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PARTNERSHIP

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1st report on state of play

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EXECUTIVE SUMMARY

The 1st EPAT (European Panel for Agroecology Transitions) was held in Brussels on the 11th of December 2024. The goal of this panel is to enhance interactions between scientists and policy makers. The EPAT is supposed to last a long time, at least the duration of the Partnership. It involves a core group including several partners from the Partnership like INRAE, ANR, CSIC, EEB, IFOAM, FBN and officers at European Commission. Apart from researchers and policy officers, such encounters also involve relevant stakeholders contributing to agroecology in Europe such as farmers and their organisations. One task was to identify potential participants likely to attend this core group. « Water and Land care » was selected as the specific topic for this first panel meeting. In addition to the core group, specific contributors were also invited to address this topic, valuing both the location in Belgium and expertise on transitions or water. Brussels was chosen for this 1st EPAT because of possible participation of policy officer from the European Commission and think tanks members.

This report reflects the content and proceedings of this first EPAT. Our approach consisted of a combination of (i) formal contributions in the form of oral presentations in plenary sessions, (ii) a round table to allow different positions to be expressed, (iii) three parallel workshops, based on contrasted situations (water management practices in situations of drought / of flood risk / collective management based on regenerative hydrology) and feedback from sessions (iv) complementary contributions (Regional cases and cities. Translation into public policies at infra levels; International settings and perspectives from AE coalition and other initiatives), (v) collective sequences, with the help of a professional facilitator, to encourage participants (n=36) to get to know each other and interact.

In an introductory and interactive session, participants were invited to think about what they would ask from research and policy, respectively. Scaling up agroecology through research funding was stressed repeatedly. It was also pointed out that alignment is needed between policy and science, but there is a risk to get stuck in status quo. The development and current state of the AE partnership was introduced, stressing the current momentum, with new commissioner and implementation phase. Two presentations were dedicated to agroecological transitions and attached approaches, ranging from technological interpretations to transition studies. Accepting complexity and embracing food systems as a nexus enables a resignification of agroecology, where water also can be addressed as an interface between agroecosystems and food systems. The round table discussion with ERIAFF, Via Campesina, UCLouvain, Flanders Environment Agency and European Commission (DG AGRI and DG ENV) highlighted the importance of narratives and framing as powerful mechanisms to inform and drive policy and behaviour change. In interactive parallel workshops, participants were invited to delve into contrasting situations about water management practices in situations of droughts and flooding as well as collective management with regenerative hydrology. It appeared that landscape management can help in buffering the water cycle, whereas agroecology connects landscape, agriculture and food systems. With a focus on agri-food systems, several instruments likely to support agroecology transitions at infra-level were also presented, pleading for: better coordination among stakeholders, higher support to public-community partnerships and more comprehensive data for planning and monitoring. Finally, agroecology was considered as a global concept in a (globalised) international setting, while referring to several recent initiatives (AE coalition strategy 2024-2030, G20 Agriculture Ministers Declaration, OECD agricultural policy monitoring and evaluation 2024, EU strategic dialogue on the future of EU agriculture). As a whole, many topics were addressed and opened avenues for future developments in the partnership and for the next EPAT (addressing the soil law, infra-policies, multi-level and nexus approaches).

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Table 1:List of Participants

Firstname	Surname	Organization/Name of company
Philippe	Baret	Université de Louvain
Stéphane	Bellon	INRAE
Johannes	Bender	BLE - Federal Office for Agriculture and Food
Emmanuelle	Cariou	ANR
Henriette	Christensen	Agroecology Europe
Mark	Cropper	European Commission, DG AGRI
Hubert	de Jonge	Aarhus University DCA
Aurore	Degré	Gembloux Agro-Bio Tech Uliège
Christine	Falter	European Commission, DG AGRI
Susana	Gaona Saez	European Commission, DG AGRI
Maria	Gernert	IFOAM Organics Europe
Sabine	Girard	INRAE
Helena	Julien-Laferrière	GAEC de Montlahuc
Yanka	Kazakova	University of National and World Economy of Sofia
Gaetano	Ladisa	CIHEAM Bari
Olivier	Le Gall	INRAE
Les	Levidow	Open University
Daniel	López-García	Spanish National Research Council Institute of Economics, Geography and Demography
Adrien	Michez	Gembloux Agro-Bio Tech Uliège
Bram	Moeskops	FiBL Europe
Jan	Moudry	University of Tomas Bata in Zlin
Emmnauel Chisenga	Mukosha	University of Tomas Bata in Zlin
Elisabet	Nadeu	Institute for European Environmental Policy
Isabel	Paliotta	European Environmental Bureau EEB, Brussels
Anu	Palomäki	SeAMK University

Emmanuel	Petel	European Commission, DG AGRI
Francesca	Ricardi	Free University of Bozen, Bolzano
Marta Guadalupe	Rivera Ferre	CSIC
Hemal	Thakker	LISIS, Paris, Sciences Po
Nicolas	Tinois	JÜLICH Coordination Team for AGROECOLOGY Partnership
Lene	Topp	Science policy and capacity building expert
Karin	Ulmer	Agroecology Europe
Leonardo	van den Berg	EC Via Campesina
Kor	Van Hoof	Vlaamse Milieumaatschappij
Henrike	Von Der Decken	European Commission, DG ENV
Ruta	Zulpaite	European Agroforestry Federation

Foreword

The first **European Panel for Agroecology Transitions** (**EPAT**) took place at **Fondation Universitaire in Brussels**. It was coordinated by Stéphane Bellon (INRAE) and Emmanuelle Cariou (ANR, , co-coordination team of the Partnership) and co-organized with Maria Gernert (TPOrganics, IFOAM Organics Europe), Hubert De Jonge (Aarhus University, DK), Johannes Bender (BLE, DE), Stefano Grando (MASAF, IT) and Marta Rivera Ferre, (CSIC-UPV). All are contributing to the Task 2.3 from the WP2 on science policy of the AGROECOLOGY Partnership.

The Panel itself contains 27 members including researchers, policy officers and relevant stakeholders contributing to agroecology in Europe such as farmers and their organisations.

The choices made in the agenda in terms of approach (mix of communications, round table and workshops) helped to enhance interactions between actors who had, for most of them, no professional interactions before this event. Participation to the EPAT was split into core group (permanent members of the Panel) and guests having expertise on the specific topic addressed (10 speakers). The present output is as close as possible to the progress and content of the interventions we had during the event.

1. Introduction to the 1st EPAT by Stéphane Bellon (INRAE), Lene Topp (Professional facilitator) and Susana Goana Saez (DG Agri)

Introduction from Stéphane Bellon and state of play on the topic water and land care related to Agroecology transitions

Stéphane Bellon introduced the panel's rationale and its focus on **"Water and Landcare"**, emphasizing water as a key interface between **agroecosystems and food systems**. The session framed agroecological transitions (AET) in light of **past and recent research**, noting a review of **300 publications** on agroecology transitions (Fonseca et al., 2024 [1]). Most studies originate from **Europe, Latin America, and North America**, published in journals such as *Agronomy for Sustainable Development* and *Agroecology for Sustainable Food Systems*. Using **VOSviewer**, four analytical clusters can be identified in AET : (i) transition theories, (ii) techniques and practices, (iii) political and social dimensions, and (iv) transition criteria/indicators (Fonseca et al., 2024).

Contrasted perspectives for agroecological transitions were conceptualized and exemplified in a recent book[2], where determinist and open-ended ontologies represent two different conceptions or interpretations of the change process. They depend on whether objectives and means, targets and pathways are predetermined or defined along the change process. The first chapter of this book also addresses how different conceptualizations of transitions encapsulate determinist and/or open-ended perspectives on the change process.

Among pioneer works from European scholars[3] who contributed to agroecology, Girolamo Azzi introduced interesting concepts in his seminal book "Agrarian Ecology"[4]. Referring to our specific topic of the day "water and land care", he coined the term **meteorological equivalents**, looking at how plants behave or react under water stress and excess water conditions. He suggested this term to address the consequences **lack or excess of water** cause in terms of **plant yield** and plant development. Interestingly, yield appraisal was not only in terms of quantity, but also **in terms of quality** and regenerative potential related to **seed quality**. This is a wider interpretation of production outcomes.

Still anchored on the crop production and protection sides, **Stuart B. Hill (1985)**[5] proposed the ESR (Efficiency, Substitution, Redesign) framework to describe the dynamics of AET (Agroecology transitions). His standpoint about **redesigning the food system** to make it nourishing, just and recycling was reinterpreted by S. Gliessman and many other authors**.** In his handbook[6], S. Gliessman addresses both **overflood or lack of water**. He suggests further development and testing of water management strategies, especially those that view water in the context of larger cycles and patterns that link the farm

[1] Fonseca, A. F., Polita, F., & Madureira, L. (2024). How Agroecological Transition Frameworks Are Reshaping Agroecology: A Review. *Land*, *13*(11), 1930. https://doi.org/10.3390/land13111930

[2] C. Lamine, D. Magda, M. Rivera-Ferre, T. Marsden (Volume editors), 2021. Agroecological transitions, between determinist and open-ended visions. Peterlang Ed (https://www.peterlang.com/document/1114400).

[3] Doré T. & Bellon S., 2019. Les Mondes de l'Agroécologie. Quae Ed

[4] Azzi G., 1928. Ecologia Agraria, UTET, Torino
Also see : Benton A., 2020. Girolamo Azzi et l'écologie agricole : les origines oubliées de l'agroécologie. 31 p (https://www.academia.edu/44767468/Girolamo_Azzi_testo_francese_211220_pdf)

[5] Hill SB., 1985. Redesigning the food system for sustainability. Alternatives.
https://www.researchgate.net/publication/285538508

[6] Gliessman S., 2015. Agroecology, the ecology of Sustainable Food Systems, 3rd ED. CRC Press

with the surrounding environments from which water comes and ultimately returns after passing through the fields and farms.

