach with prominent social and ecological dimensions, which depend on innovative short food supply chains to secure economic viability. Protecting ecosystem services at the farm and territorial scales, rural development and generational renewal, as well as seed production and exchange are important topics for the movement. Given the relatively smaller scale of agroecological initiatives, their economic viability often depends on collaborative processes among farms, such as sharing resources both on productive and commercial fronts (ESP-KI-3 & KI-5). This is particularly challenging considering their isolation, and policies that continue to favour large industrialized farms (Sánchez Taboada et al., 2020). Whereas agroecological farming in Spain is typically associated with local consumer groups and farmer markets, initiatives are developing public procurement programmes to increase demand, as well as food hubs to improve farmers' distribution options.

While many projects struggle to establish themselves in the highly precarious agroecology sector, a diverse set of actors are collaborating in various upscaling processes. A movement of local governments tied to the Milan Urban Food Policy Pact and Agroecology Cities Network, alongside several NGOs, continues to develop public policies and the right to food. Pressure is being made to include agroecological produce in public procurement criteria, as exemplified by school cafeterias emerging throughout the country. Moreover, the GIASAT group is developing food hubs to facilitate the coordination of supply and demand. Several informants mentioned the Daniel and Nina Carasso Foundation's leading role in financing and coordinating these upscaling processes, which is expected to continue at least over the next year (ESP-KI-12). Although informants cited the European Union's Rural Development Programmes as fostering such initiatives, the distribution of Common Agricultural Policy subsidies received criticism for maintaining an unsustainable model that depopulates the rural sector.

As Spain's agroecology movement is largely driven by consumers at the moment, developing food labels (and platforms that support these labels) is an ongoing strategy to expand the current consumer base. This is particularly relevant as the movement is leaving out many consumers who are less inclined to engage in activism to buy their food (ESP-KI-7 & KI-12). While some informants perceived rising awareness among consumers, many stressed that consumer support is being absorbed by the conventionalized supermarket organic sector as opposed to local agroecological production. Several informants saw potential in the national Alternative and Solidarity Economies Network (REAS), including its ties with Participatory Guarantee Systems. To foster a niche market for traditional varieties, work is also being done to develop a label for local farm-saved seeds. Local farmer markets, particularly the widespread 'ecomercados' provide an ideal platform to promote farmers as local heroes.

While mainstream actors are increasingly adopting the term 'agroecology', it will be important to evaluate 'agroecological' contributions within the larger societal context, including their impact on rural populations, farmer autonomy, and the ecosystem services we all depend on. In the context of global capitalism and trade policies, our consumption is intensifying negative externalities around the planet, while contributing to the abandonment of rural areas in Spain (and elsewhere), thereby prompting additional externalities such as

forest fires (ESP-KI-8). The horizontal governance model promoted in the Galician forestry law provides an example to follow in other regions. Whereas regional government support would represent a substantial leap considering the management of subsidies and agricultural authority held at this level, this may require greater public outcry. As demonstrated over previous decades, the agroecology movement is driven by civil society, often in response to ecological and economic crises. As many current activities will no longer be profitable with the approaching peak oil crisis, agroecology is a promising model for the post-oil period (ESP-KI-7 & KI-11). While agroecological models will vary from one place to another, developing local marketing arrangements built on a common vision between producers and consumers will be essential to strengthening food sovereignty.

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MAPPING AGROECOLOGY IN SWEDEN

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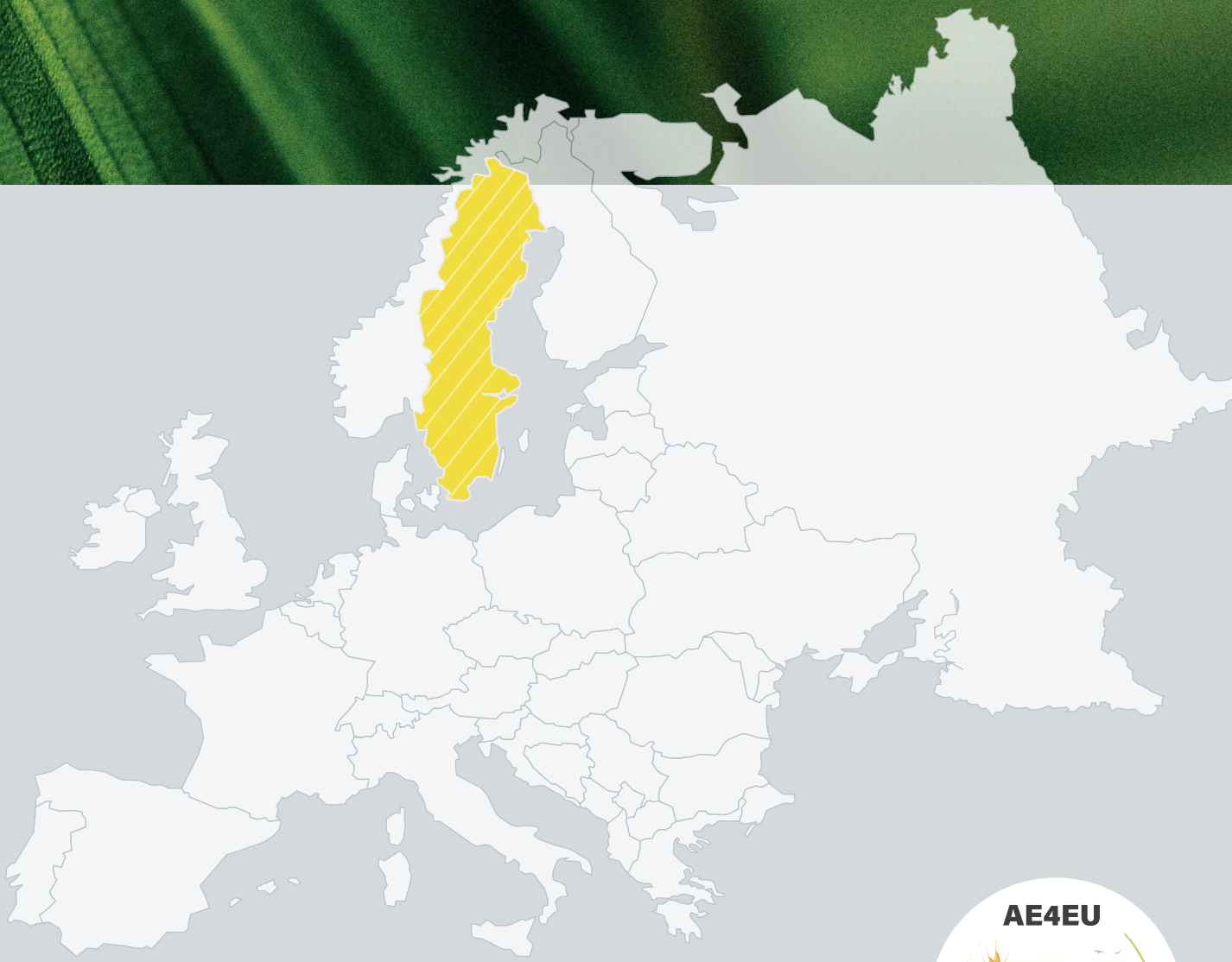

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SWEDEN

EXECUTIVE SUMMARY

This report provides an overview of how agroecology is currently perceived and used in Sweden, based on literature studies (including websites and social media) and interviews with Swedish actors performed during the spring of 2022. Organisations (e.g. associations, authorities, companies, universities) that were understood as key actors within agroecology in Sweden are listed and some selected initiatives are described and analysed. The report thus provides examples and insights about the current state of agroecology in Sweden, but it is not intended as an exhaustive analysis as not all initiatives could be included in this report.

The mapping shows that the term agroecology is not yet widely used in the Swedish context, but most of the identified initiatives recognise and agree that their activities are in line with agroecology practices and principles. Similarly, the term living lab seems to be largely unknown and of limited use, even though there are Swedish multi-actor initiatives that can be described as agroecology living labs. Agroecology is perceived mainly as an academic subject, and its interdisciplinary, system-oriented and holistic features make it difficult to define and relate to for several of the practice-oriented actors.

Actors that stand out by more frequently using the term agroecology are certain universities (in particular those that offer courses or a full study programme in agroecology), the Swedish Society for Nature Conservation, the farmer association NOrdBruk which is also the Swedish member organisation of La Via Campesina, and certain organisations and platforms that communicate scientific information.

To conclude, there are abundant notions about the need for inter- and transdisciplinary collaborations – including participants from academia, the private and public sectors, and civil society – to achieve transitions to more sustainable agriculture and food systems. Agroecology as an interdisciplinary, participatory and system-oriented approach is well suited to fill this need, but it requires that agroecology becomes more well-known throughout Swedish society and that knowledge in agroecology is embraced and implemented in decision-making at all levels.

SWEDEN

EXECUTIVE SUMMARY (IN SWEDISH)

Denna rapport ger en överblick över hur agroekologi uppfattas och används i Sverige i dagsläget. Rapporten baseras på en litteraturstudie, inklusive web-sidor och sociala medier, samt intervjuer med svenska aktörer som genomförts under 2022. Rapporten listar organisationer (till exempel föreningar, myndigheter, företag och universitet) som författarna uppfattar som nyckel-aktörer inom agroekologi i Sverige, och ger en lite mer utförlig beskrivning och analys av ett fåtal utvalda initiativ. Läsaren ska inte förvänta sig en fullständig kartläggning, eftersom alla initiativ inte har kunnat inkluderas.

Kartläggningen visar på en begränsad användning av begreppet agroekologi i Sverige, men att de flesta studerade initiativen ändå känner igen och håller med om att deras aktiviteter är i linje agroekologiska metoder och principer. På liknande sätt verkar begreppet levande lab (living lab) inte heller användas i någon större omfattning, och ett okänt begrepp bland de initiativ som studerats även om det finns svenska initiativ baserade på samverkan mellan olika aktörer som kan beskrivas som agroekologiska levande lab. Agroekologi uppfattas huvudsakligen som ett akademiskt ämne, och dess tvärvetenskapliga, system-orienterade och holistiska ambitioner gör att praktiskt orienterade aktörer kan ha svårt att relatera till ämnet. Några aktörer sticker ut genom att oftare använda begreppet agroekologi, och dessa är vissa universitet (särskilt de som ger kurser eller ett helt utbildningsprogram i ämnet), Naturskyddsföreningen, lantbrukarorganisationen NOrdBruk (som även är den svenska medlemsorganisationen i det internationella nätverket La Via Campesina), och vissa organisationer/plattformar som arbetar med kommunikation av vetenskaplig information.

Rapportens slutsats är att det finns många insikter om behovet av tvärvetenskapliga och yrkesöverskridande samarbeten – som inkluderar akademi, privat och offentlig sektor såväl som civilsamhället – för att få till en omställning till mer hållbara jordbruks- och livsmedelssystem. Agroekologi, som tvärvetenskaplig, samarbetsbaserad och system-orienterad ansats kan fylla detta behov, men det kräver att agroekologi blir mer välkänt i hela det svenska samhället samt att agroekologisk kunskap tas emot och används i beslutsfattande på alla nivåer.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in Sweden are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in Sweden.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	NGO	Local production of traditional cereal varieties and seeds	
2	NGO	Farming and producer-consumer relationships	
3	University-led research project	Production and implementation of knowledge on biocultural heritage in food production	
4	Public Entity	Organic agriculture, sustainable food systems	
5	Farm	Sustainable food systems	
6	NGO	Campaigning for climate justice	
7	NGO	Promotion and development of local legume production	
8	NGO	Consultation and insurance within agriculture	
9	Public Entity	Implementation of state governance	
10	Public Entity	Implementation of state governance	
11	University	Research and Education	
12	NGO	Implementation of and mass education about food sovereignty	
13	NGO	Preservation and local production of seeds	
14	NGO	Academic, private, public and civil society; agricultural development and reduction of hunger	
15	NGO	Indigenous food production systems	
16	NGO	Urban farming and food systems, social sustainability	
17	University	Agricultural sciences	
18	University	Dietary Sciences and the food production chain	

2. CONTEXT

Two-thirds of the total land area in Sweden, not including water bodies, is made up of forests – 28 out of 41 million hectares (SCB 2019). Farmlands make up just above 3 million hectares, with 2,544,900 hectares of arable land and 465,700 hectares of pastures and meadows (Jordbruksverket 2021a). Agricultural lands on flatlands tend to make up a larger percentage of the total land in mid- and southern Sweden. Around 20% of agricultural production is certified organic (Jordbruksverket 2021b). There are two additional certifications, KRAV (a Swedish certification) and Demeter, whose certification requirements are somewhat stricter than those of the EU (Jordbruksverket 2022a). Agricultural land use is dominated by ley and green forage production, cereals (mainly winter wheat), pastures for grazing, and meadows for hay or forage production (Jordbruksverket 2021a).

Since World War II, national productivity goals applied to agriculture have led to immense centralisation, whereby farm size increases at the cost of the number of holdings (SCB 2019). The number of holdings between 2.1-10.0 hectares has been heavily reduced since the late 1920s, while the number of holdings over 100 hectares has increased during the same period – simultaneously, the average size of holdings increased from 8.7 to 43.4 hectares. This trend of centralisation is ongoing and can be seen particularly with dairy farms – the number of farms with cows for milk production has decreased substantially over the last twenty years, but only a fraction of this decrease has translated to fewer total dairy cows (Jordbruksverket 2021a,c).

Sweden has a unique experience of corporate land grabbing due to the events taking place between circa 1850 and 1906, a historical period referred to as Baggböleriet. During this period, wealthy forest owners and forest companies bought forest land from farmers using morally questionable manoeuvres (Stadling 1894). The consequences of this period were centralised ownership of vast forest land, and subsequent poverty and landlessness of farmers and peasants, eventually leading to national legislation against corporate acquisition of forest land in 1906 (the Land Acquisition Act) (Östling 2020).

In preparation for EU membership, monopolised prize negotiations between the state and *Lantbrukarnas Riksförbund* (LRF, The Federation of Swedish Farmers – the largest farmers association in Sweden) were concluded. LRF initially opposed a market adjustment of the agricultural sector, but in what is referred to as Omställning -90 (translated as Transition -90) the association changed their stance and started campaigning for deregulation and membership in the EU (LRF 1988).

The proportion of agricultural land managed according to organic farming practices (i.e., land converted to certified organic farming) has increased strongly during the past two decades; from around 7% in 2005 to 20% in 2028 (Jordbruksverket 2023). However, this development has levelled off after 2018, and the area of organically managed land has decreased slightly until 2022.

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

Although education on agroecology is not widespread in the country, individual efforts to initiate programmes and courses on agroecology via the Swedish University of Agricultural Sciences were made during the late 1990s, but they faced difficulties and certain opposition at the time (SWE-KI-9). The Agroecology master's programme started in 2010 is still one of the few educational programmes or courses using the term in the title. This master's programme is most often mentioned by key informants, followed by the community school course at Karlskoga Folkhögskola (an institution for adult education that does not grant academic degrees) (Table 2). Although the academic world adopted the term agroecology slowly, most key informants now identify it as being strongly associated with academia (SWE-KI-1, KI-4, KI-7, KI-13 & KI-17).

Several associations provide practical training in agroecology for members or non-members, in exchange for a small fee – such as the Sesam association which organises training on seed production and the association Allkorn, which offers lectures on soil health and the production of seeds and local grain varieties.

There is a trend of increased focus on small-scale production and self-sufficiency in a more general educational context, including informal, non-academic training and education. One key informant describes a separation between theoretical education and practical training (SWE-KI-5) . Multiple key informants formulated that an obstacle to the advancement of agroecology is the intermittent tendency to strip the term from social and political values – viewing it purely as a scientific discipline or an agricultural practice – and articulate the importance of an interdisciplinary approach. One additional example of this breach, described by some key informants, is the lack of education and training concerning seed production. Even in well-rounded self-sufficiency courses and in high schools focusing on agriculture (naturbruksgymnasium), seed production is often excluded (SWE-KI-13).

Table 2: Courses and programmes in Swedish universities and community schools.

