Advancing the Contributions of European Stakeholders in Farming Systems to Transitions to Agroecology

Promouvoir la contribution aux transitions vers l'agroécologie des acteurs européens des systèmes agricoles

Förderung der Beiträge von europäischen Beteiligten der landwirtschaftlichen Systeme zum Übergang zur Agrarökologie

Katarzyna Zawalińska, Alexandra Smyrniotopoulou, Katalin Balazs, Michael Böhm, Mihai Chitea, Violeta Florian, Mihaela Fratila, Piotr Gradziuk, Stuart Henderson, Katherine Irvine, Vasilia Konstantidelli, Vitaliy Krupin, Laure Latruffe, Elvyra Mikšytė, David Miller, Daniel Monteleone, Marcus Polaschegg, Gerald Schwarz, Joseph Tzanopoulos, Irene Tzouramani, George Vlahos and Adrianna Wojciechowska

'Just transition': an opportunity for stakeholders

The European Union's (EU) Green Deal commits to no net emissions of greenhouse gases by 2050, economic growth decoupled from resource use, and no person or place left behind. Its ambitions are set out in the EU Farm-to-Fork and Biodiversity for 2030 Strategies, Circular Economy Action Plan (CEAP), European Pillar of Social Rights, and reinforced at COP26 in commitments such as the Global Methane Pledge (Glasgow, UK, November 2021). These policies and commitments signpost aspirations for pathways of future uses of land, provision of food, environmental protection, and respect of Europe's people as partners in required transitions. They also provide stakeholders with new opportunities to be integral to debates about the future of rural areas, and what these offer society as a whole.

A cross-cutting theme of all these policy objectives is that transitions must be just, a key to which is achieving the objective in partnership with those impacted by the transition. This is reflected in the report of the High Level Panel of Experts (HLPE, 2019) report on agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition, noting 'transition pathways combine technical interventions, investments, and enabling policies and instruments, involving a variety of actors at different scales'. It identifies the potential of agroecology to transform food systems, applying ecological principles to agriculture and use of ecosystem services whilst respecting needs for social equitability. Agroecology is characterised by its transdisciplinary, participatory and action-oriented nature, encompassing the whole food system from the soil to the organisation of human societies (Francis *et al.*, 2003; Wezel *et al.*, 2018). The prospects of achieving successful transitions to agroecological farming systems, are enhanced through the integrated efforts of stakeholders in all parts of farming and food systems. The EU (1991) regulation which defined organic farming was key for its inclusion as an agri-environmental measure from 1994 (EC, 1992) but agroecology is only marginally represented in the EU's Common Agricultural Policy (CAP) (Lampkin, Schwarz and Bellon, 2020). However, agroecology is now being represented in national strategic plans (e.g. recognition of the EU Agroecology Partnership in the German Strategic Plan, and strengthening agroecological infrastructures in the France Strategic Plan). Further formalisation and support of agroecological farming principles and practices in CAP measures is likely to be an essential driver of such transitions (Gava *et al.*, this issue), as recognised in the EC Observation Letters on the draft CAP Strategic Plans (European Commission, 2022). Examples identified by the European Commission are the proposed eco-schemes on topics such as soil conservation, preserving landscape features and non-productive areas, biodiversity, carbon farming, and nutrient management (including precision farming).

Actions are required to realise the types of transformations required in farming systems, 'working in partnership with multiple stakeholders, considering their local knowledge and cultural values, in a reflective and iterative way that fosters co-learning' (HLPE, 2019). Such partnership working and co-learning is advocated in the European Commission

DOI: 10.1111/1746-692X.12378

Agricultural Research Strategy through the Multi-Actor Approach (European Commission, 2016), aiming to 'boost demand-driven innovation and the implementation of research, creating synergies between EU policies', focusing on real problems and the creation of opportunities. It also aligns with participatory action principles in which community partners playing key roles in defining the research agenda (Méndez, Bacon and Cohen, 2013), and the need for research in agroecology to be broader and inclusive in nature. This is also reflected in the roadmap of Gliessman (2016) for transforming food systems towards a goal of sustainability. The first three levels of their roadmap describe actions farmers can take which have links to agroecological farming systems. They propose a fourth level which introduces interactions between consumer and producer, and a fifth level which considers 'a new global food system, based on equity, participation, democracy, and justice'.

Reed *et al.* (2014) identify five principles for knowledge exchange and the coproduction of new knowledge: i) design goals and a strategy for processes of knowledge exchange; ii) represent and identify likely users and embed key stakeholders in research processes; iii) engage stakeholders by building long-term, trusted relations, and understanding their motivations for involvement in research; iv) create impact through timely outputs, valued by stakeholders; v) reflect and sustain through regular reflections on the effectiveness of knowledge exchange and sharing good practice. Knowledge exchange in agroecological farming systems faces the additional challenge of overcoming traditional patterns of engagement associated with different stakeholder sectors and worldviews (Phillipson *et al.*, 2012). Such knowledge exchange has to be designed to ensure it overcomes any systemic inequalities and biases in access to information (e.g. delivery in relevant languages), and be conscious of respecting practices of land management and food systems that are already effective (Mason *et al.*, 2021).

> "Les divers acteurs apportent des idées et des perspectives distinctes sur les défis auxquels sont confrontées les transitions vers l'agroécologie et la crédibilité des approches."

This article describes the approaches and findings from the processes of EU H2020 projects LIFT and UNISECO. This involves stakeholders in value chains and farming and food systems in the co-learning of key enablers for progressing transitions towards agroecological farming systems, overcoming barriers encountered in practice, and requirements for frameworks for effective engagement. It presents and discusses the approaches taken in relation to knowledge exchange in environmental management and farming systems in transition to agroecology.

Eliciting stakeholder insights to transitions to agroecological farming systems

Demand-driven innovation and implementation of research can be boosted by bringing together complementary perspectives in transdisciplinary engagement forums (e.g. Multi-Actor Platforms). These enable strategic and tactical engagement, creating new knowledge about drivers and barriers to transitions to agroecological farming systems (Knowledge exchange Principle 1, Design, Reed *et al.*, 2014), revealing perspectives that challenge prevailing assumptions of project designers or managers, for example …

'Where does the project want to make a difference. Is it with farmers, rural development, knowledge transfer?' (male, independent consultant/ farm advisor).

Successful transitions require insights from stakeholders throughout value chains to create a shared understanding of the interdependencies between practice, policy, science and society. Each type of stakeholder may have different motivations to make the changes required to achieve aims of climate neutrality, reversing the loss in biodiversity and building societal inclusivity. Those motivations are apt to change through time, reflecting experiences of outputs and outcomes (e.g. improved quality of natural and human capital; higher or lower prices for produce) or changes in their own contexts. They could also reflect difficulties in achieving steps in transitions due to barriers to use of knowledge (e.g. unequal access to intellectual property; information only available in a limited number of languages).

The LIFT and UNISECO projects provide insights to motivations of stakeholders and the barriers they face through a portfolio of engagement forums. In UNISECO those forums involved 309 participants in a series of events in Multi-Actor Platforms in 15 countries and at EU level, comprising farmers, representatives of science and advisory services, value chain actors, authorities and administrations. LIFT's 108 stakeholder engagement events involved 1,206 participants in case studies across 12 countries and at national level, comprising farmers, researchers, policymakers, farm advisors, and other actors in food chains. Combined, the two projects involved stakeholders from 18 European countries. The forums were designed to enable meaningful co-learning and co-construction of pathways for farming systems in transition to agroecology amongst project partners and stakeholders from across sectors and levels of governance, and at different steps in transitions to agroecology, e.g. conventional, organic, and who implemented agroecological principles but did not seek certification as organic (Prazan and Aalders, 2019). Organic

enterprises were represented in the membership of each UNISECO Multi-Actor Platform, and the focus of the platforms in Czechia, Switzerland and Latvia. Their direct involvement in the Multi-Actor Platform process contributed perspectives on barriers to, and enablers of, transitions to agroecology based upon having undergone transitions to organic status.

The farming systems studied reflect a range that have environmental, economic or social significance in different areas of Europe. However, it is recognised that other systems may have unique characteristics which may lead to different types of barriers or drivers, or reasons for actors to wish to participate, which could bias against some types of contexts.