The historical practice of **reparcelling/remembrement** highlights how land structuring can improve mechanization efficiency and water management. Recent French examples illustrate simultaneous challenges of **drought in the south** and **flooding in the north**, showing the importance of adaptive land care strategies.

A compilation in *Agronomy for Sustainable Development* demonstrates practical applications of agroecological engineering, including **multiple cropping systems** and field-edge arrangements to optimize water use and biodiversity. Literature on irrigation in agroecology is limited, especially at broader territorial scales. **Altieri et al.** classify three strategies for drought resilience: (i) **avoidance** (land use adjustments), (ii) **tolerance** (resistant varieties, organic matter, mulching, cover crops), and (iii) **escape** (timing of planting, no-till, crop sequencing, controlled irrigation).

A **mismatch** persists between conventional water management metrics (e.g., irrigation efficiency, crop productivity) and the **complexity of agroecological systems**. To address this, emerging approaches like **Nature-based Solutions (NbS)**, **Natural Water Retention Measures (NWRM)**, and **regenerative hydrology** aim to restore soil and landscape capacity to retain water, drawing from agroecology, conservation agriculture, ecological engineering, and rainwater harvesting.

Interactive session by Lene Topp (Professional moderator)

To enable knowledge of each other, Lene Topp helped us with an interactive session where participants were invited to think about what they would ask from research and policy, respectively. Scaling up agroecology through research funding was stressed repeatedly. It was also pointed out that alignment is needed between policy and sciences, but there is a risk to get stuck in status quo.

Intervention of Susana Goana Saez (EU COM DG Agri) to present the Agroecology Partnership.

The AGROECOLOGY Partnership, established under Horizon Europe (2021–2027), was co-created by the European Commission, Member States, researchers and stakeholders to strengthen links between science, policy, and practice in support of the agroecological transition. With a budget of about €300 million, shared equally between the EU and Beneficiaries, the Partnership promotes a context-specific, multi-level approach that connects European, national and regional priorities. The creation of the European Panel for Agroecological Transitions (EPAT) serves this goal by enhancing science–policy dialogue. Susana Goana Saez emphasizes the importance of coordination between EU, national, and regional levels, especially within the Common Agricultural Policy (CAP) framework, and highlights the need to align future research with the new Commission's agricultural and food policy priorities through evidence-based decision-making.

2. Agroecological transitions: visions and approaches by Marta Rivera Ferre, (CSIC-UPV)

Marta Rivera Ferre from Universitat Politècnica de València, set up the scene sharing diverse approaches and visions shaping agroecological transitions and their complexity. (full text see annex)

Marta Rivera Ferre, provides a comprehensive and critical reflection on the complexity of **AET**. Drawing on recent scientific-policy reports, including those from the Intergovernmental Panel on Climate Change (IPCC), or the SAPEA report (SAPEA - Science Advice for Policy by European Academies)[7], also the MedECC (Climate and Environmental Change in the Mediterranean Basin) report[8], she emphasizes that agroecology extends far beyond the management of land and water. Instead, it encompasses a broader **nexus of land, water, food, energy, and ecosystems**, requiring systemic and integrative approaches rather than reductionist or "siloed" solutions.

For decades, policymakers have sought simplified data and quantitative indicators from scientists. Marta Rivera Ferre argues that such reductionism risks obscuring the true complexity of agroecological systems. The **agroecological transition** must therefore be understood as both a **scientific and social process**, grounded in **interdisciplinary and transdisciplinary collaboration** among natural, social, and agricultural scientists, as well as active participation of farmers, communities, and policymakers.

A key argument in Rivera Ferre's presentation concerns the need to **reframe the food system**. The dominant **productivist paradigm**, which treats food as a **commodity**, has led to overproduction, overconsumption, and waste, while failing to ensure global food security. In contrast, framing food as a **human right** or as a **common good** emphasizes equity, sustainability, and participation. This alternative perspective highlights the importance of **small-scale farmers** and **local knowledge systems**, which are central to achieving both food security and sovereignty.

Rivera Ferre critiques the limitations of the **silo approach**, which addresses individual components—such as water management, energy production, or fertilizer use—without considering their systemic interconnections. Such narrowly focused solutions often generate unintended consequences, including soil salinization, water pollution, biodiversity loss, and climate feedback loops. To overcome these shortcomings, she advocates for a **nexus approach (Water–Energy–Food–Ecosystem, WEFE)** that fosters synergies between different sectors while minimizing trade-offs.

Her analysis identifies **behavioural and socio-ecological innovations**—including shifts toward the **Mediterranean diet**, **reduction of food waste**, and **revitalization of traditional and indigenous knowledge**—as the most transformative and synergistic strategies within the WEFE framework. These approaches embody the core principles of agroecology by linking ecological integrity with social transformation. Citing **O'Brien** (the IPCC, Intergovernmental Panel on Climate Change, 2012, Responding to Climate Change: The Three Spheres of Transformation report[9]), Rivera Ferre argues that genuine transformation occurs not only through technological innovation but also through changes in **beliefs,**

[7] SAPEA, Science Advice for Policy by European Academies. (2020). A sustainable food system for the European Union. Berlin: SAPEA. https://doi.org/10.26356/sustainablefood

[8] MedECC (2020) Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report [Cramer, W., Guiot, J., Marini, K. (eds.)] Union for the Mediterranean, Plan Bleu, UNEP/MAP, Marseille, France, 632pp. ISBN: 978-2-9577416-0-1 / DOI: 10.5281/zenodo.72248

[9] : O´Brien, K. and Sygna, L. (2013) Responding to climate change: The three spheres of transformation. Proceedings of Transformation in a Changing Climate, 19-21 June 2013, Oslo, Norway. University of Oslo (pp.16-23). ISBN 978-82-570-2000-2.

values, and worldviews. This highlights the central role of **social sciences** in rethinking governance models, institutions, and power dynamics to achieve equitable and sustainable food systems.

Finally, Rivera Ferre warns against the **resignification and co-optation** of agroecology by stakeholders who adopt superficial ecological practices without addressing deeper social and political inequalities. Such approaches—often linked to carbon offsetting and "net-zero" schemes—risk reinforcing land grabbing and undermining community sovereignty. Authentic agroecological transformation, she insists, must therefore reconfigure **power relations**, promote **autonomy**, and place **human rights** at the heart of food system.

In conclusion, Rivera Ferre positions **agroecology as the most effective pathway** to achieve multiple environmental and social objectives simultaneously. Its success depends on embracing complexity, fostering collaboration across disciplines and sectors, and redefining the ethical foundations that shape human relationships with food, ecosystems, and society. Through such holistic and value-based transformation, agroecology can serve as a **catalyst for sustainable food systems**.

3. **Round Table**: Framing and implementation of agroecological transitions focusing on water and land care. **Participants:** Christine Falter (European Commission, DG-Agri); Francesca Ricardi (ERRIN); Kor Van Hoff (Flanders Environmental Agency); Leonardo Van Den Berg (La Via Campesina); Philippe Baret (Université Catholique de Louvain); Henrike von der Decken (European Commission, DG Env)

The European Round Table on Agroecology Transition brought together policymakers, researchers, regional representatives, and farmer organizations to examine how agroecological transitions are framed and implemented across governance levels, with a focus on **land and water care**. The discussion revealed both progress and persistent tensions between environmental ambition, political pragmatism, and farmers' realities.

- **Policy Shifts and CAP Reform:** Christine Falter (European Commission DG AGRI) explained that recent *CAP simplifications* (March 2024) granted Member States more flexibility but relaxed environmental obligations. Mandatory biodiversity measures became voluntary, and crop rotation could be replaced with diversification. While intended to reduce bureaucracy, these moves risk diluting the ecological ambition of the Green Deal.
- **Regional Leadership and Co-creation:** Francesca Ricardi (ERRIN & University of Bolzano) underscored the crucial role of **regional authorities** in co-designing agroecological transitions. Regions like Bolzano are already co-funding European partnerships (e.g., *Biodiversa+*, *Future Foods*) that link researchers, farmers, and policymakers. However, regional contributions remain undervalued at EU level.
- **Bridging Water and Agroecology:** Kor Van Hoff (Flanders Environmental Agency) emphasized that **implementation gaps**, not legislative gaps, are the main bottleneck for water and land care. His work in *Water4All* focuses on strengthening coordination between water management and agroecological initiatives, aligning with the forthcoming *EU Water Resilience Initiative*.
- **Implementation and Future Policy Outlook:** Henrike von der Decken (European Commission, DG Env) confirmed that the next EU political cycle will prioritize **implementation over new laws**. Focusing on the future *Soil Monitoring Law*, *Nitrates Directive revision*, and *Water Resilience Strategy*, she emphasized that agroecology can connect fragmented targets on soil, water, biodiversity, and climate.

- **Farmers' Realities and the Commons:** Leonardo van den Berg (La Via Campesina, farmers organisation) reminded participants that small and medium-scale farmers—key actors in agroecology—are under economic and climatic pressure. His testimony illustrated water scarcity's growing impact and warned against the **commodification of water**, calling for it to be treated as a *common good*.
- **Narratives as Drivers of Change:** Philippe Baret (Université Catholique de Louvain) argued that **narratives, not data alone, shape policy and research**. He distinguished between the technical effects of policy change and their narrative consequences, urging researchers to act as *strategic partners* who help craft compelling, evidence-informed narratives rather than react defensively to political trends.