UNIVERSITY	COURSE OR PROGRAMME NAME
Swedish University of Agricultural Sciences *Sveriges Lantbruksuniversitet*	• Agroecology (Master's programme) • Rural development and Natural Resource Management (Master's programme) • *Samhällsutveckling – landsbygd* (Social development – rural areas, B.Sc. programme) • *Agroekologi: Att arbeta med komplexitet i lantbrukssystem* (Agroecology: Working with the complexity of farming systems, B.Sc. course)
Örebro University *Örebro Universitet*	• *Miljövetenskap A, Agroekologi* (Environmental science, Agroecology, B.Sc. course, 15 ECTS)
Färnebo Community School; institute for non-academic adult education *Färnebo Folkhögskola*	• *Permakulturdesign* (Permaculture design, Community school course). The last year running the course • *Skogsträdgårdsodling i praktiken* (Practical forest gardening, Community school course) • *Småskalig ekologisk odling* (Small-scale organic farming, Community school course)
Holma Community school; institute for non-academic adult education *Holma Folkhögskola*	• *Regenerativ odling och Permakulturdesign* (Regenerative farming and permaculture design, Community school course) • *Mat ur jorden – grundkurs i hållbar grönsaksodling* (Food from the soil – Basic course in sustainable vegetable gardening, Community school course) • *Skogsträdgård: odling och ekologi* (Forest gardening: cultivation and ecology, Community school course) • *Ställ om: permakultur, entreprenörskap, krisberedskap och självhushållning* (Adaptation: permaculture, entrepreneurship, preparedness and subsistence, Community school course)
Karlskoga Community school; institute for non-academic adult education *Karlskoga Folkhögskola*	• *Agroekologi – Småskalig odling i praktik och perspektiv* (Agroecology – Small-scale farming in practice and perspectives, Community school course) • *Andelsjordbruk – delat ansvar, delad skörd* (CSA farming – shared responsibility, shared harvest, Community school course)

3.2. LIVING LAB

Only two out of 18 key informants were familiar with the term living lab and could mention a couple of examples well suited to the definition. The examples were projects initiated by two or more different types of actors, such as farmers, researchers and supply chain actors. These initiatives often contained elements of research, communication and collaboration with local neighbourhoods, and meeting one or more needs of the nearby community. Examples of living labs included in this report are LOBA and Botildenborg Foundation. LOBA is a network consisting of farmers, researchers, consumer representatives and actors from the third sector, who aim to promote the local production of legumes. Workshops and collaborations across sectors are the main methods towards achieving this goal. Botildenborg Foundation organises a variety of community-supporting and supported activities related to food production and preparation, involving school children and young adults, retirees, the municipality and a private corporation, as well as local religious associations. Both examples of living labs included in this report recognise agroecological principles but do not actively use the term in communication with the public – Botildenborg

uses it internally but to a limited extent. The term 'living university' has been used by the Royal Technical University (*Kungliga Tekniska Högskolan*, KTH), and has now been adopted by other organisations[1], such as the foundation Jamtli.

Living labs per se are not widely known and developed in Sweden but intersectional, transdisciplinary, and collaborative approaches are increasing (SWE-KI-11 & KI-17). Examples of potential living labs not included in this report are Vattholma Gård[2], linked to perennial food production and agroforestry; Angereds Gård a model small-scale organic farm producing food for local pre-schools and retirement facilities, which offers training courses in vegetable production[3].

3.3. MOVEMENT

Most movements mentioned by key informants were related to climate and environment, such as Naturskyddsföreningen[4] (the Swedish Society for Nature Conservation), Fältbiologerna[5] (the Field Biologists, a nature-oriented youth association) and a few associations related to organic production, such as Permakulturföreningen[6] (Association for Permaculture) and Ekologiska Lantbrukarna[7] (Organic Farmers association). Naturskyddsföreningen is mentioned by several key informants as one of the few associations using the term agroecology (SWE-KI-7, KI-12 & KI-17). The social movement most frequently using the term is NOrdBruk (North Cultivation)[8], a non-profit association for small-scale farmers. This association is connected to the international peasant movement La Via Campesina, through the European Coordination of La Via Campesina (ECVC). FIAN[9] is another association mentioned by several key informants (SWE-KI-4, KI-12 & KI-15) concerning agroecology. FIAN is an international human rights association present in over fifty countries, represented in Sweden since 1990. A list of additional movements is provided in Table 3.

Table 3: Swedish movements (associations and networks) not mentioned in the text above.

ASSOCIATION	Scale of association	AIM
Association of Family Farmers *Familjejordbrukarnas Riksförbund*	National	Fortification of family farming
Association for Mountain Farming and Outfield Production *Förbundet Svensk Fäbodkultur och utmarksbruk*	National	Preserve and fortify traditional mountain farming
Friends of the Earth Sweden *Jordens Vänner Sverige*	International	Advocate for climate justice and human rights
Power over the Food *Makten över maten*	National	Promotion of food sovereignty
Food Protection *Matvärn*	National	Advancement of local and community-based food production
Reform the Food *Reformaten*	National	Development of a sustainable global production system
Association of small-scale farmers *Förbundet Sveriges Småbrukare*	National	Promotion of sustainable farming and forestry

[1] https://www.liveinlab.kth.se/nyheter/aktuellt/kth-live-in-lab-stottar-jamtli-living-university-1.1024819 [2] https://agroforestry-vattholma.se [3] https://stadsnaraodling.goteborg.se/modellodling-pa-angereds-gard/
[4] https://www.naturskyddsforeningen.se [5] https://www.faltbiologerna.se/om-oss/ [6] https://permakultur.se [7] https://www.ekolantbruk.se [8] https://www.nordbruk.se/ [9] https://fian.se/om-fian/

3.4. PRACTICE

The term agroecology is generally not used by producers in the country, the main reason being a lack of familiarity and knowledge around it – either by producers or consumers (SWE-KI-1, KI-8, KI-11 & KI-12). Other descriptions such as organic agriculture or KRAV-certified production (a Swedish certification for organic production) are preferred.

Practices mentioned by key informants – including permaculture, biodynamic farming, regenerative farming and no-till – are not statistically recorded at the country level and the extension of these practices is not easily estimated. Alongside the Association for Permaculture and the Organic Farmers Association, a few additional associations focusing on promoting specific agroecological practices are *Agroforestry Sverige* (Agroforestry Sweden), *Andelsjordbruk Sverige* (Community Supported Agriculture Sweden) and *Förbundet Svensk Fäbodkultur och utmarksbruk* (the Association for Mountain Farming and Outfield Production). *Andelsjordbruk Sverige* (Community Supported Agriculture Sweden), one of the initiatives analysed in this report, have collaborated with *Länsstyrelsen Västra Götaland* (the county administrative board of Västra Götaland) to disperse information about CSA nationally.

In Sweden, farmers may be supported by EU subsidies for the following activities: diversification of crops, mountain hill agriculture, pastures, ley and hay production, organic farming (or transition to organic farming), implementation of catch crops and vegetative protection zones to reduce nitrate leaching in sensitive areas, restoration of wetlands, and agricultural activities in the northern parts of the country (here, the national limit for receiving agricultural subsidies from within the European Common Agricultural Policy – CAP – has been lowered from four hectares to three hectares) (Jordbruksverket 2022b). One key informant stated that requirements for receiving subsidies for the diversification of crops is quite low (implementation of three or more different crops per farm and allocating 5% of the arable land as an ecological focus area) but may still inspire diverse crop rotations or polycultures (SWE-KI-17).

3.5. SCIENCE

The Swedish University of Agricultural Sciences has several departments researching subjects related to agroecology, such as intercropping, soil health, biodiversity conservation, integrated pest management, use of perennial crops, sustainability innovations, producer-consumer relations, and rural development (Table 4). Research related to agroecology, mainly within social sciences and technology, also takes place at Karlstad University, Mid Sweden University and Örebro University (Table 4). According to one key informant, research including all or most elements of agroecology – science, social movements and practices – tend to be concentrated in departments of social sciences (SWE-KI-6). One key informant states that the term is increasingly incorporated in research settings, yet descriptions such as 'multifunctional land use' might be more widely accepted and understood (SWE-KI-11).

Table 4: Departments at Swedish universities that perform research within or related to agroecology.

UNIVERSITY	RESEARCH DEPARTMENTS
Karlstad University	• Centre for Research on Sustainable Societal Transformation
Mid Sweden University	• Ecotechnology and Sustainable Building Engineering
The Swedish University of Agricultural Sciences (SLU)	• Biosystems and Technology • Crop Production Ecology • Ecology • People and Society • Plant Protection Biology • Soil and Environment • Urban and Rural Development
Örebro University	• Man-Technology-Environment • Science and Technology

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 5: An overview of initiatives, cases and examples that are described and analysed in this section.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Holma Folkhögskola** *Holma community school*	Local	Community School	Transformation towards welfare for the planet and humans, fair distribution	✓		✓	✓	
2	**The Agroecology masters programme at SLU**	Inter-national	University education	Provide inter-disciplinary knowledge in agroecology	✓				
3	**LOBA; Lokala Baljväxter** *LOBA; Local Legumes*	Regional	Network of all actors of the food chain	Promotion and development of local legume production		✓		✓	✓
4	**Stiftelsen Botildenborg**	Local	Foundation and corporation	Social sustainability through food and farming	✓	✓		✓	
5	**Sapmí** *Slow Food*	National	Association	Rights of indigenous food producers	✓		✓		
6	**NOrdBruk** *North cultivation*	National	Association of farmers and members of the civil society	Food sovereignty and mass education	✓		✓		
7	**Andelsjordbruk Sverige** *Community Supported Agriculture Sweden*	National	Association of producers of CSA	Fortify and promote CSA	✓			✓	
8	**BIOKUMA** *Biocultural Heritage and alternative food production*	Regional and Inter-national	Universities and farmers	Research project on reproduction of biocultural heritage through alternative food production				✓	✓

Table 6: Additional initiatives, cases, and examples in Sweden - not included in this report.

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Agroekologi – Småskalig odling i praktik och perspektiv *Agroecology – Small-scale farming in practice and perspectives*	Local	Community School Course	Promote agroecological principles and practices					
Agroforestry Sverige *Agroforestry Sweden* https://agroforestry.se	National	Association	Promote the implementation of agroforestry					
SLU Centre for Organic Food & Farming, EPOK https://www.slu.se/en/Collaborative-Centres-and-Projects/epok-centre-for-organic-food-and-farming/	National and Inter-national	University unit	Coordinate and inform about research on organic agriculture					
Odla i norr *Cultivate in the north* https://www.rvn.se/sv/Folkhogskolor/Hola-folkhogskola/kursutbud/distanskurser/odla-i-norr/	Local	Community School Course	Education on small-scale food production and food sovereignty					
Ekologiska Lantbrukarna *The Organic Farmers* https://www.ekolantbruk.se	National	Farmer's association	Promote organic agriculture					
Familjejordbrukarna *The Family Farmers* https://sv-se.facebook.com/Familjejordbrukarna/	National	Farmer's association	Promote family farming and strengthen rural areas					
Förbundet Svensk Fäbodkultur och utmarksbruk *The Association for Mountain Farming and Outfield Production* http://fabod.nu	National	Association	Promote traditional mountain farming					
Matvärn *Food Protection* https://www.facebook.com/groups/1105241296881908/	National	Network	Increase non-monetary food production supported by and supporting local communities					
Måltidsekologi-programmet *The Meal Ecology Programme* https://www.facebook.com/groups/1105241296881908/	Local	Bachelor programme	Education on sustainable food production and culinary sciences					
NordFrö *North Seed* https://nordfro.se	National	Corporation	Increase national and small-scale production of seeds					
REKO-ring *REKO-rings; initiatives for fair consumption* https://hushallningssallskapet.se/forskning-utveckling/reko/	National	Farmer's market model	Local distribution of organic food					
Småbrukarna *Small Scale Farmers* https://www.sverigessmabrukare.se/	National	Farmer's association	Promote small- and medium size family farms					

INITIATIVE N°1 – HOLMA COMMUNITY SCHOOL

Holma Folkhögskola
tillsammans odlar vi en hållbar värld

https://www.holmafolkhogskola.se

HOLMA FOLKHÖGSKOLA
HOLMA COMMUNITY SCHOOL

Holma Community School (*Holma Folkhögskola*) was founded in 2015, by the municipality and currently consists of eight ideology-driven, non-profit organisations. The leading organisations have varying backgrounds and aims but consolidate around issues of environmentally and socially sustainable food production systems, such as permaculture or biodynamic farming. The Holma Community School describe their vision as a transformation towards the earth's and humans' welfare and a fair distribution of resources.

KEY FEATURES

- **Type of education and training**: practical and theoretical
- **Main topics:** agroecological principles, transition to agroecology, horticulture
- **Training duration:** varying between 1 day and 1 year
- **Type of legal entity:** community school
- **Founded in:** 2015
- **Accessible to:** anyone meeting the admissions criteria

Funding for community schools is received from the state and the region. The admissions criteria for Holma Community School vary between courses but are generally based on previous participation in other courses held by the school or corresponding experience in the cultivation of crops. Additional criteria includes an ambition or plan to use the acquired knowledge and engagement in alternative farming social movements. Courses offered by the school focus on forest gardening, permaculture design, regenerative farming, construction and handcrafting for self-sufficiency, and the transformation of foods for added value. The education is built around a practical experience where theoretical knowledge is put to use through workshops, activities, discussion and reflection.

Agroecology is not explicitly mentioned in the school's courses and mission statement, yet the operating principles of Holma Community School are based clearly on agroecological concepts. The Holma Community School grew out of the cooperative movements concerned with alternative farming beginning in the '60s and '70s. Implicit in the school is an understanding that agroecology is practised rather than described. The farming methods mentioned above – permaculture, regenerative farming and forest gardening – can be comprehended as agroecological methods. The structure and decision-making at Holma Community School are centred around sociocracy, a measure for creating connection and communication between students, teachers and management. Principals for each subject are selected through deliberation.

Holma Community School has formal connections with the eight responsible authorities, who are working to propel the vision forward. The school is also in contact with NOrdBruk, the Swedish member organisation of European Coordination Via Campesina (a regional member of the international peasant movement La Via Campesina); the Swedish University of Agricultural Sciences (Sveriges Lantbruksuniversitet, SLU); and the municipality of Lund (Lunds kommun). There are around ten consistent collaborations with organisations engaged in the cultivation of crops and an informal network of alumni, for example, who have become small-scale producers. Bioregionalism, a strategy used within permaculture, is applied regarding cooperation at Holma Community School – meaning local collaboration is prioritised. However, international relationships also exist, for instance, the school hosted an international permaculture festival in 2021.

WHAT CAN WE LEARN?

By offering short- and long-term courses on location as well as online, Holma Community School increases their availability, reaching people of various backgrounds. Interactions with the surrounding society at different levels are an important measure for increasing the impact and incorporation of social and environmental values held by the school. By utilising the existing network, Holma Community School can sustain favourable exchanges with cooperation partners. A farm nearby (run by Holma alumni) is making use of a two-wheeled tractor owned by the school in exchange for providing training in tractor driving and internship spots for students.

POSITIVE IMPACTS

COOPERATION: By creating and maintaining contact with alumni and nearby producers, for example, the initiative is an active part of their network. Whenever there is a need for any particular expertise, the network is the first resource to be utilised.

EDUCATION: The initiative is promoting an agroecological transition through education and practical training in sustainable small-scale farming and through discussion and criticism of the current food production system. Analysis on a broader scale enables an understanding of the issues faced today and how agroecological principles might offer solutions. Theoretical discourse is anchored in practical experience, and by avoiding isolating different parts of the matter, Holma Community School can inspire and support new and longer-lasting initiatives.

SOCIETY AND EQUITY: All concerned groups are involved in dialogue concerning the development and improvement of Holma Community School through the sociocratic structure.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Community Schools in Sweden do not receive funding for accepting foreign students, therefore, although the interest is high, Holma Community School cannot offer education in any other language besides Swedish. Short classes are held in English sometimes, depending on time and contingency.

THE AGROECOLOGY MASTERS PROGRAMME AT SLU

The Swedish University of Agricultural Sciences (SLU) performs research, education and environmental assessment within agriculture, horticulture, forestry, landscape architecture and veterinary medicine. SLU was founded in 1977 by merging the Agricultural, Forestry and Veterinary Colleges, the School for Forest Management and the Skara Veterinary Institute. There are around 25 first-cycle degree programmes offered at SLU, of which the majority are taught in Swedish, and around 20 second-cycle degree programmes (requiring a bachelor's degree or equivalent for admission) of which the majority are taught in English.

The agroecology master's programme started in 2010 and has been offered every year since. There are 20 study places available on the programme and after a drop in the number of students entering the programme in 2011 when Sweden introduced tuition fees for non-European students, between 10 and 15 students participated in the programme each year from 2013 to 2019. In 2020 there was a large increase in the number of students applying to the programme, and around 20 students started the programme each year in 2020-2022.

KEY FEATURES

- **Type of education and training**: second-cycle university education
- **Main topics:** agroecology, methods for participatory learning and action, sustainable agriculture and food systems, environmental economics, integrated pest management
- **Training duration:** 2 years (120 ECTS)
- **Type of legal entity:** public university
- **Founded in:** 2010 (start of the programme; SLU was founded in 1977)
- **Accessible to:** anyone meeting the admissions criteria

The normal study path covers two years of full-time studies (120 ECTS credits), of which the last semester (30 ECTS credits) consists of the master thesis project. It is an international programme with broad entry requirements: a bachelor's degree (or equivalent qualification) in natural science, social science or technology. The student population is usually composed of approximately one-third from Sweden, one-third from other European countries and one-third from the rest of the world.

The Agroecology programme aims to provide in-depth knowledge of the ecology of food production systems and a holistic understanding of the sustainability challenges of food production. It integrates knowledge about biological and social processes, and how these interact and influence the sustainability of farming and food systems. Combining academic knowledge (e.g. textbooks, scientific articles and reports) with case studies, farm and field visits and student projects, the programme covers the complexity and potential multifunctionality of land use and explores inter- and transdisciplinary solutions to handle sustainability dilemmas in the food system.