The establishment and running of effective and credible forums followed principles and processes that accounted for equitability, rights of participation, purpose and ethics, and recruitment which adhered to criteria for membership (e.g. interest, availability, relevance, appropriateness, representativeness, willingness, gender, geography, age range) (Principle 2, Represent, Reed *et al.*, 2014). An aim was to bring together individuals who may have different perspectives (mindful of risks of building in bias due to unequal access to information), institutional power, responsibilities, or subject positions within the selected farming systems, and discussing issues that may be controversial in local contexts (Ollivier *et al.*, 2018). This is consistent with characteristics of forums in integrating Participatory Action Research with agroecology of membership which is appropriate for achieving the outcomes desired (Méndez *et al.*, 2017) and actively managing power relations within groups (Lopez-García *et al.*, 2022).

The participatory approaches in the two projects is summarised in Figure 1. The forums were designed to enable two-way exchange of ideas for co-creating knowledge of agroecological farming systems. Co-benefits were sought of building long-term relationships between researchers and stakeholders (Principle 3, Engage, Reed *et al.*, 2014), and research outputs of direct use by stakeholders (Principle 4, Impact, Reed *et al.*, 2014). Mechanisms for on-going evaluation of quality of engagement provided feedback on the design and implementation of participatory processes (Principle 5, Reflect and sustain, Reed *et al.*, 2014), identifying weaknesses, and informing improvements to processes throughout the duration of the projects.

Such perspectives noted the positive benefits for organic farming of certification schemes (e.g. EU Certification), and rural development measures in funding innovative projects on the collection and sales of organic produce from small-scale producers and support for a monthly market of organic and local produce (e.g. in Navarra, Spain).

A strategy for transitioning to agroecology created in the stakeholder forums comprised means of expanding markets and attracting more consumers, whilst limiting administrative complexity to producers and the wider supply chain. Elements of the strategy were to incentivise farmers using organic and agroecological practices, to increase productivity and the provision of public goods with support payments commensurate with the complexity of such practices and the performance of agri-environmental-climate measures (Zilans and Veidemane, 2021).

> “Die Beteiligten bringen unterschiedliche Aspekte und Sichtweisen bezüglich der Herausforderungen eines Übergangs zur Agrarökologie und bezüglich der Glaubwürdigkeit der Ansätze ein.”

The growth and acceptance of organic farming practices and food by EU farmers and consumers make organic farming a good point of departure for transitions to agroecological farming practices and food systems. However, to achieve the EU Farm-to-Fork Strategy target of at least 25 per cent of agricultural land under organic farming by 2030 will require actions that overcome barriers such as uncertainty in sales, a lack of premium prices, market saturation for organic products, and complexity of certification processes.

Stakeholder insights to overcoming barriers to transitions to agroecological farming systems

The process of co-construction within the engagement forums identified benefits, opportunities, barriers and mechanisms for enabling transitions to agroecological farming systems and practices.

In LIFT, new evidence relating to drivers and barriers comes from a large-scale survey of farmers (1,628 respondents, 24 case studies, 12 countries). The results were expanded using Delphi exercises and Q-studies to understand the adoption rate and pattern after 10 years of applying ecological principles to farming in 13 and 16 case studies respectively, associated socio-economic effects (Bailey *et al.*, 2021), and discussion of drivers and barriers (Barnes *et al.*, 2021). Where stakeholders predicted clusters of farms adopting ecological principles to farming, Q-methodology participants highlighted that these clusters may support a stronger agroecological social movement: supply chains shorten where consumers buy their food direct and farmers collaborate to share inputs. This is consistent with the model of scaling in which clusters of farms and families produce and eat agroecologically in a ‘multitude of contextualized, articulated agroecologies’ (Ferguson *et al.*, 2019).

Examples of types and extent of agroecological practices used by survey respondents are illustrated in Figure 2.

Figure 1: Participatory approaches used in knowledge co-creation in LIFT and UNISECO projects

MULTI-ACTOR PLATFORM

The Transdisciplinary Multi-Actor Platforms brought together actors from different areas of research, policy and practice, for making transdisciplinary assessments of agro-ecological farm practices, and transitions towards their uptake and adoption. Their structures and ways of working enabled engagement with relevant actors across the various phases of UNISECO's work packages to co-construct innovative market and policy incentives and instruments, that can deliver agro-ecological transitions and farming practices.

INPUT FROM STAKEHOLDERS

Stakeholders through a variety of methods for engagement were asked to collect and provide relevant information; discuss, evaluate and validate research results; identify **key barriers and drivers for the transition to AEFS**; co-construct and assess **management strategies** and **market incentives** and **policy instruments** favouring conversion pathways to AEFS and co-create scenarios of AEFS at EU level.

OUTPUT FOR STAKEHOLDERS

The story maps of the case studies - understandable lessons on the transformation of systems from conventional to AEFS.
Decision Support Tools (DSTs) - enhance the capacity of actors (e.g. farmers, advisors, policy makers) to assess the sustainability of economic, environmental and social synergies, and trade-offs of the implementation of agro-ecological practices.
Social Network Analysis (SNA) - identified the key actors involved in the decision-making process towards agroecology, on farm and beyond the farm level.

DELPHI & Q METHOD

The Delphi method attempts, first, to collect the views and opinions of a number of informed people and, second, to harmonise these views across a panel of experts. Delphi exercise was applied to investigate the views of participants on the development of ecological farming approaches and its socio-economic consequences at a 10 year forward perspective. The Q-methodology presents a Q-set of statements that the Delphi has developed and, through factor analysis, studies the key stakeholder perspectives of the socio-economic effects of the perceived adoption of ecological practices in 10 years in the future.

INPUT FROM STAKEHOLDERS

Stakeholders co-designed the future scenarios of adoption of ecological approaches by farms (They characterised **ecological and conventional farms** and defined **patterns of adoption**, on-farm **employment effects** across the study area, employment effects on industries supporting farming, supply chain effects, and effects on rural communities).

OUTPUT FOR STAKEHOLDERS

Presentations provided to stakeholders inspired them to think and explore the possible agricultural futures for the region and how they fit into that future. **Development of creative and abstract thinking (cognitive skills).**

HYBRID FORUM

The hybrid forums can be described as public discussions with the aim of constructing a common project around a defined challenge. By definition, in the heart of Hybrid Forum there are the controversies, because their existence triggers the process of learning and co-producing something new.

INPUT FROM STAKEHOLDERS

Each workshop leader had to find **controversies** to explore, for that reason the topics vary in each case study report.

Example: Is ecological farming profitable?

OUTPUT FOR STAKEHOLDERS

What is at stake for the stakeholders is not just expressing oneself or exchanging ideas, or even making compromises; it is not only reacting, but constructing. In our case it is equivalent to **co-production of knowledge.**

LARGE-SCALE FARMER SURVEY

This questionnaire of the survey to farmers that was carried out in the LIFT project, to 1,628 farms across the European Union (EU) in the LIFT case study areas. The survey collected primary qualitative and quantitative data at the farm level and that data that is comparable across a large geographical area, across different production sectors, as well as across different farming practices/systems.

INPUT FROM STAKEHOLDERS

The information gathered relates to the **practices used on the farm**, the **drivers behind the adoption** of these practices, the **farm's structural and economic characteristics**, the on-farm **labour force**, the farmer's feeling towards future agricultural policies and general characteristics of the farmer and the farm.

OUTPUT FOR STAKEHOLDERS

The MOOC platform (Massive Online Open Course) - it allows stakeholders to learn about ecological farming and exchange opinions among platform users.
LIFT Typology Tool - helps the stakeholders to categorise their farm in the LIFT typology.
LIFT Adoption Tool - serves to predict the eco-category of a new farm. Stakeholders can enter data about a real or hypothetical farm and farmer. The tool will predict the degree of ecological practice adoption that is likely based on their responses.

MULTI-CRITERIA ANALYSIS

The application of a participatory Multi-Criteria Analysis developed an ex-ante impact assessment for improving the knowledge about proposed policy instruments to address the barriers to the adoption of agroecological practices and to the necessary changes in the governance dimension of the farming systems in the 15 case study countries.