Audience Reflections and Closing
Questions highlighted the tension between **evidence and narrative power**, the **exclusion of small-scale farmers** from policymaking, and the need for **counter-narratives** to industrial agriculture. Panelists agreed that implementation, coordination, and fairer economic frameworks are now Europe's main agroecological challenges.

Overall Message
The panel demonstrated that Europe's agroecological transition is not merely a technical process but a **political, social, and narrative challenge**. Effective transformation will depend on aligning **policy flexibility with ecological ambition**, **empowering regional and farmer participation**, and **framing research and communication strategically** to support coherent, cross-sector implementation.

4. Addressing water and land care in Agroecology (Aurore Degré Gembloux Agro-Bio Tech ULiège and Gaetano Ladisa, CIHEAM Bari)

Dr. Aurore Degré, Agroecology and Landscape Design for Climate Resilience: The Critical Role of Water

Dr. **Aurore Degré**, a hydrologist from Gembloux Agro-Bio Tech (University of Liège), offered a **hydrological and systems-based perspective** on agroecological transitions, emphasizing the **critical role of water and landscape design** in climate resilience. She began by reminding participants that the **water cycle is inseparable from energy dynamics** — energy drives evaporation, precipitation, and circulation. Climate change, she showed, is disrupting this balance, producing red zones of vulnerability where both water and energy systems are destabilized.

A. Degré linked these disruptions to the **planetary boundaries' framework**, noting that humanity has already **transgressed safe limits for both green water (soil moisture) and blue water (surface and groundwater)**. This overshoot does not only reflect overuse but a dangerous **increase in variability** — with soils becoming alternately too dry or too saturated due to both **climate change and land-use alterations** such as soil sealing, water diversion, and dam construction.

Historical data and hydrological modelling show a **rising variability of soil moisture** over time, even when average levels remain stable. To address this, she proposed the strategic goal of **"buffering the water cycle"** — enhancing landscapes' capacity to absorb, store, and slowly release water. Climate projections for Belgium suggest that, regardless of whether temperatures rise by two or four degrees, **extreme events—floods and droughts—will intensify**, producing wet winters and dry summers. This dual challenge will shape Europe's hydrological future, affecting soil erosion, water quality, and infrastructure.

Following Belgium's catastrophic 2021 floods, A. Degré's team used a **distributed hydrological model** on a 40 km² agricultural watershed near Herve to test agroecological measures such as:

- Small infiltration holes between maize rows
- Increased hedgerow density
- Reduced or no-till soil management

These **simple interventions reduced water discharge by about 30%**, significantly mitigating downstream flood risk. Efficiency mapping and indicator analysis revealed that **context-specific, spatially targeted strategies** are key — the same measure may yield different effects depending on local landscape conditions. In a more exploratory scenario, her team **digitally redesigned field boundaries** to optimize hydrological performance, achieving an **additional 10% reduction in discharge**. Though hypothetical, this demonstrates how **landscape-scale planning** could substantially improve water resilience if supported by enabling governance frameworks.

Dr. Degré concluded by urging stronger **integration of hydrology within agroecology**. Hydrological modelling, she argued, not only supports technical innovation but also helps **structure decision-making** around where and how land management practices are most effective. She called for **hydrologists to be core partners** in agroecological transitions and for water to be understood not merely as a resource, but as **a systemic entry point for climate-resilient agriculture**[10]. (see also full text Annex 7.4)

Dr. Gaetano Ladisa: The Interconnections Between Agriculture, Landscape, and Water

Dr. Gaetano Ladisa highlighted the **mutual dependencies between agriculture, landscape, and water**, warning that poor land management triggers **soil erosion, biodiversity loss, and reduced productivity**. He described this as a fragile "**triangle of interdependence**" whose balance must be maintained for resilient food systems.

He emphasized the urgency of achieving a **stable water balance**, as both **droughts and floods** increasingly disrupt agriculture. Around **a quarter of the global population** lives in flood-prone areas—mostly in **low- and middle-income countries**—while **droughts and heatwaves**, such as those of 2022 and 2024, threaten food and water security, particularly in **Southern Europe**.

Beyond quantity, **water quality** is a major concern: pollution from pesticides and runoff harms crops, ecosystems, and human health. Ladisa also introduced the idea of **virtual water**, underlining how global trade embeds hidden water flows that affect sustainability.

As solutions, he promoted **agroecology** as a **holistic approach** to restore ecosystem services and resilience. Practices like **agroforestry, cover crops, reforestation, and efficient irrigation** strengthen soils, conserve water, and reduce pollution.

He concluded that **water is the "fil rouge"** linking food systems and landscapes. Managing it **efficiently and equitably at the basin scale**, through **sustainable and science-based agroecological transitions**, is essential to future resilience.

[10] Also see https://economicsofwater.watercommission.org/report/economics-of-water.pdf

5. Regional cases and cities (Daniel López-García, Institute of Economics, Geography and Demography; Spanish National Research Council IEGD/CSIC)

Dr. **Daniel López-García** presented his work on **territorial approaches to agroecological transitions**, emphasizing the translation of agroecology into **public policy** and **multi-level governance** frameworks. His research explores how **cities and regions** act as key arenas for embedding agroecological principles in **sustainable food systems**, through participatory policy co-production and territorial coordination.

As **former coordinator of the Spanish Network of Municipalities for Agroecology** (Red de Municipios por la Agroecología, created in 2017 [11]), López-García facilitated the participatory design of **Local Food Strategies** in major Spanish cities (Barcelona, Valencia, Zaragoza, Valladolid). Following the **Milan Urban Food Policy Pact (MUFPP, 2015)**, city governments have become crucial actors in implementing **urban food policies** promoting **social and ecological sustainability**, integrating food, health, land use, and social equity into the **urban policy agenda**.

Across Spanish city-regions, municipalities have deployed **policy tools** aligned with agroecological principles [12], such as:

- **Scaling up short and territorial food supply chains** via public procurement, logistics infrastructure, and local marketing (Reina-Usuga et al., 2023);
- **Protecting peri-urban agricultural land** through agricultural parks and land banks;
- **Strengthening multi-actor coalitions** that link public institutions, civil society, and agroecological farmers (Vara-Sánchez et al., 2021; López-García et al., 2024).

These initiatives mirror a wider European trend toward **reflexive governance** and **embedded food system transformations** (Marsden et al., 2018[13]). López-García et al.[14] identified **two key challenges** to advancing these transitions:

1. **Political leadership and institutionalization** — Agroecological transitions thrive when policies are formally embedded within **local governance structures**, budgets, and administrative capacities, rather than relying solely on alternative movements. Public support mechanisms, cross-sectoral coordination, and consistent data frameworks are vital to reinforce these processes.

[11] https://www.municipiosagroeco.red/
[12] Reina-Usuga, L., Parra-López, C., De Haro-Giménez, T., & Carmona-Torres, C. (2023). Sustainability assessment of Territorial Short Food Supply Chains versus Large-Scale Food Distribution: The case of Colombia and Spain. Land Use Policy, 126, 106529. https://doi.org/10.1016/j.landusepol.2022.106529;
Vara-Sánchez, I., Gallar-Hernández, D., García-García, L., Morán Alonso, N., & Moragues-Faus, A. (2021). The co-production of urban food policies: Exploring the emergence of new governance spaces in three Spanish cities. Food Policy, 103, 102120. https://doi.org/10.1016/j.foodpol.2021.102120 ;
López-García D, Cruz-Maceín JL and DiPaula M. (2024). Agri vs. Food? Perceptions of local policymakers on agri-food policies from a multilevel approach. Frontiers in Sustainable Food Systems, 8, 1399746. https://doi.org/10.3389/fsufs.2024.1399746
[13] Marsden, T., Hebinck, P. & Mathijs, E. Re-building food systems: embedding assemblages, infrastructures and reflexive governance for food systems transformations in Europe. Food Sec. 10, 1301–1309 (2018).
[14] López-García, D., Zerbian, T., Cuevas, S., & Moragues-Faus, A. M. (2025). Blurred powers, multiple agencies, and discontinuous temporalities. A multi-level perspective on bottom-up innovation in agri-food policies. Environmental Innovation and Societal Transitions, 57, 101002. https://doi.org/10.1016/j.eist.2025.101002

2. **Governance resistance and regime power** — The persistence of the **industrial agri-food regime** and contradictions among EU goals (food sovereignty, competitiveness, and trade) can constrain or even co-opt agroecological transformations (Walthall et al., 2024 [15].).

To overcome these barriers, López-García proposed **three strategic pathways**:

1. **Recognize sustainable and healthy food systems** as a political priority for city-regions, explicitly embedding **agroecology** in policy frameworks;
2. **Integrate agroecological principles** into existing urban and regional planning instruments to ensure coherence across sectors;
3. **Empower local coalitions and agroecological farmers' groups** as key actors in leading and sustaining transitions toward socio-ecological resilience.

Ultimately, his work demonstrates that **city-regions** are central to Europe's agroecological transition. Through participatory governance and policy co-production, they can bridge **grassroots innovation** and **institutional transformation**, advancing the systemic reconfiguration of food systems envisioned by recent scholarship on **reflexive and transformative governance** (Marsden et al., 2018; Ajates Gonzalez et al., 2018[16]).

6. Outlook – Agroecological Transitions with a Focus on Water and Land Care

The first EPAT meeting highlights a decisive moment for agroecological transitions in Europe. Across scientific, policy, regional, and farmer perspectives, a shared understanding emerges: agroecology is no longer only about farming practices but about reshaping governance, territory, and society through systemic, water- and land-centered approaches.