After completion of the programme, students obtain a master's degree in agricultural science. Depending on the student's choice of elective courses, specialisation in agroecology can be added to the master's degree in agricultural science. The programme structure can be illustrated by the composition of recommended courses listed in the programme syllabus:

YEAR 1

- Agroecology Basics[1], 15 ECTS
- Agroecology and Sustainability of Production Systems[1], 15 ECTS
- Environmental Economics and Management[2], 15 ECTS
- Project Management and Process Facilitation[2], 15 ECTS

YEAR 2

- Integrated Pest Management in Sustainable Production Systems, 15 ECTS
- Foodscapes[1], 15 ECTS
- Scientific Methods, Tools and Thesis Writing[2], 15 ECTS
- Environmental Issues in Crop Production, 15 ECTS
- Advanced project-based course in horticulture and agriculture, 15 ECTS
- Urban Ecology for the Development of Sustainable Living, 15 ECTS
- Project Based Research Training, 15 ECTS
- Advanced Practice, 15 ECTS
- Independent Project in Agricultural Science – Agroecology (the master thesis course)[1], 30 ECTS

[1] Required for a master´s degree in agricultural science, specialisation in agroecology.
[2] Elective programme courses, at least 15 credits required for a master´s degree in agricultural science, specialisation in agroecology.

WHAT CAN WE LEARN?

Experiences from both students and teachers on the programme indicate that the holistic and interdisciplinary approach provides a genuine and rich understanding of the complexity of the sustainability of agriculture and food systems. At the same time, the width of subjects covered in different courses within the programme makes it difficult to deeply engage with any one particular topic. Therefore, students often describe a trade-off between the holistic agroecological perspective and systems-oriented analysis of problems and solutions, and a deeper focus on a specific question within a single discipline. While the holistic perspective is embraced as an important skill in agroecology, students are often also eager to gain in-depth knowledge in a subject of particular importance for their studies, and these two aims are not always possible to combine.

POSITIVE IMPACTS

COOPERATION: Students and teachers are shown the importance of cooperation to solve complex problems, receive training and understanding in different perspectives, and work together across disciplines and professions. The programme has created new collaborations within SLU, as well as between actors outside the university and SLU employees and/or students.

EDUCATION: The programme is directly contributing to education in agroecology and transitions towards more sustainable agricultural and food systems. The increasing number of alumni who graduated from the programme are also contributing to the implementation of agroecological knowledge in their professions.

LIMITATIONS & CHALLENGES

GOVERNANCE: The interdisciplinary structure poses challenges to ensure depth in particular subject matters for the students.

INITIATIVE N°3 – LOBA

Hushållnings sällskapet

https://hushallningssallskapet.se/samverkan-i-hela-vardekedjan-med-fokus-pa-baljvaxter/

LOKALA BALJVÄXTER (LOBA)
LOCAL LEGUMES

LOBA stands for Local Legumes (*Lokala Baljväxter*) and is a network consisting of local producers, consumer representatives, actors involved in the refinement of produce, wholesalers, researchers, and actors involved with processing like de-hulling and drying. The main aim of the initiative is to promote increased production of legumes locally, as well as increasing consumption and awareness of the associated benefits (e.g. enhanced soil health and reduced reliance on inputs when incorporating legumes in cropping systems; dietary benefits). The initiative focuses on legumes for human consumption and touches on animal feed issues, for example by encouraging a shift from imported soy fodder to locally produced proteins. In December 2021, with the completion of another project on legumes (New Legume Foods), LOBA was launched. LOBA aims to involve fifty actors by the end of the project in 2023. No farmer organisation is currently involved in the network, although the initiative is in contact with an organisation for ecological farmers and several individual farmers are part of the network.

KEY FEATURES

- **Main topics:** promoting production and consumption of local legumes
- **Founded in:** 2018
- **Type of organisation supporting the living lab:** The Rural Economy and Agricultural Society (Hushållningssällskapet)
- **Type of actor involved:** producers (including farmers), consumers, scientists, wholesalers, and refineries
- **Scale of the living lab:** regional

In connection with the start-up of the project, an 'open space' workshop was carried out. Actors and participators in New Legume Foods and LOBA discussed different subjects and issues, and the information was gathered and documented. From this activity, it was clear to the initiative that there were several areas in need of work: sensory stimuli like flavour, scent and appearance; knowledge about cooking legumes; and the use of field trials with older varieties and landraces.

During 2022, the initiative organised network meetings, field visits and field trials. The activities are centred around the interests of the stakeholders within the network who all wish to benefit from the production of legumes sustainably.

The founder of the initiative is The Rural Economy and Agricultural Society in Skania (Hushållningssällskapet Skåne). Finance is received through the County Administrative Board of Scania (Länsstyrelsen Skåne), and a project held by the initiative, which ended in May 2022, was funded through Horizon 2020. The Rural Economy and Agricultural Societies belong to the third sector and cannot qualify as either a state organisation or as a private one. There are fifteen societies across the country, standing alone but cooperating. First and foremost, they consist of agriculture advisors, but they are also involved in science, practical research and education. Due to the way LOBA is funded, it is restricted to the Scania region, but the actors involved are hopeful that the work of the initiative can be carried out nationwide.

The initiative is not familiar with the term living lab but recognises the concept when provided a description and agrees that their activities contain features of a living lab. The major focus of the initiative is the participation of several actors in the food chain, as well as the increasing resilience on both the farm level and landscape level. Co-creation is important for the initiative and even though not currently implemented, a goal for the future is testing and experimenting in real-life settings (for example, more field trials of local legume varieties and aid from consumer groups). Agroecology is not a term that is being used in the initiative so far as the initiative is somewhat required to adapt to terms and expressions used in authority publications from the Swedish Board of Agriculture (*Jordbruksverket*), the County Administrative Board and the Swedish Agency for Economic and Regional Growth (*Tillväxtverket*). For example, descriptions such as 'local food production' or 'local food chains' and 'sustainable food production' are more commonly used. The initiative however identifies strongly with agroecological principles or values such as prioritising soil health, regenerative and input-resourceful farming, knowledge-sharing and the use of sustainable crops and cropping systems.

Picture 1: Swedish-produced lupin, grey peas and lentils in a lunch prepared by the chef involved in the LOBA network and served at one of the LOBA workshops. Source: Raj Chongtham Iman.

WHAT CAN WE LEARN?

A characteristic feature of the initiative is the 'open space' workshops, where most actors involved in the food chain participate and collectively formulate ideas for existing issues. This creates a broad understanding of the challenges taken on by the initiative and generates areas to focus on.

POSITIVE IMPACTS

COOPERATION: Cooperation between actors of the food chain is very important for the initiative.

HEALTH: The initiative works to promote the health-related perks of consuming legumes regularly, as well as the advantageous connections between legumes and soil health.

LIMITATIONS & CHALLENGES

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: It is difficult for the initiative to receive the support needed from consumers. Producing larger volumes of legumes is possible, but increased consumer demand is required to make an increase in production viable. access and short supply chain supports and infrastructure".

INITIATIVE N°4 – BOTILDENBORG FOUNDATION

BOTILDENBORG
food * farming * friendship
https://botildenborg.se

BOTILDENBORG FOUNDATION
STIFTELSEN BOTILDENBORG

Botildenborg Foundation and the company Xenophilia are coordinated together under the name 'Botildenborg', which is also the name of a building located in the city of Malmö in Southern Sweden. Their shared vision is to use food and farming as tools for attaining social, ecological and economic sustainability. The initiative's objectives are to create jobs, knowledge and community through their work, focusing on urban food production based on small-scale open-field cultivation of vegetables. The social activities of Botildenborg Foundation are supported through commercial farm activities, income generated through property leasing and hosting of meetings and conferences, and through different types of project financing. The urban farm at Botildenborg was initiated through cooperation with the Swedish University of Agricultural Sciences (*Sveriges Lantbruksuniversitet*, SLU) and the city of Malmö. Their model for urban farming is implemented by providing access to land in Malmö for market garden-size vegetable production and offering training for new urban farmers. The initiative has eleven employees and about 20 trainees per year. Botildenborg also offers work training through the city of Malmö, involving around 60 persons per year. There are approximately 20 participants (including school children) in the social farming activities. Whether the employees are gardeners or chefs, working within the corporation or the foundation, there is collaboration across organisations and practices.

KEY FEATURES

- **Main topic:** social sustainability through food and farming
- **Founded in:** 2015
- **Type of organisation supporting the living lab:** corporation, foundation, municipality
- **Type of actors involved:** members of the civil society, chefs, gardeners, university
- **Scale of the living lab:** local

Botildenborg is associated with the global Social Gastronomy movement. This movement aims to connect organisations that are working towards creating better communities, "using the power of food to generate social change." The term agroecology is not used by the initiative, but employees are familiar with agroecological principles and concepts. The different elements at Botildenborg are seen as an entirety, where the social activities are as important as the farming systems. The commercial farm at Botildenborg is based on SPIN-farming (Small Plot Intensive), bio-intensive and ecological principles, with no fossil fuel or chemical usage. The social cultivation systems incorporate permaculture principles.

Odla Kompis (roughly translated to 'Farming Friend'), financed by the Swedish Board of Agriculture through Leader Skåne, is a project run by the initiative where Swedish families are connected with families who have recently arrived in the country, creating new social networks. The initiative also works specifically with young people through #MinFramtid (#MyFuture), where participants run a summer café over the holiday. Children between four and five years old are included through a project named Botildenborg Skolträdgård (Botildenborg school garden) where they learn how to cultivate a garden and prepare food outdoors. The project #MinFramtid is funded by the Swedish Inheritance Fund (*Allmänna Arvsfonden*), *Råbystiftelsen* (foundation) and *Sparbanksstiftelsen Finn* (foundation owning the bank Sparbanken), respectively.

Another way in which the initiative is working for social sustainability is through work training programmes coordinated with and funded by the city of Malmö and the European Social Fund. These programmes mainly include people who have been unemployed for an extended period. The participants train in the Botildenborg kitchens and cultivation systems, and the food produced is served to guests.

WHAT CAN WE LEARN?

The model is to offer initial training and trial fields where new urban farmers can develop their skills before moving into commercial production. This has been developed and communicated to other cities in Sweden, as well as to other European countries, through different research and innovation projects. Botildenborg now offers its competence in working with this model as a service to municipalities through its website – to continue inspiring similar collaborations and boosting food production in the city or peri-urban areas.

POSITIVE IMPACTS

COOPERATION: Through projects and cooperation with different actors, and the inspirational farms at Botildenborg, the initiative manages to generate interest in urban farming, both locally and internationally.

SOCIETY AND EQUITY: The initiative aims to reach and assist children and adults who are marginalised in society in creating a more meaningful everyday life. Activities to support this goal are community gardening and cooking, work training and summer jobs.

EDUCATION: The initiative offers inspiration and advice to public institutions that want to encourage and enable urban farming locally.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Project funding is based on EU means, publicised by national institutions, and often requests new ideas and designs. This requirement to start new projects based on new approaches and ideas might be an obstacle against continuity, (i.e. it can shift the focus away from the continuous refinement of existing or recently developed activities that are well-functioning and useful for the community).

INITIATIVE N°5 – SLOW FOOD SAPMÍ

Slow Food®

https://www.slowfood.com/slow-sapmi/

SLOW FOOD SAPMÍ

Slow Food Sapmí is a non-profit member organisation of Slow Food International and was founded in 2009. Members are both Sami and non-Sami people, reindeer herders, fishers, food producers, food crafters, and individuals who are interested in supporting the work of the organisation. Food sovereignty is central to the Slow Food International movement, which is led by the slogan "good, clean and fair." Slow food Sapmí prioritises issues related to the right to land, water, and traditional foods, as well as the health of humans, animals and the environment.

KEY FEATURES

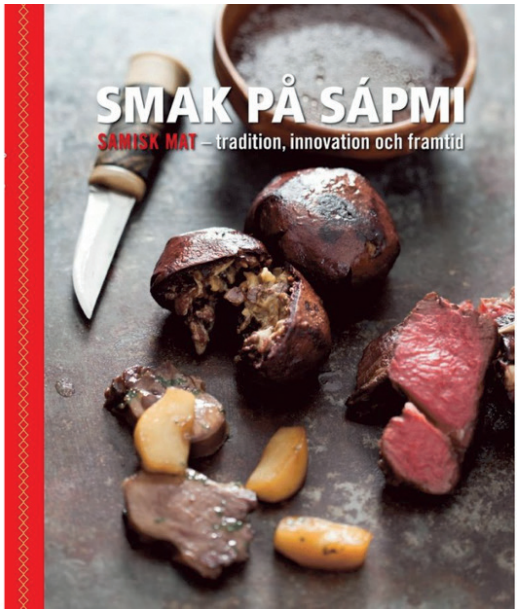
- **Main goals:** food sovereignty, rights for Sapmí food producers, fortification of Sami food culture
- **Founded in:** 2009
- **Type of organisation:** non-profit association
- **Farming sector:** reindeer herding, fishing, traditional Sami food crafts
- **Scale of the organisation:** international (Sami territories in Sweden, Finland, Norway, and Russia)

Slow Food Sapmí aims to strengthen Sami culture: food culture, production and craft. Each year the organisation applies for funding from the Sami Parliament (*Sametinget*). Occasionally the organisation applies for project financing through different types of EU funds, for example, the agricultural fund. One project that ran from 2020 until December 2022 was "The Fish's Gold" (Golleguolli). This is a documentation project that aimed to capture traditional Sami fishing (under icecap net fishing, inland lake fishing and fishing in forest and mountain areas) in a series of films.

Slow Food Sapmí is working to influence public opinion and the majority of their work is public and administrative authorities or other related branch organisations. Leading up to the Sami Parliament election in 2021, Slow Food Sapmí sent out questions to every party, relating the vision of the association. The association is also a consulting body that collaborates with researchers at the Swedish University of Agricultural Sciences in Uppsala, the Department of Food, Nutrition and Culinary Science (*Institutionen för Kost- och måltidsvetenskap*), and the Centre for Sami Research at Umeå University (*Umeå universitet*). They are members of Indigenous Terra Madre, Slow Food International and the Swedish Food Arena.

The main goals of Slow Food Sapmí are to increase prices for reindeer meat and to protect the denotation of "suova", which is a Sami word for reindeer meat and traditional preservation of Reindeer meat. Restaurants using Suova are presented with a diploma that they can display. The organisation also produced a cookbook of Sami recipes. Another activity that Slow Food Sapmí engages in is to study the menus of elderly community centres in certain municipalities, to determine and increase the frequency in which the residents receive Sami cooking.

Agroecology, as a term, is often used within the organisation, but the work and core values of the organisation, and the methods of Sami food production, are closely related to territorial foundations and the cultural identity of local food traditions.



Picture 2: "*Smak på Sapmi*" (A Taste of Sapmí), written by Victoria Harnesk, is a cookbook aimed to inspire and spread knowledge about Sapmí cooking. Source: Margaretha Dahl Sandling and Victoria Harnesk.

WHAT CAN WE LEARN?

Slow Food Sapmí works on many different topics, such as education, biodiversity and climate justice, with a variety of goals, including voicing the concerns of Sami food producers, promoting Sami culinary culture and production systems, and the rights to land, water and food. Climate change poses many threats to reindeer due to increased ice cover which limits the reindeer's ability to seek out food for themselves, requiring reindeer herders to supply the animals with additional feed.

POSITIVE IMPACTS

TRADITIONAL FOOD AND HERITAGE CONSERVATION: By producing a cookbook and participating in research, Slow Food Sapmí contributes to the increased knowledge of traditional Sami gastronomic culture and food production. This work is linked to values concerning traditional production areas, the conservation of natural resources and the organisation's focus on food sovereignty.

GOVERNANCE: The initiative is a consultative body that works to influence public policy with a special focus on indigenous culture and heritage.

EDUCATION: Through documentation and representation, the initiative creates public awareness through education and outreach.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: The initiative does not know how much funding they will be granted from year to year, which makes continuity difficult to attain. The inability of the initiative to offer part- or full-time salaries to anyone limits the ability to follow the political development on international, European and national levels. All the work done within the association is done on a volunteer basis which makes it difficult to keep consistent observation of political events, both nationally and globally; to increase the possibilities of participating in debates or discussions; form public opinion. Funding from the Sami Parliament varies from year to year, meaning continuity of activities is hard to achieve. Enquiries for participation in conferences and other projects are frequent, but due to the majority of board members having other full-time employment, they are limited by time and energy.

NOrdBruk

http://www.nordbruk.se

INITIATIVE N°6 – NORDBRUK

NORDBRUK

KEY FEATURES

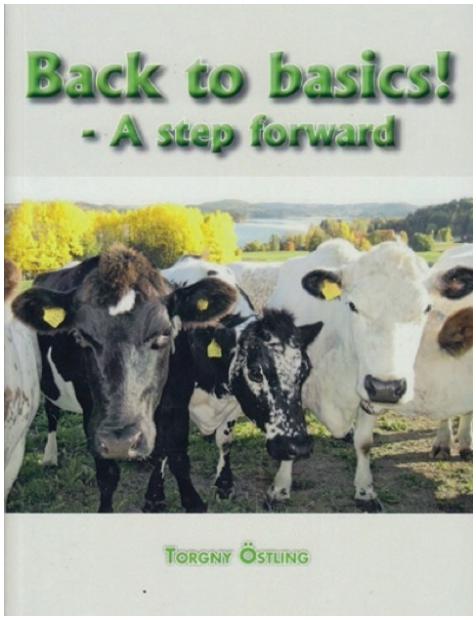
- **Main goal:** food sovereignty and democratic control over natural resources
- **Founded in:** 1996
- **Type of organisation:** association
- **Farming sector:** all sectors
- **Scale of the organisation:** national

NOrdBruk is a national farmers' organisation and the Swedish member organisation of the international peasant's movement La Via Campesina. It was founded in 1996, three years after the foundation of La Via Campesina. The main goal is to support food sovereignty and sustainable food production based on agroecological principles. NOrdBruk is a non-profit organisation funded by membership fees; members are either supporting members or full-scale members (i.e., producers). The association has just over 50 members and the board consists of five commissioners and a chair. Besides being a consultative body in issues concerning forestry, farming and natural resources, the association also represents the European Coordination of Via Campesina (ECVC) in the civil dialogue group on forestry in the European Commission.