INPUT FROM STAKEHOLDERS

Stakeholders in case studies assessed and ranked policy instruments according to pre-determined objectives and criteria enabling co-learning about different preferences and the potential of policy instruments to address barriers of transitions to agroecology. The criteria were developed through a consultation with European-level experts in policy implementation and evaluation.

OUTPUT FOR STAKEHOLDERS

Improved understanding of the expected **performance and relevance of the policy instruments** with respect to transitions to agroecology.

Enhanced capacity of stakeholders to assess **synergies and conflicts among policy instruments** and to identify the most innovative instruments to support the agroecological transition.

In UNISECO, understanding drivers and barriers was from a set of 15 in-depth case studies of farming systems, using an adapted Socio-Ecological System (SES) framework (Guisepelli *et al.*, 2018; Figure 3). The case studies cover a range of types of public goods, feasibility and options for agroecological farming practices, characteristics of value chains, and institutional and societal issues (Prazan and Aalders, 2019). Engagement within each case study involved semi-structured interviews, workshops with key actors, and quantitative assessments of the status quo of the sustainability of farming systems (using Decision Support Tools Cool Farm, SMART and COMPAS; Landert *et al.*, 2020). The findings were interpreted by stakeholders in the Multi-Actor Platforms.

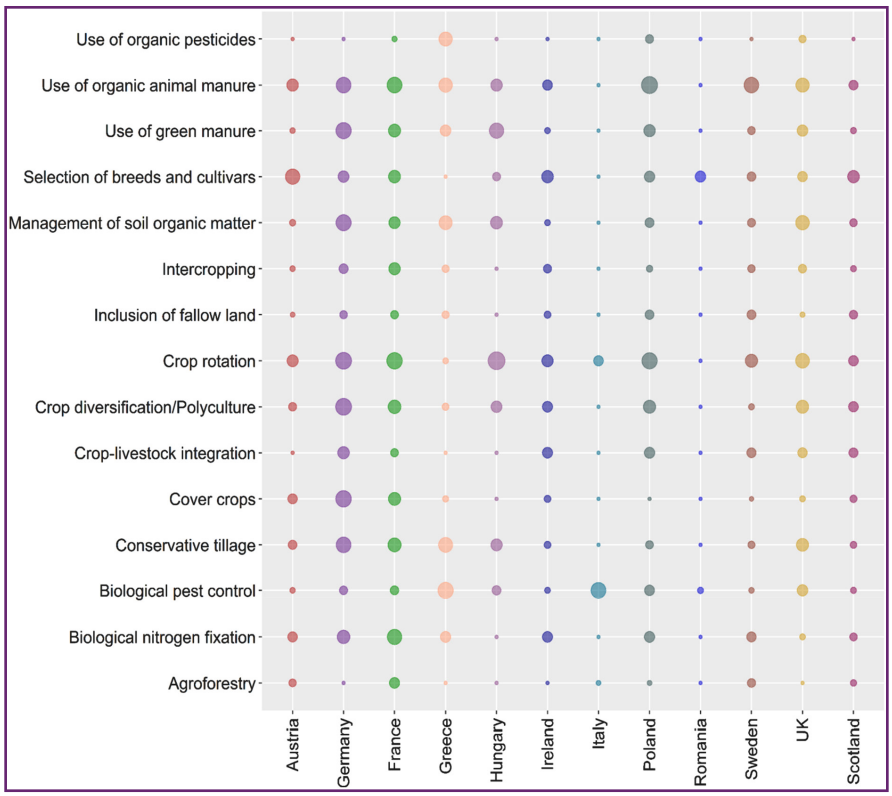
Findings from the two projects identified key enablers of transitions (Schwarz *et al.*, this issue):

Mature social capital and improved farmer knowledge. Case studies identified the importance of intermediaries in generating social capital and institutional changes (e.g. trusted advisors bringing actors together), demonstrations of local success, and abilities to communicate and influence (as per Cook, Satizabal and Curnow, 2021). Enhanced social capital can improve human capital, such as farmer understanding of economic, environmental and social opportunities of transitions to food and farming systems (as per Wezel *et al.*, 2018). However, improving social capital is a long-term process, requiring an enabling policy environment that supports capacity building and investments to normalise or institutionalise new forms of cooperation.

Strengthened collaborative actions and collective institutions to increase negotiating power within the value-chain. Producers experience pressures of costs of inputs, payments for outputs, and needs for waste minimisation and product quality. An increase in negotiating power of producers within value chains improves prospects of higher prices for products from agroecological farming practices and economic viability of associated farming systems. Such outcomes would gain from public sector support (e.g. procurement) and measures that tackle overconsumption and food waste with consequential benefits for public health, social justice and food security (Lampkin, Schwarz and Bellon, 2020).

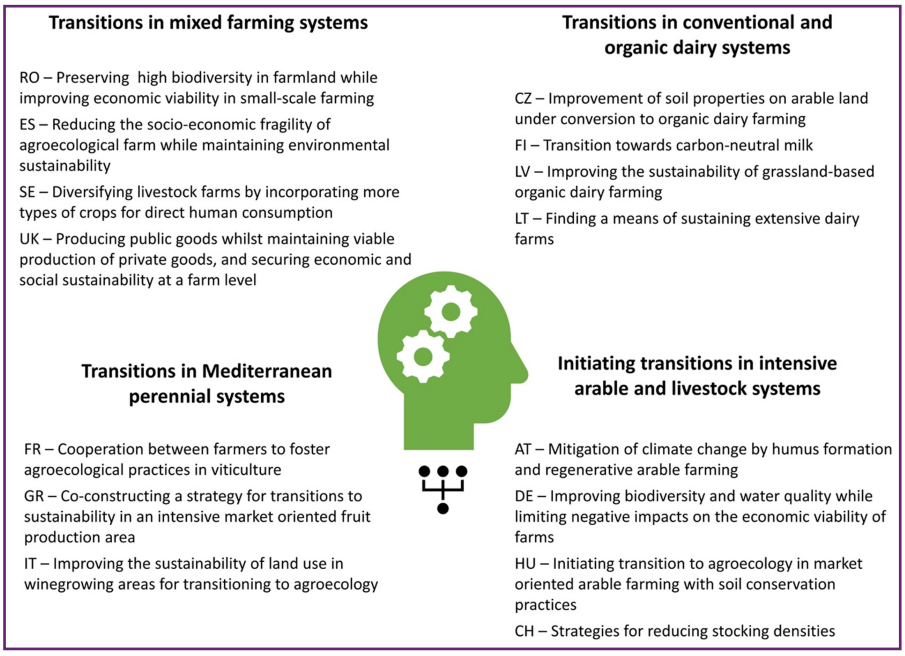
Changes in consumer behaviour and diets. Migrating to sustainable human diets has co-benefits for food systems,

Figure 2: Share of farms applying agroecological practices of total farms surveyed in 2018 (%)



Note: Size of circles indicates magnitude of shares which range between 0% and 95%.
Source: LIFT large-scale farmer survey.

Figure 3: Transition pathways towards agroecological practices within different farming systems across Europe



Source: UNISECO project. UNISECO website: https://uniseco-project.eu.

such as reducing greenhouse gas emissions (GHGs) and environmental and social impacts of their purchasing habits, and influencing markets (in line with findings of Wezel *et al.*, 2018). This could represent an adoption of 'food citizenship' and re-establish the directness of connections between producers and consumers of food, as per Level 4 of the Gliessman (2016) roadmap for transforming global food systems.

These enablers of transitions should be congruent with contexts of affordability, nutrition and food safety. They point to a need for a food systems perspective on transitions to agroecological farming systems, as envisaged by the HLPE (2019), and supported by territorial level analysis of UNISECO (Mayer *et al.*, 2021; Röös *et al.*, 2022) and LIFT (Legras *et al.*, 2021; Védrine *et al.*, 2021). An advantageous end point identified by the stakeholder forums was for a strategy that encourages the adoption of agroecological farming practices alongside organic farming, but does not necessarily expect farms to seek certification of organic status.

> "Stakeholders bring distinct insights and perspectives to challenges facing transitions to agroecology, and credibility of approaches."