Water and land care appear as powerful entry points for transformation. Climate change is destabilizing hydrological cycles, amplifying both droughts and floods, and pushing soils beyond green and blue water planetary boundaries. Research presented by hydrologists demonstrates that relatively simple agroecological measures—hedgerows, reduced tillage, infiltration techniques—can reduce runoff by 30–40%, while landscape redesign and hydrological modelling offer even greater potential. These insights reinforce the need to integrate hydrology into agroecological design and policy, and to frame water not merely as a resource but as a structural component of climate-resilient landscapes.

At the governance level, the EU is shifting from legislative development to implementation and coordination, with the AGROECOLOGY Partnership positioned to align research, policy, and practice across Europe. Yet tensions persist: recent CAP simplifications risk undermining ecological ambition, and contradictions between competitiveness, trade, and sustainability remain unresolved. Regions and cities, meanwhile, emerge as key laboratories for agroecological governance, translating principles into territorial food strategies, land-use protections, and short supply chain policies. These experiences demonstrate the transformative potential of reflexive, place-based, and participatory governance, but also its vulnerability to political cycles and institutional fragmentation.

[15] Walthall, B., Vicente-Vicente, J. L., Friedrich, J., Piorr, A., & López-García, D. (2024). Complementing or co-opting? Applying an integrative framework to assess the transformative capacity of approaches that make use of the term agroecology. Environmental Science & Policy, 156, 103748. https://doi.org/10.1016/j.envsci.2024.103748
[16] Ajates Gonzalez, R., Thomas, J., & Chang, M. (2018). Translating Agroecology into Policy: The Case of France and the United Kingdom. Sustainability, 10(8), 2930. https://doi.org/10.3390/su10082930;

Social sciences contribute a crucial warning: agroecology is at risk of resignification or co-optation when policies adopt superficial environmental measures without addressing inequalities, power relations, and food system paradigms. Maintaining agroecology's transformative depth requires reframing food as a right or a common good, strengthening farmer participation, and recognizing the role of values, narratives, and worldviews in shaping policymaking. As several speakers noted, data alone cannot drive transitions; compelling narratives aligned with evidence are needed to counter dominant productivist framings.

Looking forward, three priorities clearly emerge:

- Integrate water and land care as strategic connectors across EU policies for soil, climate, biodiversity, and agriculture, using hydrological modelling and nature-based solutions to guide territorial implementation.
- Strengthen multi-level governance, enabling regions and city-regions to co-produce policies with farmers, researchers, and civil society, supported by coherent data frameworks, funding, and institutional mandates protect the transformative essence of agroecology, ensuring that transitions remain grounded in equity, rights-based approaches, and socio-ecological resilience rather than being reduced to technical optimizations.

This suggests new opportunities for EPAT Phase 2, particularly through the emerging Work Package on regions (WP12), which could strengthen links between the Panel and local actors responsible for on-the-ground agroecological transitions.

A further challenge lies in addressing the socio-technical landscape, the broader cultural and societal currents shaping transitions. Renewed narratives in science and policy that align with societal dynamics and social movements are essential. These narratives can either support agroecological transformations or reinforce deregulatory pressures that weaken the Green Deal. Incorporating this landscape perspective within the EPAT and the wider Partnership will be essential.

Finally, the upcoming EU Soil Monitoring Law will be a cornerstone for promoting sustainable land use. This aligns directly with the theme of the 2nd EPAT (1 October 2025, Malmö), highlighting continuity and opportunity for deepening European dialogue on land stewardship.

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7. Annex

7.1 Annex 1 Introduction to the 1st EPAT by Stéphane Bellon (INRAE)

« Water and Landcare » was selected as the specific topic for this first panel meeting. Apart from the EPAT core group, specific contributors were also invited to address this topic during this day.

This presentation briefly introduces both transition issues and the specific topic, while referring both to past and recent works in agroecology.

In a recent review, 300 publications addressing the "agroecology transition" framework were analysed[17]. Different perspectives appear from 2012 to nowadays.

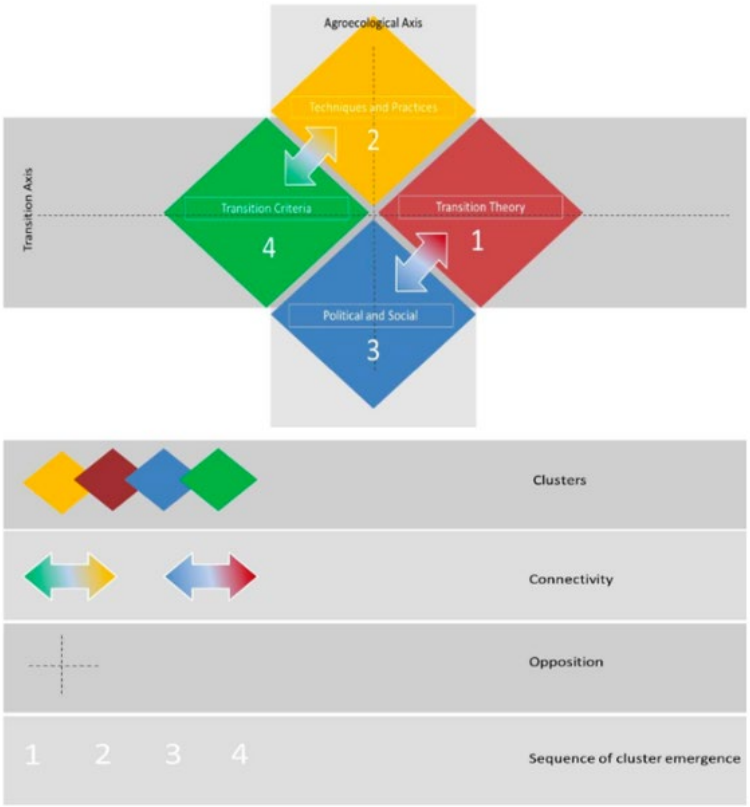

Figure 5. Illustration and synthesis of the connections and oppositions between 'agroecological transitions' theoretical and conceptual frameworks.

Source: Elaborated by the authors based on the interpretation of the data in Figure 3.

As for the geographical distribution of publications, most of the contributions come from Europe, but also from Latin America (Brazil, among others), and North America

The authors also considered which authors and journals refer to agroecological transitions. There are manifold but the major journals are "Agronomy for Sustainable Development" (edited in France) and Agroecology for Sustainable Food Systems" (coordinated by Stephen Gliessman, a prominent author in agroecology).

Based on an analysis using specific software VOSviewer software (version 1.6.20), the authors identify 4 major polarities and provide an analytical grid to differentiate clusters.

The **red cluster** refers to what the authors call **transition theories** i.e. the conceptualization of agroecological transition.

The orange one, refers mostly to **techniques and practices** in agroecology.

The blue one refers to **political and social dimensions** whereas the last and most recent one, in **green**, refers to **transition criteri**a, using frameworks and indicators to "measure" achievements in terms of agroecology and transitions.

[17] Fonseca, A. F., Polita, F., & Madureira, L. (2024). How Agroecological Transition Frameworks Are Reshaping Agroecology: A Review. *Land*, *13*(11), 1930. https://doi.org/10.3390/land13111930

Connectivity and opposition among clusters are also mentioned in their Fig. 5 (Fonseca et al., 2024)

Contrasted perspectives for agroecological transitions were conceptualized and exemplified in a recent book[18], where determinist and open-ended ontologies represent two different conceptions or interpretations of the change process. They depend on whether objectives and means, targets and pathways are predetermined or defined along the change process. The first chapter of this book also addresses how different conceptualizations of transitions encapsulate determinist and/or open ended perspectives on the change process.

Then we wanted to briefly recall how water issues are dealt with publications in agroecology and related fields.

Among pioneer works from European scholars[19] who contributed to agroecology, the Italian Girolamo Azzi introduced interesting concepts in his seminal book "Agrarian Ecology"[20]. Referring to our specific topic of the day "water and land care", he coined the term **meteorological equivalents**, looking at how plants behave or react under water stress and excess water conditions. He suggested this term to address the consequences **lack or excess of water** cause in terms of **plant yield** and plant development. Interestingly, yield appraisal was not only in terms of quantity, but also **in terms of quality** and regenerative potential related to **seed quality**. This is a wider interpretation of production outcomes.

Still anchored on the crop production and protection sides, **Stuart B. Hill (1985)**[21] proposed the ESR (Efficiency, Substitution, Redesign) framework to describe the dynamics of agroecological transitions. His standpoint about **redesigning the food system** to make it nourishing, just and recycling was reinterpreted by S. Gliessman and many other authors**.** In his handbook[22], S. Gliessman addresses both **overflood or lack of water**. He suggests further development and testing of water management strategies, especially those that view water in the context of larger cycles and patterns that link the farm with the surrounding environments from which water comes and ultimately returns after passing through the fields and farms.

The effect of what we called "remembrement" in French **(**or reparcelling in English, as the rearrangement of fields to improve farm structures and thus the economic viability of holdings) is also interesting, as related with landcare. Reparcelling/remembrement refers to remembering open fields, which were divided, and then afterwards merged while removing edges. There were a set of techniques and methods applied to agriculture to follow up on modernization, industrialization but really **adapting the land structure or land development to mechanization**, motorization and tractors. This dimension helps to understand better where we are standing now regarding the choice we made **to deal both lack of water and excess of water**. **This year in France**, we had both situations, lack of water in the south of France and the north of France was flooded with excess rain.