The initiative is aware of the term agroecology and uses it regularly to display alternatives to the current food production system. They believe that approaches such as permaculture or regenerative agriculture are methods that can be included under the term agroecology, but that the term itself is much broader. The initiative defines agroecology as a tool to achieve food sovereignty, democratic control of food production systems and sustainable management of natural resources. They also see agroecology as a way to minimise inputs and balance the agricultural production system with nature's ecosystems, but also social ecosystems.

Dissemination of information and opinions, through printing a quarterly member's review, recording podcasts and publishing books, is an important tool to achieve the goals of the initiative. NOrdBruk is also involved in formal education. Since 2017, they have organised a yearly guest lecture as a part of the introductory course in the Agroecology Master's Programme at the Swedish University of Agricultural Sciences. NOrdBruk also holds lectures in Community Schools and other forums. The initiative takes part in collaborations against free trade agreements, such as the EU-Mercosur agreement, and continuously communicates this work to the public.

NOrdBruk keeps a close watch on national and global political news and events, both independently and in collaboration with ECVC. They aim to make visible the connections that have created the current food production models, considering national, EU and World Trade Organisation (WTO) legalisations. The initiative has also stood up against the liberalisation of the Shore Protection Act (Strandskyddslagen), a significant act for limiting construction on agricultural land. Further, the initiative identifies the Agreement on Agriculture, included within the WTO legislation, as detrimental to food sovereignty and the possibilities for food production guided by agroecological principles.



Picture 3: "Back to basics! – A step forward", written by the former and late chair of NOrdBruk, Torgny Östling. The book is sold by the initiative and used for mass education and promotion of the food sovereignty movement. Source: https://images.app.goo.gl/QiL84k5Fy8y9YgV69.

WHAT CAN WE LEARN?

By studying historical and current agricultural policies, and by joining in solidarity with other organisations in Europe and globally, the initiative can give an in-depth critique of current obstacles to further implementation of agroecology.

POSITIVE IMPACTS

COOPERATION: Through cooperation with the international peasant movement La Via Campesina, the initiative is communicating relevant experiences and historical insights about the issues of land grabbing, exploitation of natural resources and de-democratisation of production systems. The initiative puts important political events in context with global events, to find the route towards food sovereignty beyond the farm level.

EDUCATION: The initiative participates in formal education programmes through guest lectures, and raises awareness through their information channels and collaborations with other organisations.

LIMITATIONS & CHALLENGES

GOVERNANCE: NOrdBruk states that regulations, policies and market agreements that support mainstream industrialised agriculture are in opposition to agroecological principles.

COOPERATION: The initiative has existed since 1996 but is still relatively unknown, and maintains a low number of members. The threshold to introduce activists and generate interest and engagement is high due to low public knowledge of agroecology and food sovereignty in a Nordic, political and historical context.

SUSTAINABLE AND FAIR ECONOMICS: The economic resources of the initiative are limited. When lecturing in different parts of the country or taking part in panel discussions or debates, all board members are using private funds to cover travel and accommodation costs. This limits the scope of which the initiative can be active.

INITIATIVE N°7 – ANDELSJORDBRUK SVERIGE

http://www.andelsjordbruksverige.se

ANDELSJORDBRUK SVERIGE
COMMUNITY SUPPORTED AGRICULTURE (CSA) SWEDEN

CSA Sweden (*Andelsjordbruk Sverige*) is a national NGO that aims to promote and support small-scale, locally adapted, and sustainable food production systems supported by the nearby community. The principles of CSA farming are production systems that fit into the local ecosystem, rather than ever-expanding and exploitative. Another core principle of CSA farming is to build relationships between the people producing food and the people who are consuming it, to ensure fairness on both parts. By sharing both risks and rewards, members of a CSA farm can take part in deciding what type of food they would like to consume and under what conditions it is being produced. In this system, the farmer is less exposed to risks related to bad harvests, market prices and overbearing workloads. Andelsjordbruk Sverige consists of members who are producers or supportive community members that are working to promote the local farming model. Today, there are about thirty members, including producers, mainly vegetable farmers, but also sheep farmers and beekeepers.

Funding has recently been obtained from the Rural programme (*Landsbygdsprogrammet*) through a national project initiated by the county administrative board of Västra Götaland (*Länsttyrelsen Västra Götaland*), spanning between 2020 and 2022. The project is named CSA Farming: Information & Counselling (*Andelsjordbruk: Information & Rådgivning*) and employed the board of Andelsjordbruk Sverige as advisors and part of the steering committee. The goal of the project was to assist already existing CSA farms in Sweden and to bolster the start of new ones. This allowed the initiative to administer mentorship through the project, where volunteer farmers offer their time and experience to people who are interested in starting a CSA farm or are already active CSA farmers who need input. The project also funded the initiation of regional networks, to increase cooperation between farmers. On top of the mentorship and regional networks, this project offered lectures on CSA farming in different Swedish regions by parts of the steering committee and about 10 additional members of the organisation.

KEY FEATURES

- **Agroecological practices concerned:** mainly organic farming practices
- **Founded in:** 2015
- **Farming sectors concerned:** all farming sectors
- **Lead organisation:** not specified, but it has a board composed of persons who are elected among the members
- **Types of members involved:** small-scale farmers (full members), consumers and others (supporting members)
- **Number of stakeholder involved:** around 30
- **Scale of the initiative:** national

Picture 4: The international grassroots network of all forms of regional and Local Solidarity-based Partnerships for Agroecology (LSPAs), of which Community Supported Agriculture (CSA) is the best-known iteration. URGENCI is an acronym standing for An Urban-Rural Networks: Generating New Forms of Exchanges between Citizens. Source: https://urgenci.net/about-us.

Agroecological practices are very much present within the initiative, however, the term is not frequently used. There are no set guidelines on production methods, but there is a general agreement that production systems should be sustainable; for example, improving soil health rather than simply maintaining it, and

certainly not depleting it. Some of the member farmers are certified organic, but it is not a requirement. Certification for small-scale farms can be very expensive and time-consuming and therefore is not accessible to all. While some members argue that all members should be certified, others argue that the need for certification is rendered obsolete through the closer relationship with the community of consumers.

Andelsjordbruk Sverige is a member organisation in the international network for community-supported agriculture "Urgenci". The member organisations follow four principles: (i) partnerships between the CSA farmers and the CSA members, (ii) local production and trade, (iii) solidarity through sharing of risks and rewards, as well as respect for health and the environment, and (iv) relationships between producers and consumers based on trust, without hierarchies or dependency on middlemen.

WHAT CAN WE LEARN?

Before the recent project CSA Farming: Information & Counselling (described above), Andelsjordbruk Sverige was part of a smaller regional project aiming to evaluate the current state of CSA farming in the Västra Götaland region (spanning between 2015 and 2018). Outside of these two projects, funding has been difficult to find. Compared to Norway, the CSA movement in Sweden diverge in two major ways: the first one being support from the state. The Norwegian counterpart of Andelsjordbruk Sverige constitutes a segment of a larger network of farmer organisations and receives funding from the government. In Norway, the CSA movement is still quite dependent on funding through time-limited projects, but less so. Inconsistent and precarious funding has consequences for both fundamental capabilities of new work, and continuity and maximised benefit from old work.
The second distinction between the movements is related to who initiates the CSA farms; on the Swedish side, it is most commonly the farmer, while on the Norwegian side, it is usually a group of consumers. This discrepancy might lead to similar numbers of CSA farms, but the Swedish model brings on much more work for farmers, who are already occupied by cultivation. This mode of action also influences the ability to find ways of funding the organisation.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The initiative promotes locally adapted production systems based on methods that promote soil fertility, biodiversity, efficient water use and recycling of nutrients. Working towards an increased number of CSA farms in the country, the initiative contributes to the development of sustainable food production systems that value natural resources.

COOPERATION: The initiative works to create alternative and robust food production where supply chains are shortened and close relationships between producers and consumers are prioritised. This type of production offers collaboration and participation, reducing the impact of fluctuating market prices on external inputs and fuel, and even reducing the need for such inputs. This way of organising the production of food is simultaneously providing fair and secure incomes to the farmers and ensuring long-term sustainable food production for communities.

LIMITATIONS & CHALLENGES

GOVERNANCE: CSA farming in Sweden is influenced by the strong culture surrounding small-scale entrepreneurship. This makes it difficult to fully benefit from the principles of CSA farming regarding shared profit and responsibility.

SUSTAINABLE AND FAIR ECONOMICS: As the initiative has limited economic resources and is mainly managed by farmers who are already working full-time, and therefore spend unpaid additional time on the initiative, stress and burnout are common.

EDUCATION: The limited knowledge of CSA farming in general – and within municipalities in particular – creates limitations for including public institutions as CSA members. It is currently possible, but very much dependent on the personal awareness of municipality or public institution employees.

INITIATIVE N°8 – BIOKUMA

https://www.niku.no/prosjekter/biokuma/

BIOKULTURELLT ARV OCH ALTERNATIV MATPRODUKTION (BIOKUMA)

BIOCULTURAL HERITAGE AND ALTERNATIVE FOOD PRODUCTION (BIOKUMA)

Biokuma is a project looking into how small-scale food production interacts with our biological and cultural heritages. Biokuma stands for biocultural heritage and alternative food production and aims to integrate the conservation, or rather reproduction, of cultural landscapes with small-scale production and development of local food.

KEY FEATURES

- **Main goal:** reproduction of biocultural heritage through alternative food production systems
- **Founded in:** 2020
- **Lead organisation:** University of Karlstad (KAU)
- **Main topics:** biocultural heritage
- **Type of actors involved:** scientists and farmers

The leader of this project is the University of Karlstad (*Karlstad universitet* – KAU) through the Centre for research about sustainable societal change (*Centrum för forskning om hållbar samhällsförändring* – CRS), but it also includes the Norwegian Institute for Cultural Heritage Research (*Norsk institutt for kulturminneforskning* – NIKU), the Inland Norway University of Applied Sciences (INN University, *Høgskolen I Innlandet* – HINN) and four farms; two located in the region of Värmland in Sweden and two located in Norway, in the Hedmark region. The other stakeholders involved in the project are consumers of locally produced food (via on-farm shops or other points of sale). The project also aims to map education and trainee programmes of different degrees, volunteer work and other ways of transferring knowledge.

Biokuma is a regional and international project. The financing is regional and limits the geographical spread of participants, however, additional regions could be involved. Biokuma is funded by the EU programme Interreg Sverige-Norge and the European Regional Development Fund. The project started in October 2020 and finished in September 2022. In addition to a final report, the project produced two policy briefs communicating the main issues and obstacles concerning continued or expanded small-scale food production according to the participating farms. The policy briefs are directed towards governments and decision-making bodies. Biokuma also produced scientific and scientific writings about the project's central findings for the general public in more approachable formats. The project maintains a blog where activities and information about participating farms are being shared continuously. Further, two short films from field studies have been produced to communicate the project's work more broadly. The interviews conducted within the project with consumers of local products serve as an addition to the knowledge gathered from the four participating farms.

None of the farms participating in Biokuma uses the term agroecology to describe their working methods or aims. The terms that are used are permaculture, biodynamic, organic and regenerative farming. The project has been using the phrase "alternative food production", which is generally accepted but expanded to "we are not alternative, we are traditional but innovative – we are the farms of the future". The farms aim to produce healthy food where health and social values are considered alongside environmentally sound production methods.

WHAT CAN WE LEARN?

The project has identified and described challenges for the conservation or reproduction of biocultural landscapes and traditional, small-scale food production systems, highlighting that the lack of infrastructure adapted for small-scale farms is an important obstacle. For example, when selling products to wholesalers it can be difficult for large vehicles to enter the narrow roads often leading up to these farms. Another issue is the continuing closure of smaller slaughterhouses, forcing long transport distances for small-scale and remote farms, which usually maintain fewer animals. Further, the fact that traditional forest grazing cannot be practised in forests that are managed in industrial plantations was also identified as a challenge for the conservation of practices that represent their biocultural heritage. Finally, another issue expressed by the farmers was the lack of information and guidance on how to ensure compliance with rules and regulations, as well as the fluctuating priorities of administrative authorities.

The project Biokuma does not offer any direct solutions to farmers but serves as a platform for enhancing the voices of small-scale producers with authorities, governments and the public.

POSITIVE IMPACTS

COOPERATION: Farmers work long days and often do not have time to communicate the challenges that they are facing to administrative authorities, journalists or the public. Biokuma offers a platform for participating farms where their needs and concerns can be voiced. Within the project, there is also an integrated view of biological, social and cultural values. The project contributes towards sustainable solutions within several areas.

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: The initiative promotes the strengthening of sustainable food production through traditional farming systems that preserve natural resources and promote biodiversity.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: One issue that was raised by the leaders of this initiative is the fact that the funding does not cover the participation of the farmers. Therefore, their assistance is very limited by their current workload, sometimes causing absence.

5. CONCLUSION AND FUTURE PERSPECTIVE

Agroecology is not currently a term widely known or used in Sweden and is mainly associated with academia. Key informants showed an aversion to the term for two different reasons: either the term is described as too entangled in political movements or it lost its inherent social values. The different scepticisms towards the term agroecology seem to have one critique in common – its definition. Some key informants regard this as a positive aspect, as it allows guiding principles, rather than a narrow focus on specific methods to define agroecology. Yet the same informants express concerns that the broad scope of the term exposes it to becoming increasingly used in the 'green washing' of unsustainable practices and products. Other key informants criticise the broadness of the term and state that this is the cause of its unpopularity – it is difficult to communicate the meaning of the term to both producers and consumers, and other descriptions are preferred.

Although living labs thus far are generally unidentified, the concept holds the potential for enhancing agroecological development. There is a notion among key informants of the need to increase not only interdisciplinary approaches but also the involvement of civil society. Moreover, activities in living labs could increase public knowledge about food production chains and stimulate engagement in activities to improve their sustainability.

Regarding the Movement activity category, most initiatives covered by this report work with aims and questions that are narrower in scope than agroecology, for example, nature conservation, food sovereignty or family farming. With a few exceptions, the movement initiatives do not relate their activities directly to agroecology.

Agroecology practices seem to a large degree covered by other descriptions that are more established, such as organic farming, or more specifically with practices such as catch crops/cover crops and agroforestry. Organic farming stands out as a well-known set of practices that appear to be easier to communicate and implement than agroecology.

The future challenges of implementing agroecological principles and methods nationally will be to improve the lack of knowledge within decision-making bodies as there must be an awareness of agroecological principles among decision-makers to facilitate support. A related issue is a requirement for receiving project funding – it often requests entirely new ideas, making it difficult to secure continuity and maintenance of successful activities. Other factors mentioned as obstacles are constraints related to the economy and time. Non-profit organisations are often managed by individuals who work full- or part-time jobs, and whose availability and capacity are therefore limited. Opportunities to apply for funding are also described by several key informants as restrained.

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DECLARATION OF INTEREST

Two circumstances might have influenced the selection of key informants and initiatives or the interpretation of obtained information:

- Tove Sundström, the first author of this report, is a board member of the organisation Nordbruk. Efforts were made to objectively use the information provided by the key informant from this initiative, but it cannot be excluded with certainty that the author's insights, knowledge and interest in this organisation have had an influence.
- The second circumstance concerns the information about SLU in the context of agroecology in Sweden. Tove Sundström was employed by SLU to perform the mapping and has also studied at SLU. Furthermore, Furthermore, Georg Carlsson (second author of this report) is also the key informant for SLU and responsible for SLUs work in AE4EU and has been supervising the work to generate this report. Knowledge and information about SLUs activities and initiatives regarding agroecology in Sweden have therefore been more directly available compared to other Swedish universities and academic organisations.