The engagement forums provided 'safe spaces' for debating and reporting barriers faced by stakeholders in pursuing changes in farming systems, such as:

- policy measures (e.g. inconsistencies in eligibility for support; practical difficulties in implementation; risks of penalties for restricted actions; limited account of locally significant factors);
- economic viability, with low financial incentives for adopting agroecological practices (e.g. retailer constraints on quality of produce; lock-ins to contracts);
- weak infrastructure of farming or food systems (e.g. lack of local processing capabilities);
- lack of human capital (e.g. skills required for new techniques; lack of advisor knowledge);
- institutions (e.g. slow adaptation to new opportunities; membership organisations represent those who benefit most from existing arrangements).

A valuable output from engagement forums was transition narratives to which all stakeholders could relate, see their role, and explain it to partners (business, family, social). Those narratives provide positive reinforcement amongst all stakeholders involved in transitions of the benefits, progression and improvement, rather than what constitutes a 'good farmer'. They also contribute to the resilience of transitions, recognising the likelihood of external factors intervening whether international (e.g. pandemics, international conflicts, financial crises), local (e.g. political crises, extreme weather events), or personal (e.g. family bereavements, business failure) (Darnhofer, 2020).

Impacts of transition narratives are enhanced by the co-design of contents and presentations of supporting evidence from the perspectives of stakeholders with different roles in farming and food systems (Principle 3, Engage, Reed *et al.*, 2014). Examples of such narratives are the multi-media story maps produced by UNISECO (Figure 4a, www.uniseco-project.eu) and graphical stories presented in Eco-factsheets for each case study by LIFT (Figure 4b, www.lift-h2020.eu).

Lessons learnt from multi-actor engagement

The co-construction of new knowledge emerged from the engagement forums at case study and EU levels. In reporting on the experience and outcomes, members of the UNISECO EU level forum acknowledged the new opportunities for exchanging ideas and establishing links with other actors, especially at *in situ* meetings.

'The possibility to be allowed to provide input to the fine-tuning was very positive and a very good example for the participatory approach followed throughout the project' (female, scientist / environmental expert).

The sharing of perspectives within the engagement forums enabled identification of barriers to some stakeholders but not recognised as such by others (e.g. liability for food safety linked to standards for retailers). To enable such sharing, the forums needed to be designed and operated to stimulate positive feelings amongst participants …

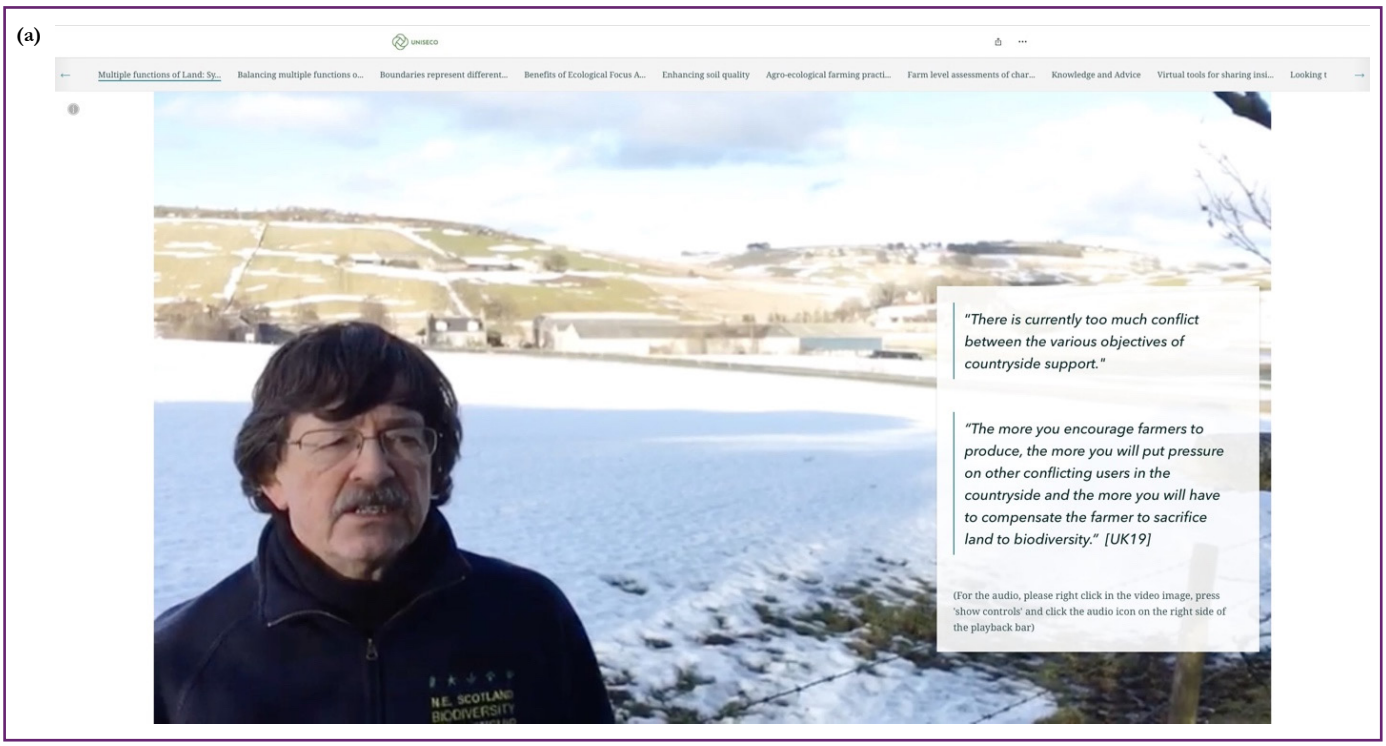
'One of the main contributions of this project was the very good and open exchange of views in the various workshops. This is an important trust-building measure and maybe this is even the main impact of the project' (male, farmer)

The safe spaces of the forums provided rare insights to behaviours in response to measures, the reporting of which suggest positive outcomes, but the realities are of actions that would have taken place in due course, thus wasting public resources. For example, schemes to support new entrants to farming …

'This scheme may change the ownership title of a few farms but is usually no more than a paper exercise, bringing forward an inheritance that was going to happen later anyway, while capturing some additional grant funding' (male, farmer)

Collective decisions within the forums followed the principles of representing the opinions expressed, which is not always compatible with advocating all points of view …

Figure 4: (a) Video contribution of member of UNISECO stakeholder forum (James Hutton Institute)



'is there a risk we agree too much or avoid conflicts that would contribute to better outcomes?' (female, scientist)

However, overall the experience was that well facilitated forums, with good quality written reporting, stimulated thinking amongst stakeholders and enabled coalescing around shared positions.

'*the project by design or the way you managed it generally gave me a kind of food for thought … looking at the multiple angles of agroecology, the different dimensions, the drivers, and that types of projects … helped us structure our own thinking' (male, policy officer NGO)*

The Covid-19 pandemic emerged during the running of UNISECO and LIFT. In all countries farming practices continued, but within modified infrastructures (e.g. changed operation of markets) and constraints (e.g. illness, risks to human health, managing family commitments). Amongst the outcomes has been an apparent increase in consumer preferences for local food (e.g. due to inability to travel to supermarkets; concerns over health risks); adoption of new skills (e.g. digital tools); and appreciation of benefits of nature and biodiversity during lock-downs.

Covid-19 and mitigation actions between 2020 and 2022 impacted upon processes of stakeholder engagement. Alongside benefits of an increase in opportunities to join online workshops and engage in surveys, participants identified limitations of online activities of:
i) inhibiting collaboration and open discussion between attendees;
ii) limiting opportunities for social interactions and exchange of knowledge during informal activities (e.g. meals, comfort breaks, travel).