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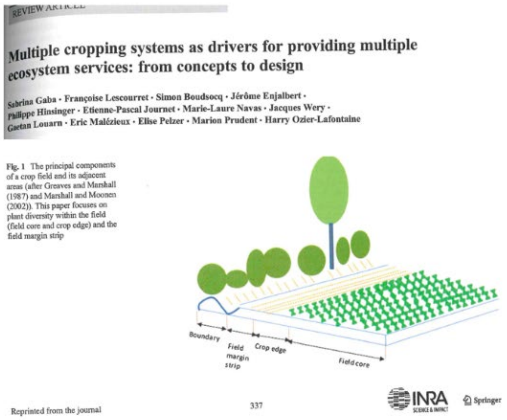
[18] C. Lamine, D. Magda, M. Rivera-Ferre, T. Marsden (Volume editors), 2021. Agroecological transitions, between determinist and open-ended visions. Peterlang Ed (https://www.peterlang.com/document/1114400).
[19] Doré T. & Bellon S., 2019. Les Mondes de l'Agroécologie. Quae Ed
[20] Azzi G., 1928. Ecologia Agraria, UTET, Torino
Also see : Benton A., 2020. Girolamo Azzi et l'écologie agricole : les origines oubliées de l'agroécologie. 31 p (https://www.academia.edu/44767468/Girolamo_Azzi_testo_francese_211220_pdf)
[21] Hill SB., 1985. Redesigning the food system for sustainability. Alternatives. https://www.researchgate.net/publication/285538508
[22] Gliessman S., 2015. Agroecology, the ecology of Sustainable Food Systems, 3rd ED. CRC Press

Inspirations from AE engineering?


Multiple cropping systems as drivers for providing multiple ecosystem services: from concepts to design

Sabrina Gaba · Françoise Lescourret · Simon Boudsocq · Jérôme Enjalbert · Philippe Hinsinger · Etienne-Pascal Journet · Marie-Laure Navas · Jacques Wery · Gaetan Louarn · Eric Malézieux · Elise Pelzer · Marion Prudent · Harry Ozier-Lafontaine

Fig. 1 The principal components of a crop field and its adjacent areas (after Greaves and Marshall (1987) and Marshall and Moonen (2002)). This paper focuses on plant diversity within the field (field core and crop edge) and the field margin strip

Boundary · Field margin strip · Crop edge · Field core

Reprinted from the journal

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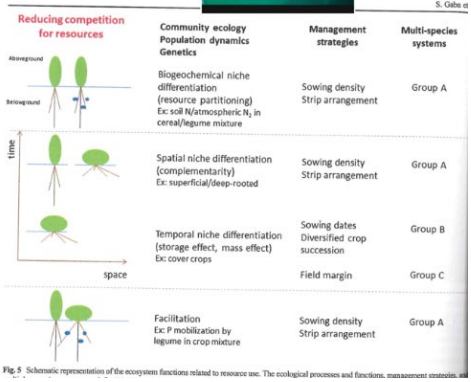


Fig. 5 Schematic representation of the ecosystem functions related to resource use. The ecological processes and functions, management strategies, and

Finally we wanted to refer to another book on agroecological engineering. It is based on a compilation of papers published in the journal Agronomy for Sustainable Development.

This compilation of scientific papers includes a wide range of techniques and practices influencing water including reviews on management levers[23]. It illustrates the previous orange cluster, and also addresses landcare.

This enables a comprehensive view on one specific topic. For example, you can find one paper written by colleagues from INRAE, and CIRAD about **multiple cropping systems**, which refers somehow at field scale how to arrange a combination of species of plants in field with beyond the cultivated plot, edges on the border in a way that it helps to think about **other scales** and other special arrangements.

Regarding irrigation and agroecology, a literature review was published recently[24]. The authors only found a limited number of publications regarding the **relationships between agroecology and irrigation practices**, and even much less at higher levels (cropping, farming, territorial and food systems). Concerning the adaptation capacity of agroecosystems to drought, Altieri et al.[25] identify three main groups of agroecological practices likely to increase systems' resilience: avoidance (changing land use patterns), tolerance (resistant varieties, adding organic matter, mulching, cover crops), and escape (early/late planting, no till, crop sequence, controlled irrigation).

A **mismatch** appears between technologies or indicators used in water management (e.g. water efficiency and crop productivity with irrigation) and agroecological systems complexity (in design or management). However, numerous initiatives are emerging to restore the capacity of soils and landscapes to slow down and retain water. These approaches—referred to as Nature-based Solutions (NbS), Natural Water Retention Measures (NWRM), or "regenerative hydrology"—aim to strengthen the resilience of agroecosystems. They draw on knowledge and techniques from agroecology, but also from conservation agriculture, ecological and vegetation engineering, rainwater harvesting, and related fields.

[23] Bodner G. et al., 2015. Management of crop water under drought: a review. Agron. Sustain. Dev.
Dollinger J. et al., 2015. Managing ditches for agroecological engineering of landscape. A review. Agron. Sustain. Dev.

[24] C. Leauthaud, F. Ameur & D. Leenhardt (27 Mar 2025): Irrigation and agroecology: a scientific mismatch? A literature review, Agroecology and Sustainable Food Systems, DOI: 10.1080/21683565.2025.2481405

[25] Altieri MA, Nicholls CI, Montalba R, Vieli L and Vazquez LL (2025) Agroecology and the limits to resilience: extending the adaptation capacity of agroecosystems to drought. Front. Agron. 7:1534370. doi: 10.3389/fagro.2025.1534370

7.2 Annex2: Agroecological transitions: visions and approaches (M. Rivera Ferre, CSIC-UPV)

The topic of the day is **land and water care**, but in our thinking, the complexity goes beyond land and water and it embed also **land, water, food, energy and ecosystems**. So really Agroecology transition is much more complex than what we can think. Today what I would like to share with you are some reflections coming from science policy reports that have been published in the last five years from the IPCC (Intergovernmental Panel on Climate Change) or the SAPEA report (SAPEA - Science Advice for Policy by European Academies)[26], also the MedECC (Climate and Environmental Change in the Mediterranean Basin) report[27].

What I would like to share with you today in terms of reflections is about the complexity in which we are involved in AE transition. Because one of the issues is for many, many years in the science policy arena, policymakers have been asking us -scientists- data, results, percentages. And what we know is that we cannot answer in simple way because giving a number can lead towards a reductionist action. And what we want to really ensure **is that policymakers understand the complexity of Agroecology**. AE transition is much more about **interdisciplinarity and transdisciplinary work** with stakeholders, policymakers, other scientists coming from social science and natural science and physical science.

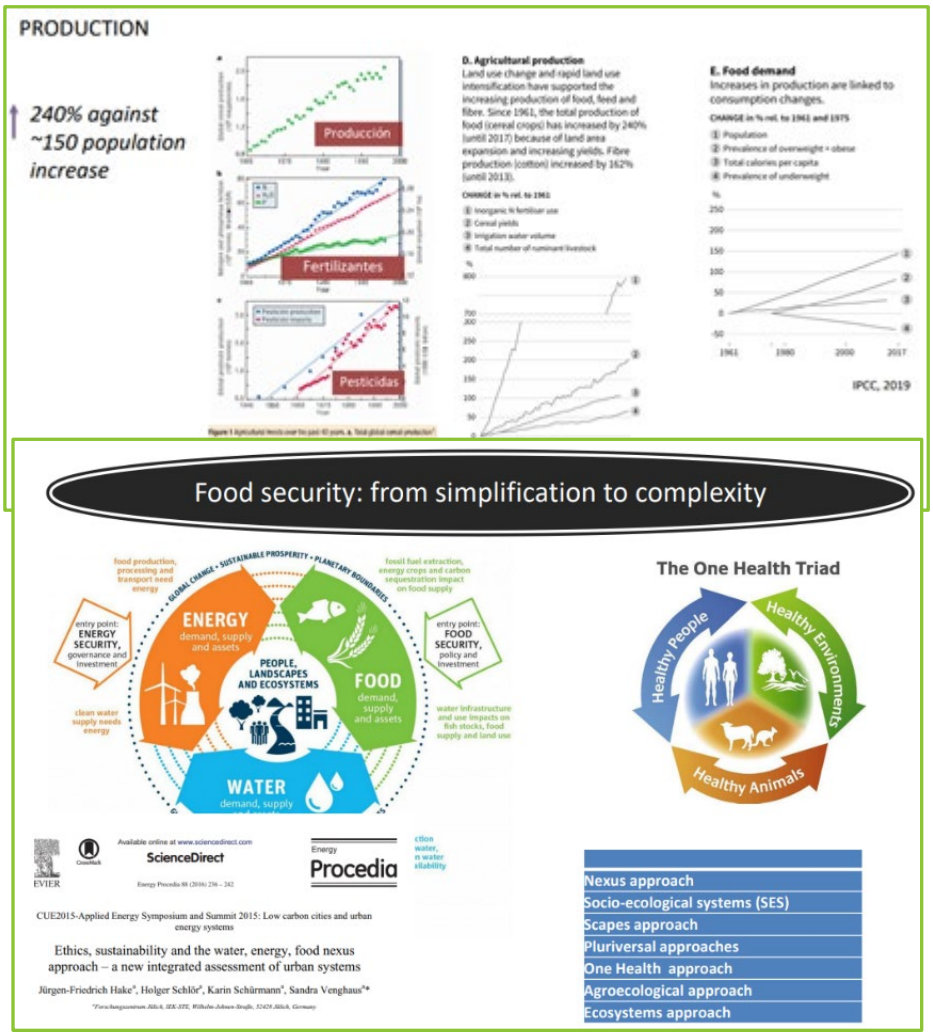
Agroecology needs to be framed within a broader issue, whether food is considered a commodity or is considered a human right, AE transition is also here **to transform the food system**, because we know the food system is not working. And it's also the problem of many other things like the **issue of the planetary boundaries**. The main topic now is **how we do transform this food system**. Which options do we have available to transform food system. And this is where embracing complexity is essential, because otherwise we will not make it. We will not really go into the transformation pathway, but we will go again into what we call incremental pathways, which is, again, using some **technologies, some reductionist solutions**, which are good, but are **not enough.**

When the **FAO published in 2008** this report saying that because in 2050 we will be 10,000 million people, farmers need to produce **70% more food**. This is a very simple, casual, linear relationship, more people, more food. But this **did not happen to be true** and the implications of this are still happening, because people still think that we need to produce more. This is a false approach because **food security** goes beyond availability, food security includes many other dimensions.