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MAPPING AGROECOLOGY IN THE UNITED KINGDOM (UK)

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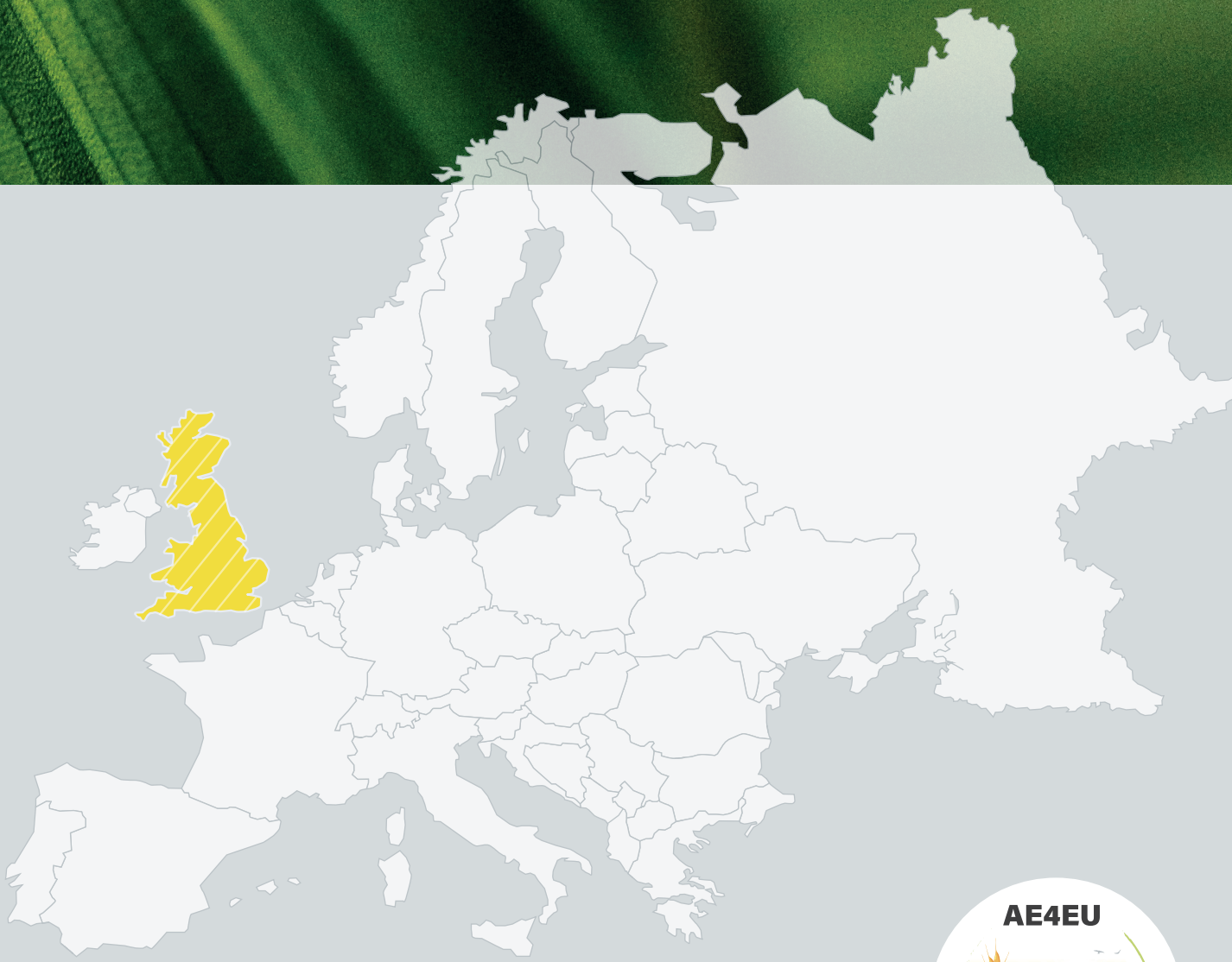

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More information about the H2020-Agroecology for Europe project can be found here: **www.ae4eu.eu**

UNITED KINGDOM

EXECUTIVE SUMMARY

This report analyses the current state and future perspectives of agroecology in The United Kingdom of Great Britain and Northern Ireland (UK). The UK is a complex case as it is made up of four devolved nations (England, Wales, Scotland and Northern Ireland) each with different targets, policies and agricultural identities. In addition, most of the EU agricultural policy retained from the EU following the UK's exit (Brexit) is now in the process of being further devolved to the four nations. The information and data for this report were collected from desktop research, interviews with 11 key informants (including at least one from each devolved nation) and 8 representatives from different agroecological initiatives from June 2021-March 2022.

Agroecology is generally understood to encompass three interconnected elements: a science (primary research), a practice (application and practice-based learning) and a social movement (new ways of organising food networks and food systems). Our findings indicate that while there is some evidence of activity on all these aspects of agroecology, the development within the three areas is unequal. Whilst historically the UK has been progressive in agroecology in terms of science, agroecology movement and organic farming practices, reduced funding for universities and Brexit (UK exit from the European Union (EU)) have had a negative impact on some research and public funding for agroecology. The term 'agroecology' is not well known by the general public, although 'organic' is well known, if not widely practiced: in 2020 only 3 % of the UK's agricultural land was registered certified organic.

Agroecology understood as a movement is clearly gathering momentum. Grassroots agroecological movements have seen significant growth over recent years and as consumers have become increasingly aware of food security (in part thanks to the Covid-19 pandemic) and environmental concerns, and the buying choices from a growing minority support agroecological farming systems in the UK. Again there is a difference between the four nations of the UK.

Current indications suggest a transition to agroecology in the UK is more likely to come from the bottom up, which would require a successful development of alternative food networks connecting consumers and producers around agroecologically produced food. Bottom-up is unlikely to bring a full transition without policy support either from the central level or the devolved nations. Movements that see agroecology describing a holistic food system, fear the word 'agroecology' is being co-opted by large corporations or certain politicians to 'greenwash' activities in a similar way to how the term 'sustainable' is sometimes used.

1. METHODOLOGICAL CONSIDERATIONS

The information regarding key informants in UK are summarised in Table 1. For more details on the research methodology of all country reports, see the Methodology section of the edited volume.

Table 1: List of key informants in UK.

Key informant n°	Type of organisation	Main sector of involvement	ACTIVITY CATEGORY CONCERNED
1	Living Lab (in development), England	International development, non-visible areas of farming relating to consciousness, aspect and electromagnet frequencies	
2	University, England	Arable lands	
3	Network, UK-wide	Community Supported Agriculture (CSA)	
4	Living Lab, Scotland	Cropping systems, some livestock, soil health	
5	Care Farm, Northern Ireland	Care farm, CSA	
6	University, England	Social science	
7	Farmer Association, UK-wide	A union of farmers, growers, foresters and land-based workers	
8	NGO, England, Wales, Scotland	Social Farming Charity	
9	University, England	Countryside, community	
10	EAFRD Government Scheme, Wales	Rural community, agriculture, forestry	
11	University, England	Rural policy	

Note: Key Informants 1-8 were identified because of strong links to agroecology. Key Informants 9-11 represent more general agriculture and were interviewed by Anna Krzywoszynska of Sheffield University as part of ALL Ready[1] (AE4EU's sister project). Primary interview data was shared by A. Krzywoszynska to enable integration into the work of AE4EU.

[1] https://www.all-ready-project.eu/

2. CONTEXT

The utilised agricultural area (UAA) in the UK is just under 17.3 million ha, covering 71 % of the UK land area. Over a third of the UK's UAA is crop land (6.0 million ha).[2] The most common crops per area grown are wheat, barley and oilseed rape[3] due to the UK's reliable precipitation, relatively mild oceanic temperatures, low altitude and fertile land. According to 2019 data, the UK is the 6th largest producer of cereals, the largest producer of sheep and the 3rd largest producer of cattle of the EU 28 Member states.[4] The organically farmed area (fully converted and area under conversion to organic) represents only 2.8 % of the total farmed area on agricultural holdings in the UK, however there are large differences within its four nations: Northern Ireland (0.8 %), Scotland (1.7 %), Wales (4.9 %) and England (3.3 %) in 2020. The organic land area has declined 34 % since its peak in 2008[5], although retail sales of organic products have more than doubled in the same period. In addition, to the lowlands, just over 50 % of utilised agricultural land in the UK is classified as Less Favoured Area, due to altitude, soil characteristics and climatic conditions. In Wales it is 80 %, so many Welsh farms in the upland regions are restricted to sheep and cattle production[6]. In the UK, The Department for Food, Environment and Rural Affairs (DEFRA) is the government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities. Since 2005, DEFRA's statistics show a decline in the number of small and very small farms for most types of production[7].

In terms of mapping agroecology, the UK is a complex case for two reasons:

1. The UK is made up of four devolved nations: England, Scotland, Wales and Northern Ireland. All nations have different geography, climate and hence different agricultural identities and different relationships to agroecology. An exhaustive UK report would therefore be four reports. There is also a strong independence movement, particularly in Scotland (as well as re-unification in the case of Ireland) and this could create even more diverse agricultural policies.
2. Brexit also means the UK is in transition. Leaving the EU gives the UK or its four nations an opportunity to legislate higher standards of animal welfare and healthy sustainable agriculture than those in current and future CAPs, or lower standards that could usher in a shift away from agroecology in the UK's food and farming sector. Since the UK always had the opportunity to adopt higher standards as an EU member for 40 years, the fear of some is that Brexit is rather used as a tool to lower standards.

After the Second World War, agriculture in the UK became highly industrialised and factory farming developed as the most efficient means of production. Although environmental and soil health groups began to emerge as early as the 1940s, intensive farming with a heavy reliance on chemical pesticides and fertilizers was supported by British Government and European Economic Community grants. The organic movement as part of a wider environmental movement began to gain traction from the late 1960s condemning the Common Agricultural Policy (CAP) and demanding a regulation of organic standards.[8] The first Organic Products Regulation came into effect in 1992[9] Organic Products Regulation 2001.[10] In these, the UK stipulates most of the expected standards for organic produce agreed by the 1991 EU Council Regulation EEC 2029/91.[11]

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946161/structure-jun2020final-uk-22dec20.pdf
[3] https://www.gov.uk/government/statistics/farming-statistics-final-crop-areas-yields-livestock-populations-and-agricultural-workforce-at-1-june-2021-uk
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[8] https://www.legislation.gov.uk/uksi/1992/2111/contents/made
[9] https://www.legislation.gov.uk/uksi/2001/430/contents/made
[10] https://www.legislation.gov.uk/uksi/2001/430/contents/made
[11] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1991R2092:20060506:EN:PDF

Against this background, the term agroecology can be seen as a relatively new and primarily exogenous concept for agricultural producers and the food system more broadly in the UK. Key Informants agree the term 'agroecology' is only understood in certain circles within the UK but note there has been significant growth in its use in recent years. One suggests it has helped unite a lot of the environmental and sustainable organisations within the UK (GBR-KI-1, Table 1) understood here primarily as a movement. Another says agroecology is important to those concerned with it, but it does not unite them (GBR-KI-11), perhaps because it is 'still a nascent and marginal term and set of poorly understood practices' (GBR-KI-6).

In 2010 The Real Farming Trust was set up and The Oxford Real Farming Conference was launched. The growth of the Oxford Real Farming Conference is a useful barometer of interest in the area of agroecology (GBR-KI-7). It has developed over the last twelve years to become the unofficial gathering of the agroecological farming movement in the UK, including organic and regenerative farming, bringing together practising farmers and growers with scientists and economists, activists and policymakers. Almost 5000 delegates from over 130 countries joined the conference online, while over 350 speakers addressed the in-person event in January 2023.[12]

The general public has a hazy idea of agroecology, although most people are familiar with organic (GBR-KI-2, KI-5 & KI-6). In recent policy proposals written for DEFRA[13], the CSA Network UK cites 150 member farms, an increase of 50% over the past 12 months and a huge increase in interest from new entrant farmers. The need for this reflects a growth in consumer awareness, particularly during the Covid-19 pandemic, and this may drive a small transition away from the existing supply chain infrastructure and reliance on supermarkets, but CSA food remains too expensive for many households (GBR-KI-3).

Since 2013 there has been an All-Party Parliamentary Group on Agroecology[14] in the UK given advisory support by Landworkers' Alliance (LWA), the Centre for Agroecology, Water and Resilience of Coventry University, Soil Association, Sustain, among many other pro-agroecology groups, aiming to:

1. Promote agroecological approaches to land management in Parliament.
2. Allow agroecological experts and researchers to present their ideas and findings to MPs (Member of Parliament), peers, researchers, special advisers, the media and the public.
3. Publish parliamentary briefings on agroecological issues.
4. Coordinate the actions of MPs and Peers of all parties on agroecological issues, including instigating ministerial meetings, Early Day Motions, debates and Parliamentary Questions.

A successful transition requires a change in mindset: since the mid-20th century, farmers have been rewarded and indeed incentivised through subsidies for intensive systems, and the need to produce intensively has become part of the 'good farmer' identity (Burton, et al 2020). The farming system in the UK is highly mechanised and 'productivist' (oriented towards high yields), so government policies and related support need to change significantly (GBR-KI-6 & KI-10). Existing agroecological farms tend to be small, and at present only farms over five hectares are eligible for the current UK government's basic payment scheme as part of CAP. This discrimination of small farms is not a requirement of the CAP as the EU has many small farms. 95 % of CSA farms in the UK's CSA Network are under five hectares (GBR-KI-3) and therefore excluded from EU CAP payments delivered in the UK. According to one key informant, EU policies are far more advanced than UK national policies in terms of fostering an agroecological transition (GBR-KI-9). Differences in understanding and policy development of agroecology across the UK's devolved nations were observed by several key

[12] https://orfc.org.uk/
[13] https://communitysupportedagriculture.org.uk/wp-content/uploads/2021/06/CSANetwork_Defra-briefing.pdf
[14] https://agroecology-appg.org/

informants. In Scotland, the word is increasingly used among policymakers, but not at all in Wales, although 'sustainable' and 'regenerative' farming are used (GBR-KI-4 & KI-10) as well as 'nature-based solutions' (Chris et al, 2021). 'Farming Connect'[15] in Wales has traditionally supported farmers to be more productive, but there has been a change in focus to ecosystem services, however Welsh farmers need more support to understand this change (GBR-KI-10).

In Scotland, organic products are seen as 'niche' and elitist, but the Scots are proud of their national products and may well embrace an 'agroecological' label if there were a clear legal definition (GBR-KI-4). Other Key Informants expressed mixed views on an agroecological label: having one would encourage food processors and retailers to embrace agroecological products, (GBR-KI-9), while another does not advocate for it to become like organic (GBR-KI-3).

Several informants highlight boundaries (e.g. between permaculture and mainstream farming), and this is also seen in advisory services where there is a split between specialist advisors and traditional agronomists (GBR-KI-9). Other terms like 'Regenerative Agriculture' are blurring these boundaries (GBR-KI-9) and although there has been an increase in the term 'agroecology' among policymakers, particularly in Scotland (GBR-KI-4) some Key Informants are seeing it co-opted by policymakers and intensive farmers in the same way as the word 'sustainable': either genuinely misunderstood or used intentionally for 'greenwashing' their activities (GBR-KI-2 & KI-3).

2022-24, is very much a transitional period for the UK's food and farming sector. As a result of Brexit, the UK is currently piloting its own 'Environmental Land Management Scheme' (ELMS) ready to replace the EU's 'Common Agricultural Policy' (CAP) by 2027. ELMS contains measures for sustainable farming that conserves nature, but environmental groups have concerns it does not go far enough. On the other hand, post-Brexit trade deals are seen to undermine current UK standards of animal welfare and healthy produce. ELMS is framed by the current UK government as an improvement to the current CAP, but this an unfair comparison as the real comparison would be with the EU's subsequent Common Agricultural Policy.

[15] https://businesswales.gov.wales/farmingconnect/

3. THE CURRENT STATE OF AGROECOLOGY

3.1. EDUCATION AND TRAINING

Most training occurs within peer-to-peer networks of farming organisations but a number of universities offer courses in agroecology or related subjects as shown in Table 2 below. These are typically master's courses, but there are some bachelor's degrees as well. Other UK universities and colleges offer agricultural courses that cover environmental and countryside protection and animal welfare, as well as degrees on food security and other related topics, but don't frame themselves as 'agroecology' and may not be included below. The Master's degree in organic agriculture at Scotland's Rural University College was described by GBR-KI-7 as 'the most widely used practical qualification I have come across' (GBR-KI-7). There is growth in these areas as interest in climate solutions increases as record numbers of students (250) began studying at the nine postgraduate courses offered at Centre for Alternative Technology's Graduate School of the Environment in Wales in 2020. These courses include Sustainable Food and Natural Resources, Sustainability and Behaviour Change, and Green Building.

In terms of practical training, the Landworkers' Alliance offers an 'agroecology training and exchange network'[16], as well as mentoring, and support for new entrant farmers. There are peer-to-peer workshops for CSA farmers, organised and driven by individual farmers, either taking place on farm, or online due to covid-19 restrictions. These are for other CSA farmers or those exploring starting their own CSA, and although supported by the CSA Network UK, are very much driven by the farmers themselves. The Ecological Land Cooperative lists 19 courses and apprenticeships in 'Ecological Agriculture', hosted by a variety of providers on its website, although not all of them are currently available.[17] Within the UK's agroecology movement, there are formal and informal peer-to-peer events, forums and opportunities for knowledge sharing, some of which are not limited to the UK.