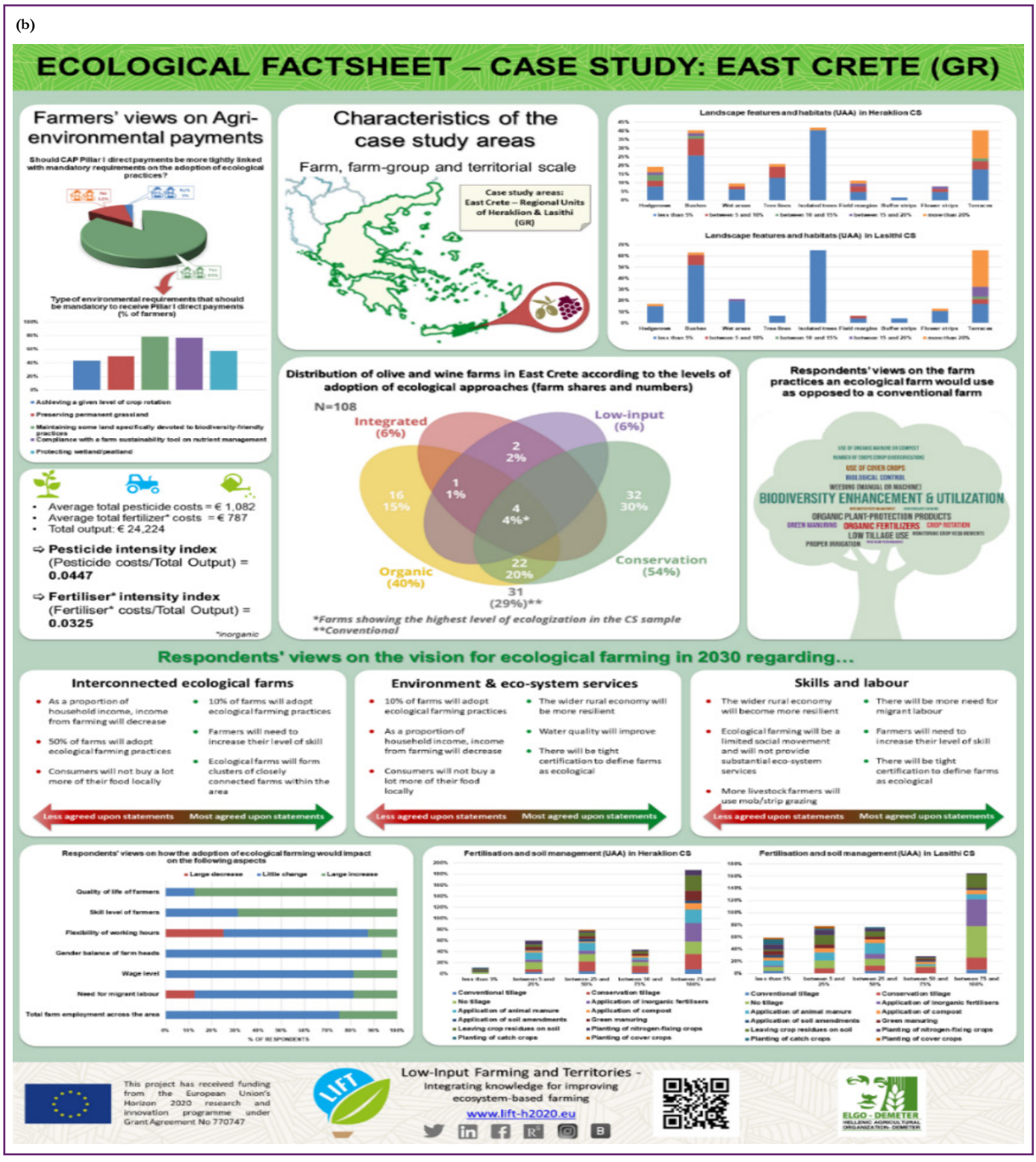
'maybe Zoom is not very comfortable for everyone to speak' (female, project manager) and '… impossible to say without seeing body language' (male, environmental expert)

Participant evaluations of engagement forums also provided insights to new skillsets required by facilitators, and importance of operating principles (e.g. all voices heard, representative of sectors, respect for geography). Operationalising new skillsets and infrastructure is transforming engagement methods in ways that reduce environmental footprints of undertaking research. Impacts of Covid-19 on stakeholder interactions are summarised in Figure 5.

Implications for policy, practice and research

Increasingly, there is an expectation in policies of co-developing approaches towards a sustainable and competitive economy of Europe, in an environment which is inclusive and socially just. This is reflected in the CEAP, Global Methane Pledge, EU Long Term Vision for Rural Areas and Rural Pact. The engagement forums in UNISECO and LIFT revealed that, when co-constructing knowledge to inform the adoption of agroecological practices, stakeholders throughout food and farming systems need to understand the basis and consequences of environmental, economic and social trade-offs involved, consistent with findings of Darnhofer (2020) on processes for shaping responses to emerging opportunities. The approaches enabled information sharing at the level of individuals with different roles in the farming system, and the higher collective level which is most relevant when policymaking and organisational interventions are

Figure 4 (b) Example of LIFT Eco-Factsheets, East Crete case study, Greece



required (Contandriopoulos *et al.*, 2010). As noted by Ollivier *et al.* (2018), 'individual and collective grassroot stakeholder actions are key to triggering transitions'.

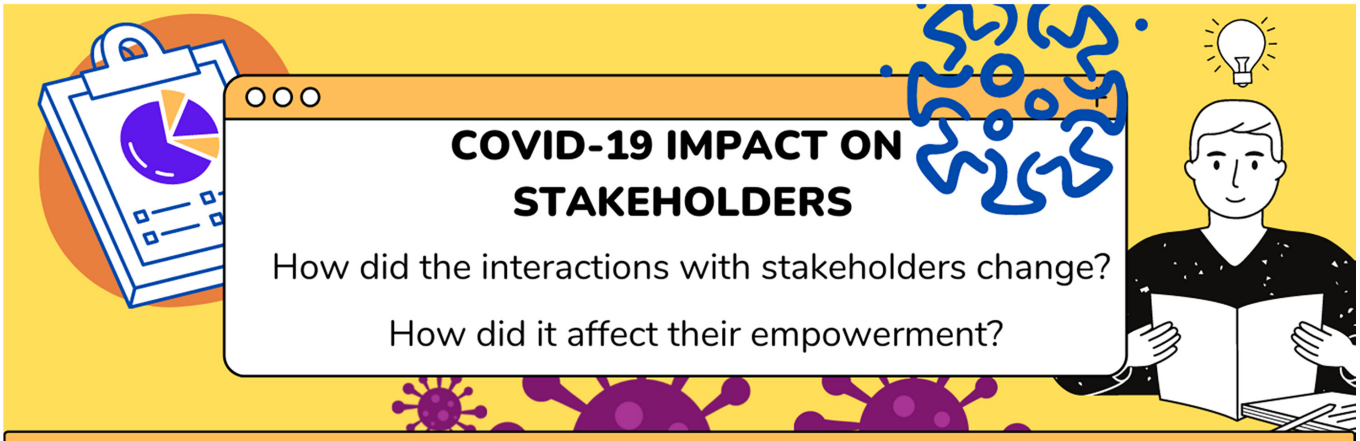
An expanding element of engagement and co-construction is participant contributions to articulating arguments, evidence or recommendations, consistent with the concept of peer-to-peer learning …

'Farmer to farmer learning is the most powerful tool in my book!' (male, farmer)

Reviewing the experiences of co-construction of knowledge identified the following requirements for engagement forums to be effective, consistent with several of the principles for the practice of knowledge exchange (Reed *et al.*, 2014); and findings on integrating Participatory Action Research and agroecological principles (Mendez *et al.*, 2017):

- designing forums in a structured way, identifying and recruiting members following ethical

Figure 5: Summary of impacts of Covid-19 on stakeholder interactions and empowerment