[26] SAPEA, Science Advice for Policy by European Academies. (2020). A sustainable food system for the European Union. Berlin: SAPEA. https://doi.org/10.26356/sustainablefood

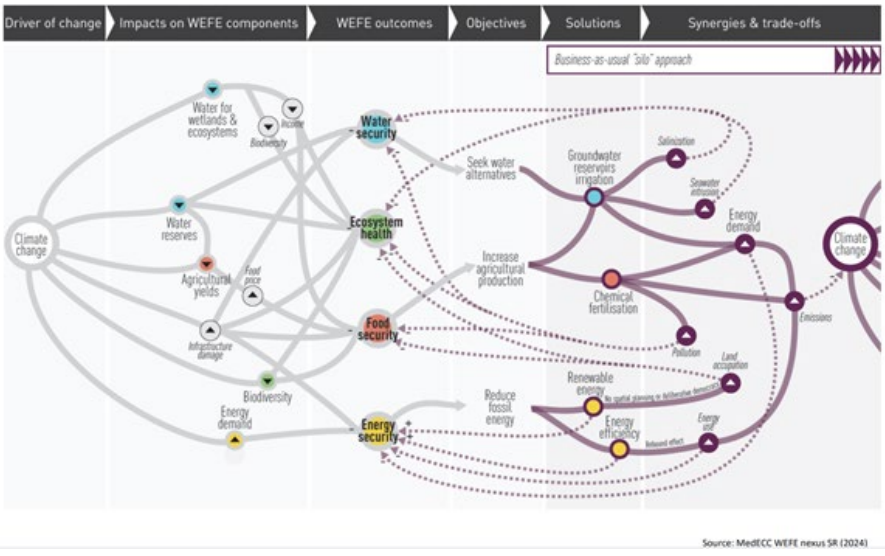
[27] MedECC (2020) Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report [Cramer, W., Guiot, J., Marini, K. (eds.)] Union for the Mediterranean, Plan Bleu, UNEP/MAP, Marseille, France, 632pp. ISBN: 978-2-9577416-0-1 / DOI: 10.5281/zenodo.72248

We know that **the production of food** has increased much more in the last decades **than the population growth**, but still we have a lot of problems of food insecurity because **food security** now is a problem also of **over consumption and overproduction.** In addition, there are **changes in diets** with a big increase in the **meat consumption**, particularly in some countries from global north. At the same time, there is a **problem of food loss and waste**.



These are partly **consequences of intensive farming system production**, and we cannot afford this anymore. So we really need to **embrace complexity** in the relationships between the different elements composing food system (cascading effects, positive, negative interactions, feedback loops).

And we can see also in the partnership, that there's a lot of effort to really integrate stakeholders and different disciplines, which is somehow good news and reflects this complexity. Now also in the **science policy** we should have this **nexus approaches**.

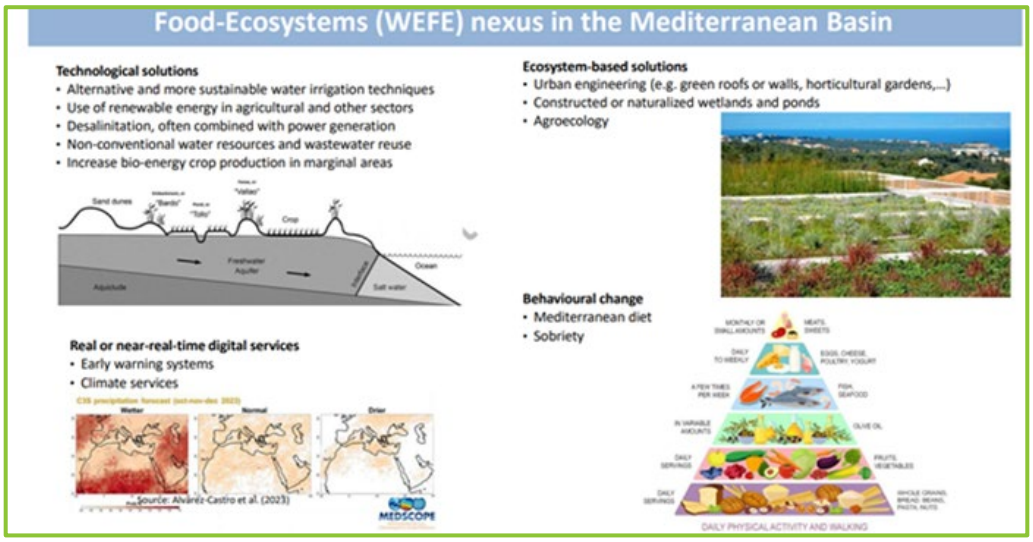


In another report from the MedECC, we also worked on **water security, food security, energy security and ecosystem health as goals to achieve** in the Mediterranean area. We could introduce also **social dimensions**. Another driver is **climate change**. We know that climate hazard impact on **food security** (IPCC report 2024) because it has an impact on some of the **water food energy component**. It reduces **water reserves**, **agricultural yields**, **biodiversity**, it **increases temperature-based energy demand**.

In our objectives, we want to **increase production** in the sense that not like before because of the issue of more people, but the fact that we know there will be less production because in the case of the Mediterranean it is expected 17% reduction of agricultural yields.

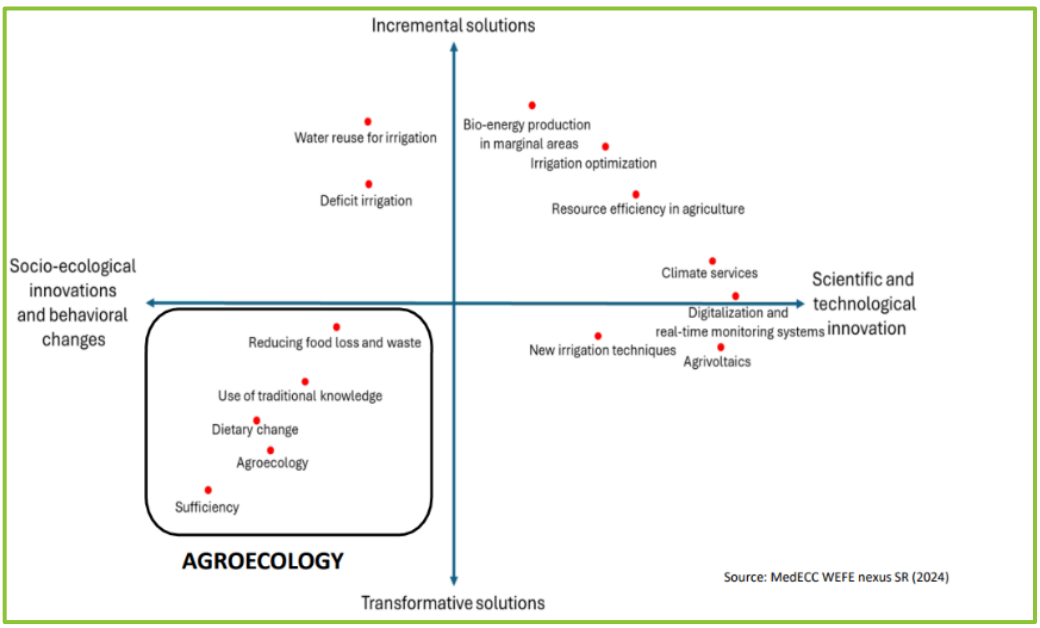
Going to the solution in the **silo approach**, in the sense of looking for increase of production and consequently for increase of inputs like water more precisely groundwater, the result is that in the short term, I have more water, in the long term, I am compromising the health of the ecosystem because this solution increases the salinization of soils (and this is exactly what is happening in Spain). And this has a **negative impact** on the objective which are **water security** and **food security among others**. Improving c**hemical fertilization** as another solution from the silo approach, we know, has a lot of **energy demand** and disadvantages because it pollutes water and the land and has a negative feedback loop with some of the elements we want to achieve like water quality and healthy ecosystems, but at the same time it increases emissions gas **and consequently climate change**. In that case, we are making the problem worse because we are increasing climate change, which was one of the options I wanted to solve with land management.

And another example is with the energy. We want to **reduce fuel energy** use by using renewable energy, but we cannot implement renewable energy without **landscape planning** because in that case, the consequences are on an increase of the occupation of land which is not used anymore for food production. So we are solving one problem but at the same time we are generating different trade offs on the elements of the system eg food security, water security,...