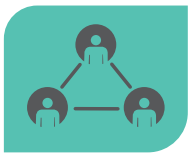
None of the informants was aware of agroecology education in schools, however, charities such as Ruskin Mill offer an outdoor specialist independent education to children and adults with complex needs. While not specifying 'agroecology', their Practical Skills Therapeutic Education (PSTE) programme includes arts, crafts, commerce, agriculture, nutrition, living skills and the environment.[18]

One farmer (believed to be the first CSA farmer in Northern Ireland, showcased later) has produced a series of short educational YouTube videos for the Northern Ireland Science Festival 2021, 'The Science behind the Farm'.[19]

[16] https://landworkersalliance.org.uk/agroecology-training-and-exchange-network/
[17] https://ecologicalland.coop/courses-and-apprenticeships
[18] https://www.rmt.org/our-method/
[19] https://www.youtube.com/watch?v=1_RoWnGHZMw

Table 2: Selection of courses and programmes in UK universities, colleges or research institutes using the word 'agroecology' in their course description or course title.

University / College	Qualification	Course or Programme name
Coventry University	MSc	Agroecology, Water and Food Sovereignty
Harper Adams University	MSc, PGDip, PGCert	Agroecology
Writtle University College	BSc	Agriculture (Regenerative Systems)
Royal Agricultural University	MSc	Sustainable Agriculture and Food Security
Schumacher College	MSc, BSc	Regenerative Food and Farming
Scotland's Rural University College	MSc	Organic Farming
University of Reading	MSc	Agriculture, Ecology & Environment
Centre for Alternative Technology (CAT), Wales	MSc, PGDip, PGCert	Sustainable Food and Natural Resources
University of Sheffield	MSc	Sustainable Agricultural Technologies



3.2. LIVING LAB

Very few agroecological initiatives in the UK self-define as Living Labs, although many initiatives identified do have Living Lab characteristics. The universities and research institutes interviewed work regularly with farmers or farmer groups and other stakeholders to co-design research tenders, and many consortiums working on European-wide funded projects included a variety of research partners, farmer groups and NGOs.

In fact, from internet research, the only existing UK 'agroecological Living Labs' that identify as such, are part of a particular project: Soil Health Pioneers: Living labs, Lighthouse projects and Soil Assessment Networks.[20]

The UK is one of 5 countries selected to host territorial case studies for a four-year European RISE[21] project called ATTER - Agroecological Transitions for Territorial Food Systems. The project seeks to share knowledge around agroecological transitions and trajectories; however, the term Living Lab is missing from the project description and objective.[22]

While Living Lab terminology can be discovered in fields of education, energy, technology, and sustainability, in agroecology and the agricultural sector it is a relatively new concept (or description for existing concepts). One initiative (given as an example later) calls itself a proposed Living Lab. Although some Living Lab aspects are already present in this example, it is not 'officially' a Living Lab, however this intentional and ambitious 10-year plan for an agroecological Living Lab has multiple layers and seems worthy of closer inspection.

[20] https://uksoils.org/living-labs-lighthouses
[21] RISE: Research Innovation and Science Policy Experts Group https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/research-innovation-and-science-policy-experts-group-rise_en
[22] https://cordis.europa.eu/project/id/101007755 ATTER: Agroecological Transitions for Territorial Food Systems

3.3. MOVEMENT

Key Informants had differing views and interpretations of agroecology as a movement. 'The social movement of agroecology' is a separate group of people from the practitioners or the scientists' says GBR-KI-9. Other key informants do not agree. GBR-KI-10 refers to a small number of organisations/individuals who "promote agroecological values and talk about community-based approaches, but they are very few and far between and not very impactful". GBR-KI-7 describes them as "making an impact far beyond what might be expected for their age and scale".

The UK's agroecological movement is carried by the Landworkers' Alliance (LWA) and other farmer and grower groups including The Organic Growers Alliance, Pasture Fed Livestock Association, Nature Friendly Farmers' Network, Federation for Common Land Members and the Community Supported Agriculture Network, UK (GBR-KI-7). Other groups worth mentioning include the Agroecology Research Centre and the Soil Association.

These groups unite farmers and land workers committed to practicing agriculture in a nature-friendly way. There is knowledge-sharing of practices and in the case of organic and pasture-fed livestock, certification for produce. But there is also a strong social and political aspect to some of these groups as they seek to define agricultural policy. As well as improving the livelihoods of its members, the LWA's mission is to "create a better food and land use system... based on agroecology and food sovereignty that furthers social and environmental justice" (GBR-KI-7). GBR-KI-3 and GBR-KI-7 represent two of the movement organisations that have seen significant growth in membership in recent years. Both are having a positive impact on the growing number of CSAs and other agroecological farms in the UK as well as policy decisions and mobilising individuals to campaign. Currently there are a few hundred CSA farms in the UK and many tens of thousands practicing agroecological approaches, whether in name or not (GBR-KI-7). The agroecological groups haven't been established anywhere near as long as the National Farmers' Union and typically represent voices from much smaller farms, but they are making an impact in national policy. The LWA has been heavily involved in the design of post-Brexit agriculture/environmental schemes, seen the recent inclusion of agroforestry and organic payments in the sustainable farming incentive and have successfully campaigned for the inclusion of the word 'agroecology' in England's new 'Agricultural Bill'.

While one key informant believes "The social movement of agroecology is a separate group of people from the practitioners or the scientists" (GBR-KI-9) this is not across the board because movement groups have a recent history of joining academics for European projects[23] and many of the movement organisations are farmer-led. The yearly Oxford Real Farming Conference is another hub for gathering agroecological scientists, activists and practitioners in the UK and beyond. One thing that will benefit the movement is increasing support from conscientious consumers. As the global community seeks to address climate change issues, biodiversity loss and food insecurity the agroecological movement will receive greater credibility and recognition going forward, but it takes a while to 'trickle down' (GBR-KI-5).

[23] LWA were participants to the BOND project (https://cordis.europa.eu/project/id/774208) and currently to ATTER (https://cordis.europa.eu/project/id/101007755). They are also supporting AE4EU (this project) through Via Campesina.

3.4. PRACTICE

Although informants agreed agroecological practices are not implemented widely, certain practices have become popular in the UK, particularly pasture fed livestock production, regenerative agriculture in terms of minimum tillage and agroforestry. One key informant refers to DEFRA's surveys that look at how British farming practices are affected by current agricultural and environmental issues.[24] GBR-KI-9, says the 'Practice Surveys' show minimum tillage is widely applied, mixed farming is resurrecting (having been out of favour for some years), and biodiversity preservation is very farm dependent. It is worth noting, however, 'reducing tillage' was one of several examples given of 'improving energy efficiency', in the DEFRA survey. Of the 77% who selected 'improving energy efficiency', there is no way of knowing how many reduced tillage[25] specifically, and reduced tillage is not the same as minimum tillage. A survey which focused on the adoption of regenerative agriculture systems, which is an element of agroecology, similarly found a fragmentation: certain practices are increasingly widely adopted, but there is a lack of a system-level integration of those practices, which means the full environmental benefits are not achieved.[26]

"Agroecology is well understood and well-practiced by those that stand for it and advocate for it. But the extent of the practice(s) is limited and piecemeal when compared to conventional agri-food chains" (GBR-KI-6). Two informants cited the encouragement of wildflower strips to build up natural predatory levels, thus reducing reliance on chemical pesticides as well as using crop rotations/management (GBR-KI-2 & KI-4). One informant from Scotland noted a growing interest in soil health, biodiversity and carbon among farmers (GBR-KI-4) and this was supported by GBR-KI-2: "a greater reliance on green manures to fix nitrogen. Better recycling of nutrients within a farm," that could be achieved partly through composting (GBR-KI-1 & KI-5). Members of CSA Network UK use many of these agroecological practices, but these 170 farm members represent mainly horticultural units that have a smaller fraction of UK agricultural land use. Not all are certified organic, although all sign up to the CSA Network charter that states they are agroecological, and biodynamic certification was also noted (GBR-KI-6).

Incentives to increase these practices vary between the devolved nations. Scotland and Wales have more progressive targets than England. For example, in November 2021 a new food bill to establish a more sustainable food system in Wales to strengthen food security, improve Wales' socio-economic well-being, and enhance consumer choice won the support of the Senedd (Welsh Parliament).[27] The Scottish government has set a legally binding target to cut greenhouse gas emissions to net zero by 2045, five years ahead of the date set for the UK as a whole.[28] "Agroecology is a word that has crept quite strongly into the Scottish government in the last 18 months. It is still misunderstood but understanding is growing." The net zero pledge[29] has spawned a series of farmer groups who are driving agroecology in Scotland (GBR-KI-4). Northern Ireland is more complex as "it has a foot in the EU still and a foot in the UK and appears to be behind both in terms of agroecology" (GBR-KI-5). The statistics for organic certified land would echo this.

Meanwhile, trade deals negotiated since Brexit are widely considered damaging to the environment (even in simple terms by importing food 15,000 km from Australia instead of 500 km from the middle of France) as well as negative implications for British farmers and food and animal welfare standards.[30]

[24] https://www.gov.uk/government/collections/farm-practices-survey [25] DEFRA's and National Statistics FPS Farm Practices Survey (2020) Table 3.3. 'Action taken to reduce GHG emissions' which the highest response is 85 % "Recycling of waste materials form the farm" the second highest rated answer (77%) is "Improving energy efficiency".
[26] https://www.sheffield.ac.uk/sustainable-food/research2/translational-transformative/achieving-sustainable-soil-management-uk#:~:text=Achieving%20sustainable%20soil%20management%20(SSM,UK%20to%20soil%20sustainability%20objectives.
[27] https://landworkersalliance.org.uk/senedd-supports-a-new-food-bill-for-wales/
[28] https://www.bbc.co.uk/news/uk-scotland-57970435#:~:text=The%20Scottish%20government%20has%20set,they%20were%2030%20years%20ago
[29] Scotland has pledged to reach net zero of emissions by 2045 in order to tackle climate change https://www.netzeronation.scot/
[30] https://www.independent.co.uk/news/uk/politics/brexit-trade-deal-australia-agriculture-b1980000.html

3.5. SCIENCE

As seen in Table 2, several higher education institutions offer postgraduate studies in agroecology specifically. The Centre for Agroecology, Water and Resilience at Coventry University (CAWR) hosts 60 international researchers (from PhD to senior researcher) and this number is growing[31]. Scotland's Rural College has a smaller number of researchers not necessarily researching under the banner of 'agroecology' but looking at reducing inputs, crop rotation, mixed farming and other agroecological practices including organic. Harper Adams University in England (a specialist provider of higher education for the agricultural and rural sector but not exclusively agroecological) continues to address the challenge of managing the world's natural resources as our population, and our demands on the planet grow. All these institutions conduct research with real world impact.

One key informant suggested "science does not prioritise research in the agroecology context: it may look at reducing greenhouse gasses, for example, but in a production-based system. It is not systemic" (GBR-KI-10). While this may be true, it is encouraging to note scientists at CAWR and Scotland's Rural College work with farmers within their research and partner with farmer organisations and agroecological movements in international research projects such as those funded under Horizon 2020 and other research frameworks.

Long term research is needed in agroecology. BBSRC[32] and the Scottish Government have quite long research programmes, but this is lacking within universities (GBR-KI-11). One researcher thinks it would be better to have much smaller more targeted projects with fewer partners, working directly with end users (GBR-KI-2).

While UK research institutes are still able to be part of Horizon Europe post-Brexit, national financial support for research institutes continues to wane under the current government. Unless agroecological research is prioritised by the government, agroecology as a science could decline in the UK.

[31] https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience/cawr-staff-list/
[32] Biotechnology and Biological Sciences Research Council

4. AGROECOLOGY INITIATIVES, CASES AND EXAMPLES

Table 3: An overview about initiatives, cases and examples described and analysed.

INITIATIVE N°	INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
					EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
1	**Ruskin Mill**	National	Specialist independent education provider	Through practical skills and Therapeutic Education help learners overcome barriers to learning, become skilled and contribute to community.					
2	**Scotland Rural University College (SRUC)**	National	University (and associations)	Experiments with soil pH treatments, crop rotations and livestock					
3	**Ryton: University on the Farm**	Regional	Research institute, farm, community	To develop an agroecological Living Lab					
4	**CSA Network UK**	National	Network	Promote, support and advocate for CSA farms in the UK					
5	**Landworkers' Alliance**	National	Association	Uniting farmers, growers, foresters and land-based workers to create a better food and land-use system based on agroecology					
6	**Jubilee Co-op**	Regional	CSA and care farm	Offer social farming, CSA and conservation education on a Community Farm in N. Ireland					
7	**Centre for Agroecology Water & Resilience**	Inter-national	Research institute	Drive innovative research into resilient and socially just food and water systems internationally					
8	**Animal & Plant Sciences at University of Sheffield**	National	Research institute	blue-sky research primarily focused on the interactions between plants and soils and soils and land use					

Table 4: Examples of additional initiatives, cases and examples in the country

INITIATIVE NAME	SCALE	TYPE OF STRUCTURE	AIM	ACTIVITY CATEGORIES				
				EDUCATION & RESEARCH	LIVING LAB	MOVEMENT	PRACTICE	SCIENCE
Ecological Land Co-op	National	Cooperative	To develop affordable, low impact, smallholdings for ecological agriculture. https://ecologicalland.coop/uk-agroecology					
SUSTAIN	National	Alliance	An alliance of organisations and communities working for a better food, farming and fishing sector https://www.sustainweb.org/					
Soil Association	National	Charity	To transform the way we eat, farm and care for our natural world https://www.soilassociation.org/					
Incredible Edible Bristol	Local	Organisation	To create edible community gardens across Bristol https://ediblebristol.org.uk/					
Pasture for Pollinators	Local	Co-op project	To increase pollinators on 6 organic dairy farm pastures in Wales https://businesswales.gov.wales/farmingconnect/business/european-innovation-partnership-eip-wales/approved-eip-wales-projects/pasture-pollinators					
Community Food Growers Network	Local	Network	Initiative of 20+ community growing initiatives across London https://www.cfgn.org.uk/about/					
Oxford Real Farming Conference	National	Yearly conference	Agroecology conference for farmers, growers, activists, policymakers and researchers https://orfc.org.uk/					

INITIATIVE N°1 – RUSKIN MILL TRUST

ruskinmill
re-imagining potential

https://www.rmt.org
https://www.facebook.com/RuskinMill

RUSKIN MILL TRUST

Ruskin Mill Trust provides specialist independent education to children and adults with complex needs at 11 sites across Great Britain. These are four schools working with children aged 5 – 18, five colleges working with young adults aged 16 – 25 and two adult social care provisions working with adults aged 18 and above. It offers day, residential and respite placements. More than half of the sites are in rural settings.

Ruskin Mill uses the value of the land and land-based activities to 're-imagine potential' of its students. An educational charity operating in England, Scotland and Wales, Ruskin Mill offers outdoor learning environments, utilising practical land and craft activities to support the development of work and life skills. The method of Practical Skills and Therapeutic Education helps students with learning difficulties, autistic spectrum conditions and disabilities, overcome barriers to learning, become skilled and contribute to community. The holistic curriculum covers fields of agriculture, nutrition, arts, crafts, commerce, living skills and the environment.

KEY FEATURES

- **Type of education and training:** specialist education for special needs children and adults
- **Main topics:** agriculture, nutrition, living skills, environment, commerce, arts, crafts
- **Training duration:** 3 years (or respite days)
- **Type of legal entity:** charity
- **Founded in:** 1987
- **Accessible to:** children and adults with special needs

Ruskin Mill's holistic education includes practical agroecological food production, nutrition and health, to give students the opportunity to make healthy food choices. Although not specifically using the word 'agroecology', the Practical Skills Therapeutic Education combines insights from Rudolf Steiner's[33] educational inspiration, and there is mention of biodynamic agriculture and forestry, and healthy diet as well as strong elements of social farming, ensuring the education also covers a student's mental and spiritual needs.

In addition to the schools and colleges, Ruskin Mill boasts a Field Centre that acts as a collaborative research hub into the Trust's educational method and underpinning influences. It aims to support the charitable objectives of the Trust, through improving practice with students, evidence the benefits of its approach, deepen staff understanding of the theoretical supports of the education method and enhance staff skills and competence.

Young adults aged 14-18 years with special needs are a special group for education training. After becoming an adult, the UK funding schemes for this education-work changes. As adults, students can have a skills-related apprenticeship and the funding can be extended, however, UK funding and support for special needs adults' further education is less well-structured.

[33] Biodynamic agriculture (the first of the organic agriculture movements) was drawn from the ideas of Rudolf Steiner (1861–1925).

Picture 1: Young people participate in agricultural activities. Source: Ruskin Mill Trust, 2021.

WHAT CAN WE LEARN?

The initiative has been growing for over 30 years and gives individuals with complex needs the opportunity to be independent, through therapeutic education, life-skills training (including nutrition) and practical/professional experience and qualifications to help them get a job. For example, students of biodynamic forestry have gone on to become tree surgeons. With 11 locations around England, Scotland and Wales, there is opportunity for students to live at home as well as be resident at their place of education.

SRUC

https://www.sruc.ac.uk/

SCOTLAND'S RURAL UNIVERSITY COLLEGE (SRUC)

A group of 20 scientists within SRUC higher education institute and consultancy service working with land-based industries and 8000 farmers in Scotland to design more efficient land use systems, incorporating nutrient management, carbon neutrality[34] and soil health.