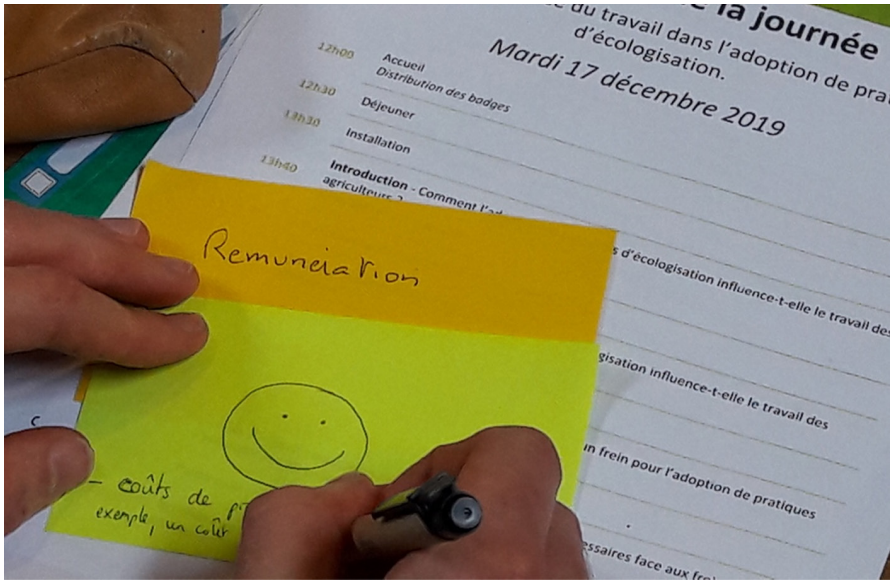
STAKEHOLDER INTERACTIONS	PRE-COVID-19	DURING COVID-19	IMPACT ON EMPOWER-MENT
INTERACTION DIMENSIONS	Various groups of stakeholders and researchers simulatnously involved in workshops in order to enable group learning.	Interactions only between researchers and stakeholders, not among stakeholders themselves.	↓
INTERACTION FORMATS	Methods for engagement were written consultation; interview; interactive session in project meetings; workshops with different participatory methods; focus groups.	Most of the projects' activities were organised virtually. The design of the events was with shorter presentations, more frequent breaks, discussions in small break-out groups, use of chatbox, fewer discussion topics per event, use of online polls, need for reading materials to be sent to everyone well in advance.	↓
RESPONSE RATIO	Various formats of group interactions held in person resulted in high response rate - more opinions that were diversified.	LIFT: Lower response rate due to virtual events UNISECO: Given that good communication and relationships with the various actors were already established through the previous face to face meetings, online events were regarded as effective.	↓
MATERIALS FOR WORK	Presentations, printed materials, interactive materials for work in groups, stakeholders jointly created material during the workshops.	More visual, intuitive, more effort expected from researchers.	← →
OPENNESS	All stakeholder groups moderately open to participation.	Farmer openness decreased, researchers, government and policy-maker openness intact.	↓
INPUT FROM STAKEHOLDERS			
DATA QUANTITY	Relatively satisfactory quantity of data obtained due to adequate representation of stakeholders and ease of interactions.	Limited quantity of data due to less involved stakeholders, shorter questionnaires due to online or phone contact limitations. Online meetings enabled to reach higher number of participants.	↑ ↓
DATA QUALITY	Variety of methods and approaches allowed to obtain quality data.	Online meetings need to be well prepared; facilitator require more effort to engage participants in the discussion.	↓
TYPE OF DATA	More hand writing data and need for introducing it to electronic systems.	More electronic ready to use data.	↑
OUTPUT FOR STAKEHOLDERS			
CROSS-NETWORKING	Projects' activities were seen as opportunities to establish communication links among the case study actors, cooperation and knowledge sharing.	Fewer opportunities for interaction and open dialogue between attendees in online meetings. Lack of social interaction.	↓
INFORMATION MATERIALS	Printing materials, photos, choice experiment cards, interviews etc.	Electronic outputs: questionanires, pre-send materials (presentations),	← →

processes (Design, Reed *et al.*, 2014; shared interest in research, Mendez *et al.*, 2017);

- providing 'safe spaces' which enable open dialogue between stakeholders representing different steps in farming and food systems in which all participants are treated equally, without risk of adverse consequences outwith the context of the forum, whilst ensuring the probity of the discussion, and respect of positions (Reed *et al.*, 2014);
- ensuring equality of participation, not compromised by resources or access to social or technical infrastructure of engagement events, an issue exacerbated during restrictions on meetings due to Covid-19 (Commitment to participation, Mendez *et al.*, 2017);
- co-developing remits and implementation with members, with rules of engagement sensitive to local contexts (e.g. within which agroecological transitions take place, Lopez-Garcia *et al.*, 2022);
- evolving membership of the forums in response to their evaluation and changes in context (Reflect and sustain, Reed *et al.*, 2014);
- encouraging recognition amongst all members of impacts accruing to their benefit (Impact, Reed *et al.*, 2014; belief in collective power, Mendez *et al.*, 2017) and increases in their capabilities (Reflect and sustain, Reed *et al.*, 2014; Mendez *et al.*, 2017);
- ensuring knowledge is co-created from all perspectives such that stakeholders are sharing knowledge (providing inputs) and learning from participation in the forum (receiving outputs) (Mendez *et al.*, 2017).

Stakeholders highlighted needs for access to relevant, contemporary information and advice, representing a growing market for data, means of monitoring and measuring (e.g. Internet of Things), and evidence

LIFT stakeholder workshop on farm performance (Podlaskie voivodeship in Poland, 2020, IRWiR PAN) © Błażej Jendrzejewski



Stakeholder contributing to a LIFT French workshop on labour and ecological practices on farms © Laurent Piet

(e.g. benefits of agroecological farming practices). This market is a significant opportunity for Open Science and Open Data, and delivery to the European Open Data Strategy.

Findings also showed benefits of developing locally tailored, contextualised, strategies to motivate, facilitate and support collaboration between stakeholders on shared objectives of transitions (Lopez-Garcia *et al.*, 2022; Miller *et al.*, 2021). Such tailoring should recognise potential shifts in perceptions and patterns of interactions between stakeholders (Darnhofer, 2014), and the roles of local influencers (e.g. Vanni *et al.*, 2019).

The processes of engagement provided evidence of the requirements of effective knowledge exchange as a key element in invigorating the contributions of stakeholders within and across farming and food systems to transitions to agroecology. Investing in the human and social capital of all stakeholders, inclusive of place, background, age, gender and belief, is consistent with the fundamental rights to, and benefits of, formal and informal life-long learning (Méndez *et al.*, 2017). Such investment has a

crucial role in advancing the contributions of sustainable farming systems to respecting the European Pillar of Social Rights and social justice (Lopez-García *et al.*, 2022). As the governance of land becomes more complex (e.g. policies to enable changes in land tenure) and initiatives created in new food systems (e.g. social innovation in Community Supported Agriculture) so the inclusion of actors throughout the supply chain is key to realising agroecological transitions. However, ensuring inputs from a diversity of stakeholders should be accompanied by recognition of their different entry points to agroecological transitions, sharing in appreciating the challenges but viewing and tackling them from different perspectives (Mendez *et al.*, 2017; Reed *et al.*, 2014). Such actors may include communities of interest which have a stake in forms of cooperative ownership that includes production, forming one driver to agroecology that links rural and urban dwellers (Vaarst *et al.*, 2017).

Creating links between communities of place and interest can be a part of achieving Level 5 of the Gliessman (2016) roadmap of benefits (e.g. of equity) being shared by everyone in the food system. However, policies and measures designed to tackle problems risk leaving loopholes which can be taken advantage of by actors in supply chains, counter to characteristics of equity and justice, and possibly acting counter to wider aims of public policy. For some stakeholders, the sharing of their insights to such loopholes reflects empowerment through roles that are integral to the research process (Lopez-García *et al.*, 2022), and a key benefit of high standards of democracy and participation which would deepen the fifth level of Gliessman (2016). The contributions of stakeholders to agroecological transitions may be greatest by their own transitions from beneficiaries of agroecology to protagonists (as per findings of Mendez *et al.*, 2017).

Workshop of UNISECO stakeholders on barriers to transitions to agroecology (Nienburg County, Germany) © Johannes Carolus

Stakeholder forum of Swedish farmers discussing the challenges facing meat and dairy farms in diversifying to produce more food for human consumption, increase profitability and improve farm sustainability © Kajsa Sahlin

Acknowledgements

The authors thank all stakeholders in the EU and case study level activities of the LIFT and UNISECO projects for their contributions, and the project partners for the research underpinning this article. Thanks also to two anonymous referees and the Editor for their very valuable comments and suggestions.