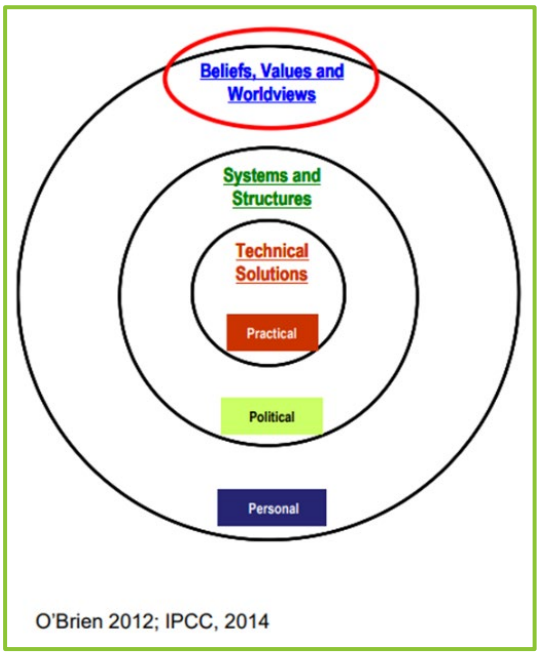
The alternative to this silo approach is to embrace complexity and favor synergies. Here for instance are some of the actions we have analyzed from a nexus approach.

The different solutions were organized into these categories, technological, ecosystem-based, behavioral change, and digital services and then we look at the interactions, synergies and trade-offs in terms of the different components of the WEFE.



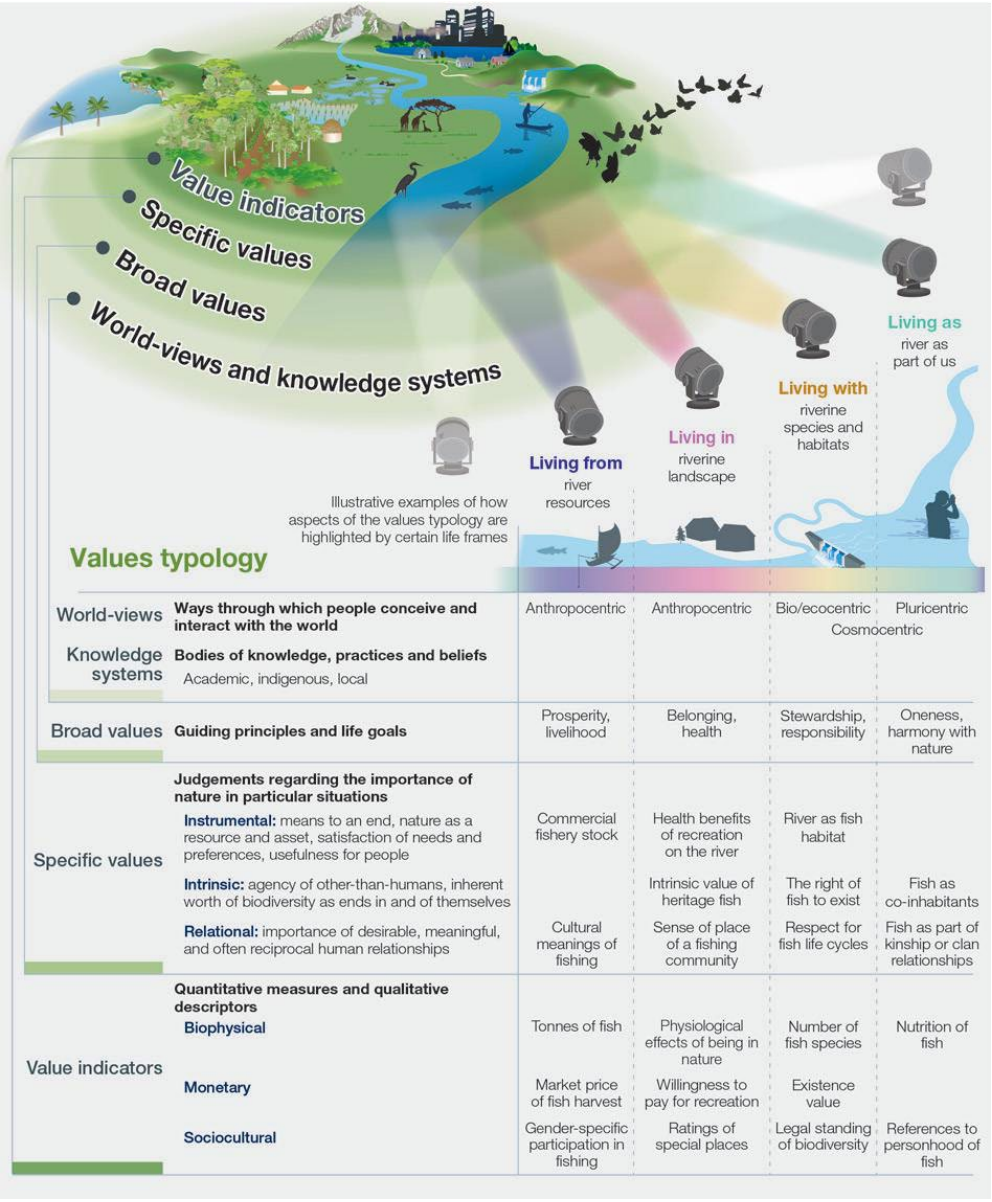
What we found (exploratory statistical analysis/ CPA) is that practices linked to socio-ecological innovations and behavioral changes like dietary changes (adoption of the Mediterranean diet for example), sufficiency, use of traditional knowledge, the reduce of food loss and waste etc… all in somehow linked to **Agroecology** are **the transformative solutions** and offers the best synergies inside the components of **the WEFE nexus**. Here are the best combinations of practices where **Food security** can be achieved. Indeed all of these components/practices are agroecology because **agroecology goes beyond the practices**. So we are moving into socio-ecological innovations, behavioral changes and transformative solutions and this is what we need to promote **agroecological transition**.

From Karen O'Brien (the IPCC, Intergovernmental Panel on Climate Change, 2012, Responding to Climate Change: The Three Spheres of Transformation report[28]), **technical solutions** are the **lowest level of transformation whereas Beliefs, Values and Worldviews** are the most transformative ones. The introduction of social science comes here because it helps us to ask, where do we want to go?



Social sciences look at the values, **policies, institutions, governance models, power dimensions,** requirements to transform food systems integrating **equity dimensions** and the impacts of different response options.

[28] : O´Brien, K. and Sygna, L. (2013) Responding to climate change: The three spheres of transformation. Proceedings of Transformation in a Changing Climate, 19-21 June 2013, Oslo, Norway. University of Oslo (pp.16-23). ISBN 978-82-570-2000-2.



Values typology

World-views	**Ways through which people conceive and interact with the world**	Anthropocentric	Anthropocentric	Bio/ecocentric	Pluricentric Cosmocentric
Knowledge systems	**Bodies of knowledge, practices and beliefs** Academic, indigenous, local				
Broad values	**Guiding principles and life goals**	Prosperity, livelihood	Belonging, health	Stewardship, responsibility	Oneness, harmony with nature
Specific values	**Judgements regarding the importance of nature in particular situations**				
	Instrumental: means to an end, nature as a resource and asset, satisfaction of needs and preferences, usefulness for people	Commercial fishery stock	Health benefits of recreation on the river	River as fish habitat	
	Intrinsic: agency of other-than-humans, inherent worth of biodiversity as ends in and of themselves		Intrinsic value of heritage fish	The right of fish to exist	Fish as co-inhabitants
	Relational: importance of desirable, meaningful, and often reciprocal human relationships	Cultural meanings of fishing	Sense of place of a fishing community	Respect for fish life cycles	Fish as part of kinship or clan relationships
Value indicators	**Quantitative measures and qualitative descriptors**				
	Biophysical	Tonnes of fish	Physiological effects of being in nature	Number of fish species	Nutrition of fish
	Monetary	Market price of fish harvest	Willingness to pay for recreation	Existence value	
	Sociocultural	Gender-specific participation in fishing	Ratings of special places	Legal standing of biodiversity	References to personhood of fish

In the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) report, 2024, experts were asking, about **the values of nature**, and showed how the different values of nature, which they identify as **living from nature**, **living in nature**, **living with nature**, and **living as nature**, already use different **indicators to assess** and really develop different actions to promote the different values of nature.

Framing the value of nature potentially gives different indicators and possibly different results when talking about transformation.

There are different ways to frame the food system. Clearly in a **productivist way**. **Food is framed as a commodity**, as a tradable good, based on tradable features that can be valued and priced in the market, basically this is the framing we are working now with the CAP for example. But food can be also be **framed as a human right**, where the main focus is on the social dimensions of food. Under this framing, we can develop different actions including i) democratic participation in food system choices; ii) fair, transparent access to all necessary resources for food production; iii) multiple independent buyers; iv) absence of human and resource exploitation. Food could also be **framed as a commons** with multiple dimensions, including both **social and environmental**, each of which is equally and properly valued, requiring different governance structures and institutions at different levels. Some examples of policy actions linked to different framings of food could be for instance- food as human rights- to facilitate the **access to land** to **small-scale farmers** and ideally to women (Jackson et al., 2024). New indicators that could be also linked to this frame -food as human rights- could **the number of people that can be fed per hectare** (Cassidy *et al*. 2013) instead of choosing the yield per ha used in the commodity model. And in that case, of course, monocultures are not valid, because monoculture doesn't provide really food for the people. We are talking here about a

completely different approach, which is promoting polycultures, which also integrated animal farming within agriculture. In addition, what is interesting when we look at the food from a different perspective like **the one of human rights** is that what in the **commodity framing food system** looks more as a problem like having **small scale farmers** who are not viable compared to large-scale farmers, but when you change the framing then the reality is different and it happens that a small-scale farming system is the ones who is really feeding the world in a frame **as food as human rights (Lowder *et al*. 2021)**.