SRUC is the parent of SAC Consultancy, which offers expertise, reach and local knowledge to producers from 25 offices across Scotland and Northern England. Farmers are typically connected to SRUC via SAC Consultancy and visa-versa.

KEY FEATURES

- **Main topics:** intercropping, soil health, farmer engagement.
- **Founded in:** 1990's
- **Type of organisation supporting the living lab:** research institution
- **Type of actor involved:** scientists, farmers, land-based industries, consultancy service
- **Scale of the living lab:** national - but works on international projects

For 30 years, SRUC has been running an experimental 60-hectare site using soil pH treatments[35] and legume-based crop rotations with and without livestock. This supports research, education (the only specialised master's degree in organic farming in Scotland[36]) and exchange with farmers. The rotations are co-developed with the farming community and provide an experimental platform for scientists to interact with practitioners. The initiative receives funding from the Scottish government, the EU, DEFRA, Research Councils, Charities and NaturScot.[37]

Some of its work has a Scottish focus, but it works quite broadly in a European context, for example as a partner in MIXED[38] (a Horizon 2020 project). Sometimes SRUC brings in people to help develop long term experiments, other times, it offers a support to farmer-led initiatives.

It is primarily involved in arable crops, permanent crops and trees with some mixed farming. SRUC does not focus on agroecology specifically, however much of its work involves agroecological practices. The MIXED project is concerned with mixed farming and agroforestry systems. SRUC looks at different models of intercropping, soil microbial community and soil health. In addition, it looks at barriers to productivity and barriers to the adoption of certain practices, such as intercropping.

The way it works is innovative in terms of co-design – developing projects with researchers, advisors and the farming community via SAC Consultancy. It uses closed social media groups (Facebook and WhatsApp) to communicate with farmer groups.

Beyond farming practices, it is involved with labelling for organically certified systems and Scottish Quality Produce. It is concerned with consumption and local development. It also works with the Scotland Environmental Protection Agency to research water pollution and soil erosion.

[34] Carbon neutrality is a state of net-zero carbon dioxide emissions. This can be achieved by balancing emissions of carbon dioxide with its removal or by eliminating emissions from society.
[35] Soil pH affects the amount of nutrients and chemical that are soluble in soil water and therefore available for crops. pH treatments alter the existing acidity of the soil.
[36] https://www.sruc.ac.uk/courses-training/course-catalogue/organic-farming/msc-organic-farming/
[37] NaturScot is the public body responsible for Scotland's natural heritage, especially its natural, genetic and scenic diversity.
[38] https://cordis.europa.eu/project/id/862357

Scotland is a smaller country than England and Scottish scientists have closer connections with agricultural policy makers. Policymakers turn up to SRUC events and farm walks.

SRUC and SAC work a lot with the Scottish Agricultural Organisation Society (SAOS), a large farmer cooperative. The SAOS facilitates farmer groups in the Living Lab context. SRUC also works with the Soil Association, The Organic Research Centre and other research institutes.

Picture 2: Crop trials. Source: https://www.sruc.ac.uk/research/research-facilities/crop-trial-facilities/

WHAT CAN WE LEARN?

Scientists working closely with advisory services (SAC Consultancy) distributed in 25 offices allows for a very direct connection with farmers. Advisors know who is growing what on local farms and can link SRUC with an individual who is likely to want to participate in a research project. The connection to practitioners is stronger than many larger research institutions. It is not only organic but works with the whole spectrum of agricultural producers.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Experiments in crop rotations and intercropping. Monitoring soil health. Research to discover barriers to the uptake of intercropping and similar practices among farmers.

COOPERATION: Co-design of projects between researchers, advisory body and farmers. Participation in European projects.

GOVERNANCE: Close relationships between researchers and policy makers. Policymakers are invited to and turn up to events.

TRADITIONAL FOOD AND HERITAGE CONSERVATION: Engages in farmer-led research. Supported by NaturScot (Scottish Heritage).

EDUCATION: Offers master's degree in organic farming. Advisory services.

LIMITATIONS & CHALLENGES

COOPERATION: The scientific focus is on farmers and growers rather than the relationship with consumers.

RYTON: THE UNIVERSITY ON THE FARM

Business plan to transform the 10-hectare, 60-year-old demonstration and research site for organic farming (which includes a working CSA farm) into an innovation village and Living Lab within a wider regional Living Lab.

The land is situated on the outskirts of Coventry city.

When Coventry University bought the land in 2019, the existing occupiers saw an opportunity. These were: The Centre for Agroecology Water and Resilience (CAWR, a research institute of Coventry University)[39], Garden Organic[40], which contains a heritage seed library and has tended the organic demonstration gardens, and Five Acre Community Farm.[41] Together these stakeholders developed a ten-year business plan for an ambitious agroecological Living Lab, which could incorporate further stakeholders including BEST in Horticulture Group,[42] Rugby District Council and the surrounding villages, including CSA members. In this Living Lab, Nature would be considered a stakeholder.

KEY FEATURES

- **Main topic:** agroecology research and promotion and training.
- **Envisioned in:** 2020
- **Type of organisation supporting the living lab:** research institution
- **Type of actor involved:** researchers, farmers, educators, community
- **Scale of the living lab:** European

Coventry University, as owner of the site, has received the business plan, but has not yet adopted it. Informally, current stakeholders already work together with some elements of a Living Lab. Research projects and trials take place between CAWR and the farm. The farm is a demonstration farm and hosts and mentors newer CSA farmers. The research centre produces papers and hosts regular seminars to disseminate learning.[43]

There is not a thriving network of Living Labs in the UK in the agricultural sector - in recent years, many agricultural universities and colleges have been selling off their experimental land because they cannot afford to maintain it, so there is an opportunity to reinvent it – reinvent what it means. This Living Lab at Ryton would be a regional hub within a wider national network of labs and demonstration locations.

The objectives would be to expand, research, train and promote agroecology and the transition towards it, showcasing impact. It would enable small agroecological businesses to thrive through training and support. In addition to the horticulture and agroforestry (vegetables and fruit produced by the CSA and demonstration gardens), the research institute conducts trials and research into consumption, local development, irrigation, rainwater harvesting and bio-remediation. Growing out of the heart of the Centre for Agroecology Water and Resilience, the Living Lab, by its nature, will be entrenched in agroecology.

Every Living Lab will have its own unique characteristics – like a farm. One of CAWR's unique aspects is its focus on indigenous and people's knowledge, linking natural science with social science, arts and humanities.[44]

[39] https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience [40] https://www.gardenorganic.org.uk [41] https://www.fiveacrefarm.org.uk
[42] https://www.bestinhorticulture.co.uk/ offers Royal Horticultural Society theory and practical training. [43] https://www.youtube.com/c/CAWRCoventryUniversity/playlists
[44] https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience/peoples-knowledge-working-group/

Located in England where the industrial revolution began, this Living Lab would be on the extreme end of sustainable farming, looking at sensible aspects of farming and consciousness of agroecology. It is a member of the European Living Labs Network (ENOLL). Five Acre Farm is part of National CSA Networks including Landworkers' Alliance (LWA) and CSA Network UK. CAWR has contacts nationally and internationally. The Heritage seed library on site is part of genetic conservation networks.

The farm is already a demonstration farm. If there were a cafe and shop showcasing local food systems and products, members of the public could come to the site. There is potential for training, demonstrations, workshops and conferences, having accommodation on site for think-tank occasions.

The next step is for Coventry University to adopt the business plan. There is provisional agreement in principle, but any work is likely delayed for 5 years due to Covid-19 and relocation of staff from other departments.

WHAT CAN WE LEARN?

The focus on indigenous and people's knowledge will be a positive attribute when co-creating with farmers and other stakeholders. Linking natural science with social science, arts and humanities may help communicate to a wider section of the community as well as policymakers. Considering 'Nature' as a stakeholder could bring a valuable steer for the Living Lab. A formal Living Lab may be a natural next step for existing stakeholders who already overlap geographically and in terms of focus.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Training and awareness raising come through research papers and seminars (CAWR) and more practically (Garden Organic).

ENERGY AND WASTE MANAGEMENT: Composting and research into composting and mulches happens across CAWR, Garden Organic and Five Acre Farm.

COOPERATION: CAWR is involved in numerous research consortiums, Five Acre Farm is part of LWA and CSA Network UK. The business plan has been co-designed. There is already participatory research between the groups on site.

EDUCATION: CAWR and the Heritage Seed Library offer workshops and activities that promote agroecology.

LIMITATIONS & CHALLENGES

GOVERNANCE: Coventry University is the main stakeholder and, due to Covid-19 and other challenges, is yet to approve the Business Plan for the site.

INITIATIVE N°4 – CSA NETWORK UK

https://communitysupportedagriculture.org.uk
https://www.facebook.com/CSANetworkUK

CSA NETWORK UK

The CSA Network UK (CSAN) is a member-led cooperative that supports and promotes Community Supported Agriculture across the UK through 5 areas of work:

1. To promote CSA to the general public, farmers and policy makers,
2. Support for new and existing CSAs
3. Bringing CSAs together, through networking and events
4. Advocate for CSAs at policy level, nationally and locally
5. Provide a link into the global CSA network.

KEY FEATURES

- **Main goals:** promote, support and advocate for CSA farms in the UK
- **Founded in:** 2013
- **Type of organisation:** association
- **Farming sector:** CSA (Community Supported Agriculture)
- **Scale of the organisation:** national

There are currently 170 existing and starter CSA member farms, the number of new farms having increased rapidly during the Covid-19 pandemic. These CSA farms provide food and other agricultural products for approximately 30 000 families nationwide. The network offers free masterclasses on its website for new and existing CSA farmers as well as mentorships and it promotes on-farm regional gatherings to share knowledge and experience.

Community supported agriculture is a radical approach to the production and supply of food that builds a strong and mutually beneficial partnership between a community and producer: a partnership in which the responsibilities, risks and rewards of farming are shared. Agroecology is at the heart of CSA and therefore at the heart of the network, and while there is a diverse range of CSA production, from vegetables, to fish, to grain, to flowers, all members of the Network share the characteristics set down in the Network's charter:

1. They are agroecological and many grow to or above the organic standards set out by the UK organic certifying organisations.
2. There is intrinsic community investment and commitment in the model and a sharing of the risks, rewards and responsibilities of farming.
3. CSA farms are businesses whose main aim is to produce food, flowers, fibre or fuel.
4. CSA is a hyper local direct distribution model and CSAs produce most of what they sell themselves.

The Network's core values are care, ecology and diversity, fairness, solidarity and reciprocity. A large part of its work is raising awareness around community supported agriculture, mentoring and supporting its members to train others.

There is an annual membership fee depending on the size of the farm, but it never exceeds £100 per year, and is significantly less than CSA farms pay in Canada, for example, where CSA has more of a brand. Membership fees account for 10% of the Network's funds, the rest is largely funded by public and private grants. Recent increases in funding have increased CSAN's ability to do more outside its core work including attempting to influence policy alongside other actors and encouraging its members to

campaign.
The CSA Network seeks to make agroecological local food available for all, but producing agroecological food via CSA, means it costs too much for some households. Despite this there has been significant growth in the last eighteen months in numbers of farms and most CSA farms have waiting lists.

Picture 3: CSA volunteers. Source: https://communitysupportedagriculture.org.uk/

The Network is a member of La Via Campesina[45] and the Agroecological Research Collaboration[46] (ARC) which brings together similarly focused actors in the UK's food and farming sector with an aim of building a farming, forestry and land-use system rooted in agroecology and food sovereignty.

WHAT CAN WE LEARN?

Despite adhering to a charter of clear characteristics, there is real diversity in terms of production across the CSA farms. The majority focus on vegetables, but there are mixed farms, fish, grain and flower farms. CSA farms are small and often spread out and the connection the Network brings can be immensely powerful in terms of knowledge-sharing and reducing isolation, as well as the support it offers to fledgling CSAs.

POSITIVE IMPACTS

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: CSAN seeks to make agroecological local food available for all by campaigning for a CSA in every neighbourhood.

COOPERATION: CSAN works with many likeminded actors, as well as engaging with national food policy, and is notably one of the five organisations making up the Agroecology Research Collaboration.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: At present there is a heavy reliance on grant funding, however farmer membership fees are low, because one of the core values is around fairness: fairness to the farmer, the customer and the land. This three-fold value is very positive.

COMMERCIALISATION IS LOCAL, FAIR AND/OR COLLECTIVE: due to the necessary cost of agroecological food via CSA, the price still excludes consumers of limited means.

[45] La Via Campesina is the International Peasants' Movement: https://viacampesina.org/en/
[46] https://landworkersalliance.org.uk/agroecology-research-collaboration/

https://landworkersalliance.org.uk/
https://en-gb.facebook.com/LandWorkersAlliance/

THE LAND WORKERS' ALLIANCE

The Land Workers' Alliance (LWA) is a union of farmers, growers, foresters and land-based workers, with a mission to improve the livelihoods of its members and create a food and land-use system based on agroecology and food sovereignty that fosters social and environmental justice. The alliance seeks to usher in a system where producers can work with dignity to earn a decent living, and everyone can access local, healthy and affordable food, fuel and fibre. It does this in four ways: through social networks and solidarity, training and exchange, media and communications, and campaigning and lobbying.

LWA is part of Via Campesina and has adapted the six pillars of food sovereignty for a UK context:

1. Food is for people
2. Food producers are valued
3. Food systems are localized
4. There is democratic control over the food system
5. We build knowledge and skills
6. Our food system works with nature

KEY FEATURES

- **Main goal:** promote an agroecological food and land-use system
- **Founded in:** 2013
- **Type of organisation:** union
- **Farming sectors: a**groecology
- **Scale of the organisation:** national

Founded in 2015, the LWA is a democratic, member-led union, constituted as a not-for-profit, cooperative company limited by guarantee. Since 2015, the LWA has grown to over 1000 members (Annual Report 2019). It works to support member needs at a local level, bringing members together to have a louder voice and bigger impact on collective issues. It is organised into branches and regions according to where members are based. It has a youth arm, 'FLAME,' and organises members into working groups to address specific areas of work in line with the LWA's priorities.

Recent agroecology campaigns include post-BREXIT policy proposals (2017), the Good Food Good Farming march (annually since 2018) and calls to amend the Agriculture Bill (2020).

It is funded by its members and supporters, as well as by selling LWA merchandise such as branded clothing, calendars and accessories. It hosts a Solidarity Pot on its website to support members facing difficult circumstances. With funding from the National Lottery Community Fund, the LWA, together with the Independent Food Aid Network and the CSA Network UK have been connecting food producers with food justice projects to provide good, high-quality produce to those in need.

LWA is working to develop a UK wide agroecology training and exchange network between farmers, growers, foresters and land-based workers practicing agroecology. It offers advice for new entrant farmers, mentoring and traineeships. Building social networks and solidarity between members is key to its aims of increasing the number of agroecological land-based businesses in the UK, reducing rural isolation and supporting members wherever possible.

LWA is working with other organisations to build a Seed Sovereignty Network in the UK. It is leading the development of the Agroecological Research Collaboration (ARC)[49] with the Community Supported Agriculture Network UK, The Ecological Land Cooperative[50], the Organic Growers Alliance[51] and the Pasture Fed Livestock Association.[52] It partners in many other projects including European research projects, offering a collective voice and experience of grass roots practitioners in UK agroecology.

WHAT CAN WE LEARN?

LWA supports a model of change based in grassroots organising and social movements as drivers of social and political transformation. It believes in bringing people together to build collective power that can create practical and political solutions to the multiple crises we currently face. The LWA works to build the social, economic and environmental elements of the solutions its members want to see.

POSITIVE IMPACTS

ENERGY AND WASTE MANAGEMENT: LWA's Vocal for Local campaign is advocating for decentralised local and short supply chain food systems to help meet the climate, environmental and public health challenges.

COOPERATION: LWA works with like-minded organisations, research centres and policy makers to find solutions for current problems in the existing food and farming system. The ARC is a good example of this.

GOVERNANCE: The Coordinating group is composed of up to 12 Directors elected from the membership by the membership at the Annual General Meeting. They aim to represent a balance of sectors, branches and regions whilst maintaining gender parity, a range of ages and inclusion.

EDUCATION: LWA offers training and traineeships and is working to develop a UK-wide agroecology training and exchange network.

SOCIETY AND EQUITY: The National Lottery Community Fund, supports the LWA - along with the Independent Food Aid Network and CSA Network UK to connect food producers with food justice projects. Recipients from deprived communities are incorporated into the management of the food system and empowered by knowledge exchange with the agroecological food producers.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Membership fees and selling of merchandise provide only part of LWA's income, most comes from grants. However, due to significant increase in these grants, LWA has adjusted what it does and has increased its capacity. If grant finances were to stop, it would have to adapt what it does and potentially decrease its staff.

[49] https://landworkersalliance.org.uk/agroecology-research-collaboration/
[50] https://ecologicalland.coop/
[51] https://organicgrowersalliance.co.uk/
[52] https://www.pastureforlife.org/

jubilee

https://www.jubilee.coop
https://www.facebook.com/jubilee.coop

INITIATIVE N°6 – JUBILEE COOP

JUBILEE COOP

Jubilee Coop practices and promotes care farming, community supported agriculture (CSA), and conservation education and engagement, with people of all backgrounds and beliefs at Jubilee Farm, Northern Ireland's first community-owned farm.