Funding information

LIFT ('Low-Input Farming and Territories – Integrating knowledge for improving ecosystem based farming') received funding from the European Union's H2020 research and innovation programme under grant agreement No 770747 (https://www.lift-h2020.eu/), and UNISECO ('Understanding & improving the sustainability of agroecological farming systems in the EU') under grant agreement No 773901 (https://uniseco-project.eu/).

Open Access funding provided by INRAE (French National Institute for Research on Agriculture, Food and the Environment).

Further Reading

■ Bailey, A., Davidova, S., Henderson, S. *et al*. (2021). Socio-economic impact of ecological agriculture at the territorial level. EU H2020 LIFT (Low-Input Farming and Territories – Integrating knowledge for improving ecosystem based farming), Deliverable D4.2. Available online at: https://doi.org/10.5281/zenodo.5076594.

■ Barnes, A.P., Candemir, A., De Bauw, M. *et al*. (2021). Drivers of adoption of ecological approaches. EU H2020 LIFT (Low-Input Farming and Territories – Integrating knowledge for improving ecosystem based farming), Deliverable D2.3. Available online at: https://doi.org/10.5281/zenodo.5075794

■ Cook, B.R., Satizabal, P. and Curnow, J. (2021). Humanising agricultural extension: a review. *World Development*, **140**: 105337.

■ Contandriopoulos, D., Lemire, M., Denis, J.-L. and Tremblay, E. (2010). Knowledge exchange processes in organizations and policy arenas: a narrative systematic review of the literature. *Milbank Q.*, **88**: 444–483.

■ Darnhofer, I. (2014). Resilience and why it matters for farm management. *European Review of Agricultural Economics*, **41**(3): 461–484.

■ Darnhofer, I. (2020). Resilience or how do we enable agricultural systems to ride the waves of unexpected change? *Agricultural Systems*, **187**: 102997.

■ European Commission (1991). Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs. *Official Journal of the European Communities*, **L198**(22.7.91): 1–15.

■ European Commission (1992). Council Regulation (EEC) No 2078/92 of the 30 June 1992 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside. *Official Journal of the European Communities*, **L215**(30.7.92): 85–90.

■ European Commission (2016). *A Strategic Approach to EU Agricultural Research & Innovation: Final Paper*. European Commission, DG Agri, EIP-Agri, Brussels.

■ European Commission (2022). *Commission Observation Letters on CAP Strategic Plans*, European Commission, Brussels.

■ Ferguson, B.G., Maya, M.A., Giraldo, O., Mier y Terán Giménez Cacho M., Morales, H. and Rosset, P. (2019). Special issue editorial: What do we mean by agroecological scaling? *Agroecology and Sustainable Food Systems*, **43**: 7–8, 722–723.

■ Francis, C., Lieblein, G., Gliessman, S. *et al*. (2003). Agroecology: The ecology of food systems. *Journal of Sustainable Agriculture*, **22**: 3, 99–118.

■ Gava, O., Povellato, A., Galioto, F. *et al*. (2022). Policy instruments to support agroecological transitions in Europe. *EuroChoices*, this issue.

■ Gliessman, S. (2016). Transforming food systems with agroecology, *Agroecology and Sustainable Food Systems*, **40**(3): 187–189.

■ Guisepelli, E., Fleury, P., Vincent, A., Aalders, I., Prazan, J. and Vanni, F. (2018). Adapted SES Framework for AEFS and Guidelines for Assessing Sustainability of Agricultural Systems in Europe. EU H2020 UNISECO (Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU), Deliverable D2.1. Available online at: https://doi.org/10.5281/zenodo.4568476.

■ HLPE (2019). *Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition*. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.

■ Lampkin, N., Schwarz, G. and Bellon, S. (2020). Policies for agroecology in Europe, building on experiences in France, Germany and the United Kingdom. *Landbauforschung Journal of Sustainable Organic Agricultural Systems*, **70**(2): 103–112.

■ Landert, J., Pfeifer, C., Carolus, J. *et al*. (2020). Assessing agro-ecological practices using a combination of three sustainability assessment tools. *Landbauforschung Journal of Sustainable Organic Agricultural Systems*, **70**(2): 129–144.

■ Legras, S., Bareille, F., Böhm, M. *et al*. (2021). Innovative public and private measures to encourage the adoption of ecological practices and enhance the performance and sustainability of ecological agriculture. EU H2020 LIFT (Low-Input Farming and Territories – Integrating knowledge for improving ecosystem based farming), Deliverable D6.3. Available online at: https://doi.org/10.5281/zenodo.5940187.

■ Lopez-Garcia, D., Cuellar-Padilla, M., Olival, A.D. *et al*. (2021). Building agroecology with people. *Challenges of participatory methods to deepen on the agroecological transition in different contexts. Journal of Rural Studies*, **83**: 257–267.

■ Mason, R.E., White, A., Bucini, G., Anderzén, Méndez, V.E. and Merrill, S.C. (2021). The evolving landscape of agroecological research. *Agroecology and Sustainable Food Systems*, **45**: 4, 551–591.

■ Mayer, A., Muller, A., Kalt, G. *et al*. (2021). *Territorial Impacts and Lessons Learnt of the Diffusion of AEFS in the EU*. EU H2020 UNISECO (Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU), Deliverable D4.3. Available online at: https://doi.org/10.5281/zenodo.5576259.

■ Méndez, V.E., Caswell, M., Gliessman, S.R. and Cohen, R. (2017). Integrating agroecology and Participatory Action Research (PAR): Lessons from Central America. *Sustainability*, **9**(705).

■ Méndez, V.E., Bacon, C.M. and Cohen, R. (2013). Agroecology as a transdisciplinary, participatory and action-oriented approach. *Agroecology and Sustainable Food Systems*, **37**: 3–18.

■ Miller, D., Irvine, K., Kyle, C., Smith, P. and Albanito, F. (2021). Addressing barriers of culture, mindset and institutions through effective co-creation forums and networking, in North-east Scotland, UK. UNISECO Policy Brief. Available online at: https://doi.org/10.5281/zenodo.4724382.

■ Ollivier, G., Magda, D., Mazé, A., Plumecocq, G. and Lamine. C. (2018). Agroecological transitions: What can sustainability transition frameworks teach us? An ontological and empirical analysis. *Ecology and Society*, **23**(2): 5.

■ Phillipson, J., Lowe, P., Proctor, A. and Ruto, E. (2012). Stakeholder engagement and knowledge exchange in environmental research. *Journal of Environmental Management*, **95**: 56–65.

■ Prazan, J. and Aalders, I. (2019). Typology of agro-ecological farming systems and practices in the EU and the selection of case studies. EU H2020 UNISECO (Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU), Deliverable D2.2. Available online at: https://doi.org/10.5281/zenodo.4116343.

■ Reed, M.S., Stringer, L.C. Fazey, I., Evely, A.C. and Kruijsen, J.H.J. (2014). Five principles for the practice of knowledge exchange in environmental management. *Journal of Environmental Management*, **146**: 337–345.

■ Röös, E., Mayer, A., Muller, A. *et al*. (2022). Agroecological practices in combination with healthy diets can help meet EU food system policy targets. *Science of The Total Environment*, **847**: 157612.

■ Schwarz, G., Vanni, F., Miller, D. *et al*. (2022). Exploring sustainability implication of transitions to agroecology: a transdisciplinary perspective. *EuroChoices*, this issue.

■ Vaarst, M., Getz Escudero, A., Chappell, M.J. *et al*. (2017). Exploring the concept of agroecological food systems in a city-region context. *Agroecology and Sustainable Food Systems*, **42**(6): 686–711.

■ Vanni, F., Gava, O., Povellato, A. *et al*. (2019). Governance Networks Supporting AEFS. EU H2020 UNISECO (Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU), Deliverable D5.2. Available online at: https://doi.org/10.5281/zenodo.5555090.

■ Védrine L., Legras, S., Larmet, V. *et al*. (2021). Farm, farm-group and territorial level impact of policies on the adoption of ecological approaches and the performance and sustainability of ecological agriculture. EU H2020 LIFT (Low-Input Farming and Territories – Integrating knowledge for improving ecosystem based farming), Deliverable 6.2. Available online at: https://doi.org/10.5281/zenodo.5940177.

■ Wezel, A., Goris, M., Bruil, J. *et al*. (2018). Challenges and action points to amplify agroecology in Europe. *Sustainability*, **10**: 1598.