155 members own shares in the farm. Some local members volunteer. Each week approximately 30 refugees, asylum seekers or adults with learning difficulties are involved in Jubilee's care farming programme and over 25 families receive a regular vegetable box. Jubilee farm is community owned so there is no lead organisation.

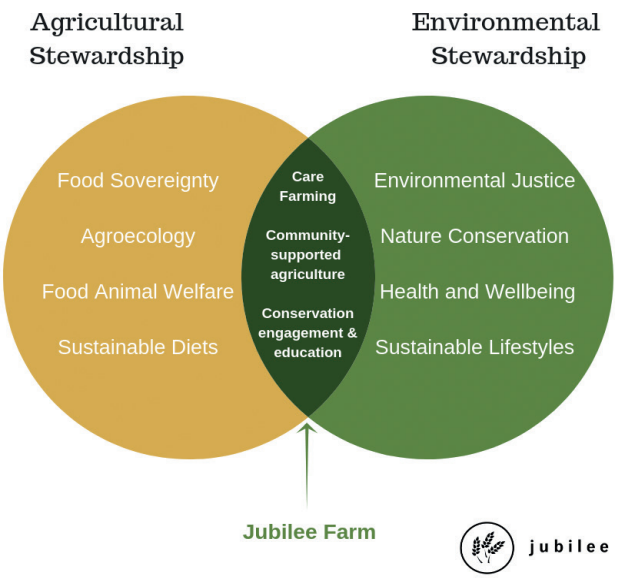
On the farm, composting, rotation, companion planting and intercropping are practiced, as well as integration of livestock in growing areas for fertilization, weed and pest removal at times. There is a wildlife meadow for pollination and an emphasis on conservation work and education. CSA members are investors so have share capital in the society. In terms of operating costs, Jubilee receives donations and grants for specific projects. Food production does not generate much income, but the coop sells care farming services, receiving referrals from the NHS (National Health Service). It also hosts school visits.

KEY FEATURES

- **Agroecological practices concerned:** Care farming, CSA, Conservation education
- **Formally established:** 2017
- **Farming sectors concerned:** Vegetables, livestock, social care farming
- **Types of stakeholders involved:** Farmer, volunteers, churches, community, refugees and asylum seekers, vulnerable adults.
- **Number of shareholders:** 155
- **Scale of the initiative:** regional

Jubilee coop is a Community Benefit Society. Members raised over £300 000 to buy the land and farmhouse that has become Jubilee Farm. Its three-fold mission: care, community and conservation, is born from a Christian faith perspective and defines 'creation care' as environmental and agricultural stewardship that incorporates fairness and flourishing, welfare and wellbeing.

The farm is situated in Larne near Belfast and as well as building community locally, hosts and mentors new CSA farmers across Ireland. As the first community-owned farm in Northern Ireland, Jubilee is part of CSA Ireland and CSA Network UK and the NI Community Farming network. Its founder speaks to churches across the UK about how agroecology is linked to caring for creation. Jubilee considers the wider church one of its stakeholders.



Picture 4: Jonny Hanson/Jubilee Community Benefit Society. Source: https://www.jubilee.coop/whoweare/

Jubilee hosted an event with CSA Networks in 2019 and since then some new Irish CSAs have started. Its recent course on community farming will hopefully become a project to support ten early-stage community farming projects across Northern Ireland.

WHAT CAN WE LEARN?

Two particularly interesting features are the church as a stakeholder and care farming with refugees and asylum seekers. The church in Ireland and the rest of the UK is a major landowner, so if Jubilee's 'creation care' model were embraced more widely there is potential to release church-owned land for agroecological projects in the future. Flexibility is important: Jubilee's business plan has evolved to include more service delivery as food production provides such limited income. The farm has been bought and is being financed over 25 years through capital and long-term peer to peer loans and the financial demands of that are such that a combination contracts with the NHS and larger multi-year grants (in place of smaller, shorter grants) are necessary to make it work. Bringing community to the farm is the purpose of community farming and brings many advantages, but it is not without multiple challenges, especially when establishing staff and volunteer roles.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: There is a wildlife meadow on site and an emphasis on conservation education.

ENERGY AND WASTE MANAGEMENT: Composting is a key part of the farm system: turning is a very popular activity for the care/social farmers. CSA provides food locally – short supply chain. Car-sharing and taking the train is encouraged.

HEALTH: The farm receives referrals from the NHS for people with mental health challenges or learning difficulties as well as being a safe place for refugees and asylum seekers. There is strong focus on mental and physical health and wellbeing.

COOPERATION: Although bringing community to the farm brings challenges, Jubilee is proud to be a space where Catholics and Protestants and people of all faiths work well together. Jubilee is also active within the CSA networks in Ireland and UK.

SOCIETY AND EQUITY: Jubilee provides work and nature experience for groups at risk of social exclusion such as people with learning difficulties, those struggling with their mental health, asylum seekers and refugees.

EDUCATION: Jubilee hosts and mentors other potential or fledgling community farmers and uses the farm to teach conservation. The director also speaks about agroecology at churches.

LIMITATIONS & CHALLENGES

SUSTAINABLE AND FAIR ECONOMICS: Fruit and vegetable production provides very limited income and although the farm receives money for its care farming services, it relies on grants for many of its projects.

INITIATIVE N°7 – CENTRE FOR AGROECOLOGY WATER AND RESILIENCE

https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience/
https://www.facebook.com/CovUniCAWR/

CENTRE FOR AGROECOLOGY WATER AND RESILIENCE (CAWR)

Coventry University's Centre for Agroecology Water and Resilience (CAWR) seeks to tackle the grand challenge around climate change and food. Approximately 60 transdisciplinary researchers now make up CAWR, working locally, nationally and internationally to drive innovative research for the understanding and development of resilient food and water systems throughout the world.

Coventry University has been involved in agroecological research activities since the 1990's but a agroecology-focused centre grew out of a group of 7 researchers in 2013. In 2014 this became CAWR. The Centre now fuses the research and interaction of 60 social scientists, geographers, sociologists, anthropologists, hydrologists and climate mappers.

KEY FEATURES

- **Main goal:** fundamental ecological research
- **Founded in:** 2006
- **Lead organisation:**
- **Main topics:** biodiversity
- **Type of actors involved:** scientists, farmers, local stakeholders

CAWR is primarily funded through small, medium and large research grants for projects. At the time of writing CAWR has 38 live projects.

The Centre's emphasis on participatory processes ensures the diverse knowledge of farmers, water users, indigenous peoples, and other citizens has a central place in its transdisciplinary inquiry. As such, CAWR's research is agenda-setting and innovative, with potentially major impacts on policy and practice.

Working with research partners in Africa, Asia, the Americas, and Europe, CAWR seeks to identify the policies, practices, institutions, and technologies needed to reverse processes that adversely affect food and water security, community, and human well-being. CAWR acts as a centre for dispersing and diffusing knowledge as well as critiquing and destabilising traditional agriculture by providing scientifically based evidence.

Agroecology in all its dimensions is at the heart of CAWR, and the focus goes beyond science in its dissemination – via training days and events, articles for the farming press as well as academia. Scientists work with the UN and FAO. Some are involved in local food initiatives such as a Social Supermarket and the CSA that shares CAWR's site. Other researchers are on committees that lobby governments.

CAWR collaborates on projects with other research centres nationally and internationally as well as farmers, farmer organisations, NGOs, civil society and policymakers. Scientists engage with growers to identify real-world problems and trial on farms to avoid operating in an abstract academic environment.

Picture 5: Food and water system research onsite. Source: https://www.coventry.ac.uk/research/areas-of-research/agroecology-water-resilience/. jubilee.coop/whoweare/

WHAT CAN WE LEARN?

CAWR intentionally brings together scientists from many different disciplines (and countries), which brings a more holistic approach to agroecological research. The people's knowledge, participatory approach to research is difficult to do well, but CAWR's commitment to this is important as scientists working alongside farmers, the community, NGOs and policymakers is much more likely to produce real change and address real problems.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Soil scientists work on composting and mulches with the onsite farm, sharing information in seminars. Other scientists study water management.

ENERGY AND WASTE MANAGEMENT: CAWR composts all suitable food waste. Cycling and lift-sharing is actively encouraged and a shuttle bus is employed to collect and drop off people at the train station and main university campus in the city centre.

COOPERATION: CAWR works in consortiums internationally with other researchers and farmer groups in a variety of projects. The research institute also works and runs trials with Five-Acre Community Farm, and researchers are connected to food aid charities and social supermarkets within Coventry city.

GOVERNANCE: CAWR contributes to policy recommendations for agroecology in Europe (e.g. BOND project, 13 MOUs) and locally (e.g. Coventry Food Strategy).

EDUCATION: CAWR has a Peoples (indigenous) knowledge approach to research.

LIMITATIONS & CHALLENGES

COOPERATION: CAWR tends to work with other actors who are primarily on the same page in terms of agroecology. It does not do big projects with global supermarkets or huge seed companies for example. This could be seen as a limitation.

University of Sheffield

https://www.sheffield.ac.uk/postgraduate/taught/courses/2023/sustainable-agriculture-msc

INITIATIVE N°8 – ANIMAL AND PLANT SCIENCES AT THE UNIVERSITY OF SHEFFIELD

ANIMAL AND PLANT SCIENCES AT THE UNIVERSITY OF SHEFFIELD

A subgroup of 6-10 researchers working on **Animal and Plant Sciences at the University of Sheffield's School** of Biosciences, engaged in blue-sky research primarily focused on the interactions between plants and soils and soils and land use.

Some research is linked to industrial objectives and covers soil mycorrhiza (the symbiotic association between a plant's roots and a fungus), microbiology and hydroponic systems (growing plants in mediums other than soil with nutrient-rich water). Some research, such as soil regeneration within the urban environment, is orientated towards more grower-applicable methods, considering what farming can achieve in the fields in terms of land use.

Much of the research is funded by the Biotechnology and Biological Sciences Research Council (BBSRC), with some input from private funders. There is cooperation with some small and medium size enterprises, farmers, and government policymakers, but most cooperation is with other researchers. Its scope is primarily national with a top-down: science to society approach.

KEY FEATURES

- **Main goal:** researching interactions between plants, soils and land use
- **Department founded in:** 1988
- **Main topics:** soil health
- **Lead organisation:** Sheffield University
- **Type of actors involved:** scientists
- **Funded by:** Biotechnology and Biological Sciences Research Council

One of the main research infrastructures is the University of Sheffield's growth chambers. These can be used to manipulate the growing environment in various ways in order to model different growing scenarios: different atmospheres, different forms of light, different soils, etc. This gives a lot of scope for experimentation.

The researchers of biotechnologies would not necessarily use the label 'agroecology' to describe their activities, although much of their research is around activating the soil microbiology to replace chemical physical processes.

There is a bigger body within the University of Sheffield called the Institute for Sustainable Food that is a cross-cutting institute and under its umbrella there is work on sustainable food systems and food security and there is some dialogue with the Animal and Plant Sciences subgroup.

Picture 6: Next generation research facilities: https://www.sheffield.ac.uk/sustainable-food/about/facilities.

WHAT CAN WE LEARN?

There is a lot of potential for agroecological experimentation using the growth chambers, harnessing the research around soil mycorrhiza, and sharing the research around regenerating soil in urban areas. Working more closely with the Institute for Sustainable Food would allow for a broader understanding of agroecology, considering the whole food system. Working more closely with farmers and consumers could enable the research to be more accessible and have a greater impact.

POSITIVE IMPACTS

NATURAL RESOURCES AND BIODIVERSITY MANAGEMENT: Much of the research is about soil health without inputs..

COOPERATION: There is active participation with other researchers in collective projects.

EDUCATION: When there is a call for evidence, research projects produce policy briefs for public institutions and government.

LIMITATIONS & CHALLENGES

GOVERNANCE: The structure is very much top-down, science to society, although some research is linked to industrial objectives.

COOPERATION: There is some cooperation with other scientists but not all participants of the food system. There is no participatory approach.

5. CONCLUSION AND FUTURE PERSPECTIVE

There is has been demonstrable growth in agroecological movements in recent years and this looks set to continue. While there were mixed views from the Key Informants over the effectiveness of the movements, their growing influence can be recognised. A demand for degree-level courses that address the issue of climate change will also likely ensure agroecology expands in higher education while education via peer-to-peer training networks continues to become more established.

In the three other pillars the future is less clear, as it relies heavily on the government of a post-Brexit Britain. If policy and associated funding recognise and support the value of agroecology, practices in the UK will naturally increase, and the influence the Land Workers' Alliance had on the conceptual development of ELMS (Environmental Land Management Scheme the UK CAP replacement) is an encouraging sign, but for now, very small farms (which are more likely to adopt agroecological practices) continue not to benefit from the current CAP payments.

For healthy agroecological Living Labs, the UK government must align with the EU's vision of the Agroecology Partnership for Living Labs and Research Infrastructures but also push that this includes social science infrastructure and includes agroecological food and farming system level research.

Historically, agroecology as a science has been fairly well established in the UK, but unless the government commits to keep the UK a part of international research calls such as Horizon Europe, agroecology as a science in the UK, will decline, and the EU will suffer by having limited creative competition and cooperation.

There is a danger in focusing only on large-scale transition to agroecology. Several Key Informants point to the importance of a holistic approach and understanding to agroecology (GBR-KI-6, KI-7, KI-9 & KI-10). Agroecology can not only be measured by how many metres of hedgerow a farm has, while ignoring the benefit of a closed-loop farming system or local short supply chains or other alternative food networks. Policymakers need good agroecological advice. The Welsh government regularly consult with environmental groups (although not all of them have agroecological claim) such as RSPB, Countryside Owners Association, Soil Association and the National Trust. They also consult with Welsh farmers unions who consider agroecological changes a threat to production (GBR-KI-10). The Scottish Environmental Protection Agency and NatureScot advise the Scottish government (GBR-KI-4).

In order to move forward, there needs to be more conversation between strictly agroecological practitioners and researchers, and mainstream farmers. One Key informant who works in agroecological research talked about being in an 'echo chamber' (GBR-KI-6) – within this sphere everyone is on the same page, but for real change, messages around agroecology must be communicated more effectively to policymakers, traditional farmers and the wider public.

Although, unlikely to come from the current UK government policy, there are always new windows opening in a democracy. High fertiliser price increases (more than doubling recently) may force the industry to use less (GBR-KI-9). The climate change crisis is a driver for the general public to consider their buying choices. In 2020, sales of commercial seeds were up 400 % while sales of biodynamic seeds rose 800 %. There are waiting lists for box schemes and allotments. It is a minority, but it is growing. (GBR-KI-1). Grass-roots enthusiasm is clearly growing, (GBR-KI-1, KI-3, KI-5, KI-6 & KI-7), as evidenced by the year-on-year growth of new CSA farms and customers, as well as members of LWA – both farmer members and supporters. As these movements of producers and consumers combine and begin to cross over into the science element of agroecology, the potential for a bottom-up solution could be realised.

ABBREVIATION

ARC: Agroecological Research Collaboration
BBSRC: Biotechnology and Biological Sciences Research Council
CAP: Common Agricultural Policy
CSA: Community Supported Agriculture
DEFRA: Department for Environment, Food and Rural Affairs
EAFRD: European Agricultural Fund for Rural Development
ELMS: Environmental Land Management Schemes (to replace CAP after BREXIT)
MP: Member of (UK) Parliament
RSPB: Royal Society for the Protection of Birds
SAOS: Scottish Agricultural Organisation Society
UAA: Utilised Agricultural Area

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GENERAL CONCLUSION

This second volume of the country reports series enlarges the documentation, analysis, and development of agroecology in Europe, and provides examples of implementation in different countries. The 11 countries studied within this volume show somewhat similar results as found in with the first 13 countries mapped in volume 1. There are quite contrasted situations regarding the development of agroecology in different countries. In some countries many existing initiatives with a direct or indirect link to agroecology and some of its principles can be document, whereas the implementation of agroecology or the use of the concept and approaches are still limited in other countries. This does not mean that some countries are better than others, only that agroecology evolves distinctly through the history of agriculture and foods systems as well as the policy framework.

Diverse visions, definitions, and use of the concept of agroecology exist in different countries, but a gradual convergence can be observed. Only a few clearly defined educational and training programmes can be documented for the majority of the countries analysed, some of these already exist for years. Dedicated research units, programmes, and projects with the name agroecology are limited in most countries, but they are growing in numbers over the last years. A lot of research related to agroecology is carried out in many countries without being explicitly on agroecology. Living labs are not much known, even less so in relation to agroecology, however, their numbers are increasing in the past years, but in most cases without explicitly referring to agroecology.

In addition to expanding the body of knowledge on initiatives linked to agroecology, this volume illustrates what needs to happen for the development of agroecology in Europe. Yet more countries are being mapped for following volumes of this series to give broad analysis and enhanced insights for the future development of agroecology in Europe.

MAPPING THE DEVELOPMENT OF

AGROECOLOGY IN EUROPE

COUNTRY REPORTS SERIES

VOLUME 2

APRIL 2024

Wezel A. - Grard B. - Kamilia K. - Gkisakis V.

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Agroecology Europe