■ Zīlāns, A. and Veidemane, K. (2021). Differentiation of support for organic farming based on the complexity of agro-ecological farming practices and performance of agro-environmental measures in Latvia. Policy brief Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU (UNISECO). Available online at: https://doi.org/10.5281/zenodo.4680754.

Katarzyna Zawalińska, Piotr Gradziuk, Vitaliy Krupin and Adrianna Wojciechowska, Institute of Rural and Agricultural Development, Polish Academy of Sciences (IRWiR PAN), Poland.
Emails: kzawalinska@irwirpan.waw.pl; pgradziuk@irwirpan.waw.pl; vitaliy.krupin@gmail.com; awojciechowska@irwirpan.waw.pl

Alexandra Smyrniotopoulou and George Vlahos, Department of Agricultural Economics and Rural Development, School of Applied Economics and Social Sciences, Agricultural University of Athens, Greece.
Emails: alex_smyr@aua.gr; gvlahos@aua.gr

Katalin Balazs, Geonardo Ltd, Budapest, Hungary.
Email: dr.balazs.katalin@gmail.com

Michael Böhm, Ecozept, Freising, Germany.
Email: boehm@ecozept.de

Mihai Chitea and Violeta Florian, Institute of Agricultural Economics - Romanian Academy, Bucharest, Romania.
Emails: mihai_chitea@yahoo.com; florian_violeta@yahoo.com

Mihaela Fratila, WWF-Romania, Bucharest, Romania.
Email: mfratila@wwf.ro

Stuart Henderson, School of Economics, University of Kent, United Kingdom.
Email: sh902@kent.ac.uk

Katherine N. Irvine and David Miller, James Hutton Institute, Aberdeen, United Kingdom.
Emails: kate.irvine@hutton.ac.uk; david.miller@hutton.ac.uk

Vasilia Konstantidelli and Irene Tzouramani, Agricultural Economics Research Institute, Hellenic Agricultural Organization-DEMETER, Athens, Greece.
Email: konstantidelli@agreri.gr; tzouramani@agreri.gr

Laure Latruffe, INRAE, Bordeaux School of Economics, Univ. Bordeaux, Pessac, France.
Email: laure.latruffe@inrae.fr

Elvyra Mikšytė, Baltic Environmental Forum Lithuania, Vilnius, Lithuania.
Email: elvyramiksyte@yahoo.com

Daniel Monteleone, European Landowners' Organization, Brussels, Belgium.
Email: daniel.monteleone@elo.org

Marcus Polaschegg, Chamber of Agriculture Lower Saxony, Oldenburg, Germany.
Email: marcus.polaschegg@lwk-niedersachsen.de

Gerald Schwarz, Thünen-Institute of Farm Economics, Braunschweig, Germany.
Email: gerald.schwarz@thuenen.de

Joseph Tzanopoulos, Durrell Institute of Conservation and Ecology, and Kent Interdisciplinary Centre for Spatial Studies, School of Anthropology and Conservation, University of Kent, United Kingdom.
Email: j.tzanopoulos@kent.ac.uk

Summary

Advancing the Contributions of European Stakeholders in Farming Systems to Transitions to Agroecology

The concept of a 'just transition' is gaining traction in international policy discourses. It has particular significance in relation to achieving net zero greenhouse gas emissions and the need for ensuring rights and responsibilities of all actors in transitions to agroecological farming systems. Research plays an important role in accompanying this transformation. It explores pathways for more sustainable and fair food systems, barriers to them being achieved, and where and what risks arise for communities of interest and of place. Researchers and practitioners across levels and sectors were brought together in H2020 projects LIFT and UNISECO using processes of stakeholder engagement. Both projects analysed the perceptions of actors towards agroecological farming, and their active involvement in the transitions required. This article summarises lessons learnt regarding multi-actor engagement in different participatory settings in both projects, including a Multi-Actor Platform approach, Q method, DELPHI and Hybrid forum workshops. The interactions involved several hundred actors from 18 countries across Europe. The article reflects on implications of the Covid-19 pandemic on the processes and effectiveness of multi-actor engagement, and assessments of the impacts on the empowerment of the actors. The findings are contextualised by contemporary European Union and national policy objectives of tackling climate change, the loss of biodiversity, and inequalities.

Promouvoir la contribution aux transitions vers l'agroécologie des acteurs européens des systèmes agricoles

Le concept de 'transition juste' gagne du terrain dans les discours de politique au niveau international. Il revêt une importance particulière en ce qui concerne l'annulation des émissions nettes de gaz à effet de serre et la nécessité de garantir les droits et les responsabilités de tous les acteurs dans les transitions vers des systèmes agricoles agroécologiques. La recherche joue un rôle important pour accompagner cette transformation. Elle explore les voies vers des systèmes alimentaires plus durables et équitables, les obstacles à leur réalisation, et où et quels risques surviennent pour les communautés d'intérêt et de lieu. Des chercheurs et des praticiens de tous les niveaux et de tous les secteurs ont été réunis dans les projets H2020 LIFT et UNISECO en utilisant des processus d'engagement des parties prenantes. Les deux projets ont analysé les perceptions des acteurs vis-à-vis de l'agriculture agroécologique et leur implication active dans les transitions nécessaires. Cet article résume les leçons apprises concernant l'engagement multi-acteurs dans différents contextes participatifs dans les deux projets, y compris une approche de plate-forme multi-acteurs, la méthode Q, DELPHI et des ateliers de forum hybrides. Les interactions ont impliqué plusieurs centaines d'acteurs de 18 pays à travers l'Europe. L'article réfléchit aux implications de la pandémie de Covid-19 sur les processus et l'efficacité de l'engagement multi-acteurs, et évalue les impacts sur l'autonomisation des acteurs. Les résultats sont examinés dans le contexte de l'Union européenne contemporaine et des objectifs de politique nationaux de lutte contre le changement climatique, la perte de biodiversité et les inégalités.

Förderung der Beiträge von europäischen Beteiligten der landwirtschaftlichen Systeme zum Übergang zur Agrarökologie

Das Konzept des ‚gerechten Übergangs' gewinnt im internationalen politischen Diskurs zunehmend an Bedeutung. Besondere Bedeutung hat es im Zusammenhang mit dem Erreichen von Netto-Null-Treibhausgasemissionen und der Notwendigkeit, Rechte und Pflichten aller Beteiligten beim Übergang zu agrarökologischen Anbausystemen zu gewährleisten. Die Forschung spielt eine wichtige Rolle bei der Begleitung dieses Wandels. Sie erforscht Wege zu nachhaltigeren und gerechteren Lebensmittelsystemen, Hindernisse, die einer Umsetzung im Wege stehen, und wo und welche Risiken für Interessen- und Ortsgemeinschaften entstehen. In den H2020-Projekten LIFT und UNISECO wurden Personen aus der Wissenschaft und Praxis auf verschiedenen Ebenen und in verschiedenen Sektoren mit Hilfe von Verfahren zur Einbeziehung von Interessengruppen zusammengebracht. Beide Projekte analysierten die Wahrnehmung der Beteiligten gegenüber der agrarökologischen Landwirtschaft und ihre aktive Mitwirkung an den erforderlichen Umstellungen. Dieser Artikel fasst die Erfahrungen zusammen, die in den beiden Projekten im Hinblick auf die Einbindung der verschiedenen Beteiligten in unterschiedlichen partizipativen Kontexten gemacht wurden. Hierzu zählen der Ansatz einer Multiakteursplattform, die Q-Methode, DELPHI und Workshops in Hybridforen. An den Interaktionen nahmen mehrere hundert Beteiligte aus 18 Ländern in ganz Europa teil. Der Artikel befasst sich mit den Auswirkungen der Covid-19-Pandemie auf die Prozesse und die Wirksamkeit der Multiakteurspartizipation sowie mit der Bewertung der Auswirkungen auf das Empowerment der Beteiligten. Die Ergebnisse werden in den Kontext aktueller politischer Ziele der Europäischen Union und der Mitgliedstaaten gestellt, die darin bestehen, den Klimawandel, den Verlust der biologischen Vielfalt und Ungleichheiten zu bekämpfen.