Agroecology definitions

FAO: AE is an integrated approach which simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. .
AE aims to optimize the interactions between plants, animals, humans and the environment while taking into account the social aspects that must be addressed for a sustainable and equitable food system …

based on bottom-up and territorial processes, helping to deliver contextualised solutions to local problems. AE innovations are based on the co-creation of knowledge, combining science with the traditional, practical and local knowledge of producers. By enhancing their autonomy and adaptive capacity, agroecology empowers producers and communities as key agents of change. Rather than tweaking the practices of unsustainable agricultural systems, agroecology seeks to transform food and agricultural systems, addressing the root causes of problems in an integrated way and providing holistic and long-term solutions. This includes an explicit focus on social and economic dimensions of food systems. Agroecology places a strong focus on the rights of women, youth and indigenous peoples.

HLPE (2019): Agroecological approaches favour the use of natural processes, limit the use of purchased inputs, promote closed cycles with minimal negative externalities and stress the importance of local knowledge and participatory processes that develop knowledge and practice through experience, as well as more conventional scientific methods, and address social inequalities.

Agroecology Fund: Agroecology is an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. Within a justice and rights framework, it seeks to minimize external inputs and optimize sustainable interactions between plants, animals, humans and the broader environment.

No matter what **definition of Agroecology** you used, they will embed the **issue of human rights framework**, which really provides some elements like working with putting in value the **local knowledge** of the farmers, **promoting autonomy**, a **better distribution of power**. All of these principles are constitutive of agroecology. It's really a social and behavioral change that move us from the first three levels of Stephen Gliessman's approach, linked to **agroecological transition,** to **a real transformation**, which are fourth and fifth levels of his approach.

When you enroll your eligible fields into the Bayer Carbon Program, you get paid for adopting cover crops and reduced tillage practices.

Climate-smart agriculture has an exciting future. And while the carbon market is already starting to grow, we believe there's much more to come.

Together, with farmers at the heart of it, we can transform the agriculture value chain by supporting regenerative practices that help companies achieve sustainability and climate action targets.

If we just remain within the **level of practices for agroecology transition and do not embed all those principles including the ones on the social part** then we enter into another problem that we have now. This is the **resignification of agroecology**. Some actors adopt vague approaches that share some farming practices with agroecology but fail to point the need for food system transformation and address root causes. Approaches used as corporate carbon offsetting solutions often linked to Net Zero emissions and land grabbing, undermining peoples´ sovereignty and rights.

Table 4 Comparison of different innovative approaches towards SFSs for FSN

Characteristic	Agroecological and related approaches					Sustainable intensification and related approaches			
	Agroecology	Organic Agriculture	Agroforestry	Permaculture	Food sovereignty	Sustainable intensification	Climate smart agriculture	Nutrition sensitive agriculture	Sustainable food value chains
Resource efficiency									
Regenerative production, recycling and efficiency								No evidence	No evidence
Biodiversity, synergy and integration									
Resilience									
Economic diversification versus specialisation									
Climate adaptation and mitigation									
Social equity/responsibility									
Knowledge generation and technology transfer									
Human and social values: *Equity*									
Human and social values: *Labour versus capital intensification*									
Connectivity (value chains/circular economies) versus globalization									
Governance: rights, democratization and participation									

Agroecology is the most efficient approach in **achieving multiple objectives** and these principles should nourish our work in this assembly.

7.3 Annex 3: Round Table: Framing and implementation of agroecological transitions focusing on water and land care. Participants: Christine Falter (DG-Agri European Commission); Francesca Ricardi (ERRIN); Kor Van Hoff (Flanders Environmental Agency); Leonardo Van Den Berg (Via Campesina); Philippe Baret (Université de Louvain); Henrike von der Decken (DG Env)

This panel constituted a genuine arena for science-policy dialogue, bringing together diverse actors representing different levels of governance—from research institutions to regional and European authorities. The session aimed to explore how agroecological transitions are being framed and implemented across multiple governance scales, with a focus on water and land care.

The session opened with Christine Falter from the European Commission's DG AGRI. Addressing recent developments in the Common Agricultural Policy (CAP), she recalled that changes introduced about a year ago had given Member States more flexibility to fulfill environmental obligations. C. Falter was invited to provide an initial assessment of how different Member States are interpreting and applying these new flexibilities. She explained that, following the Simplification Package of March 2024, certain environmental conditionalities required to access CAP payments had been relaxed or simplified. This decision, she emphasized, was a political one made at the highest level and, in her personal view, was somewhat short-sighted.

C. Falter outlined two major changes resulting from the package. First, farmers are no longer required to set aside non-productive areas on arable land under conditionality; maintaining such areas is now incentivized through voluntary eco-schemes. This shift from mandatory to voluntary mechanisms could limit the reach of biodiversity-enhancing practices, since only farmers who choose to enroll in eco-schemes will implement them. Secondly, Member States now have the option to introduce crop diversification instead of crop rotation. To accommodate these changes, Member States were required to submit amendments to their CAP Strategic Plans for evaluation by the European Commission, jointly by DG AGRI and DG Environment. C Falter emphasized that, although Member States have flexibility, their proposals must still respect the overall legal framework, and the Commission is working to ensure a degree of ambition is maintained across Europe.

Following this intervention, Lenne Topp gave the floor to Francesca Ricardi from ERRIN, representing the perspective of the regions. F. Ricardi highlighted the crucial role of regional authorities in supporting agroecological transitions. She explained her dual role, representing both the European Regional Research and Innovation Network (ERRIN) and the informal AREAF network, which brings together regions working on agricultural innovation, food, and forestry. She also noted her affiliation with the University of Bolzano and the Province of Bolzano, one of the co-founders of key European partnerships in this domain.

F. Ricardi emphasized the importance of involving regions in agroecological transitions, describing how during the COVID-19 period, she had actively pushing for stronger regional participation in co-creation processes. This involvement has enabled researchers and regional ecosystems to collaborate more effectively and to participate in large-scale European and international projects. However, she also noted that regional contributions are often underacknowledged in major partnerships, even though they are critical for fostering practical impacts on the ground.

Finally, F. Ricardi shared examples from the Province of Bolzano, an autonomous and relatively affluent region in Italy, which has been deeply engaged in partnerships such as Biodiversa Plus and Future Foods. She stressed that being a co-funder of these partnerships not only benefitted the region's ecosystem but also strengthened links between farmers, researchers, and policymakers. Her testimony reinforced the need for broader regional participation and recognition in shaping agroecological transitions across Europe.

The discussion then shifted to Kor Van Hoff from the Flanders Environmental Agency, operating at the regional level in Belgium. Lenne Topp introduced the conversation with a playful invitation: if K. Van Hoff had a magic wand, what policy changes would he wish for to advance the agroecological transition, particularly given the festive season approaching.

K. Van Hoff acknowledged that it was indeed a difficult question. He explained his role at the Flanders Environmental Agency, specifically within the Water Policy division. He also noted his involvement with the Water4All Partnership, a counterpart to the agroecology-focused partnership but centered around water issues in diverse dimensions. His participation today was prompted by colleagues from the French National Research Agency (ANR), who coordinate the Water4All partnership.

Reflecting on the challenges they face, K. Van Hoff emphasized that reaching policymakers is a major hurdle. Their strategy within the partnership has been to participate in relevant conferences, such as the gatherings of river basin managers and basin organizations, to establish contacts and offer policy recommendations. However, he admitted that this is a complex exercise, largely because the type of recommendations needed differ depending on the target—European-level policymakers versus regional or local water managers. Therefore, having a clear understanding of the intended audience is critical when formulating and delivering recommendations.

K. Van Hoff shared that the partnership had selected the Water Framework Directive as an area of focus. Rather than aiming to influence new legislation, their immediate priority has been to identify and address implementation gaps in existing regulations. The objective is to help achieve the good status of water bodies as envisioned under the current legislative framework.

Looking ahead, he noted that the partnership's next major area of work would be water resilience, responding to the European Commission's new Water Resilience Initiative. This initiative will have significant overlaps with agroecology, making it even more crucial for the water and agroecology partnerships to coordinate. K. Van Hoff concluded by reiterating that their approach has been to focus first on understanding gaps in implementation and then on proposing concrete, practical solutions to close these gaps.

In response, L. Topp acknowledged that this focus on implementation is very much aligned with the priorities of the new European Commission. While new legislation will continue to emerge, there is now a strong emphasis on better implementing existing laws and improving outcomes on the ground. She confirmed that the broader institutional shift towards "implementation first" would benefit initiatives like the Water for All Partnership, as they are precisely targeting practical improvements rather than new regulatory frameworks.Transitioning to the discussion, L. Topp announced that the panel would now turn to the "supply side" of the conversation, featuring contributions from Leonardo van den Berg and Philippe Baret, who would focus more specifically on farmers' realities, research and systemic approaches to water and land care.

The floor was then opened to Leonardo van den Berg from the European Coordination of La Via Campesina. He began by introducing himself and providing a brief overview of La Via Campesina, noting that it is the world's largest farmer organization, composed of over 30 different farmer organizations across

Europe and representing 200 million farmers worldwide. Within Europe, La Via Campesina encompasses a diverse range of agricultural producers, from arable farmers to animal farmers, vegetable growers, and mixed farming practitioners. Importantly, the majority of their members are small- and medium-scale farmers, and La Via Campesina remains the only organization at the European level that formally represents this group.

L. van denVan Den Berg clarified an important point regarding recent farmers' protests, stating that although La Via Campesina had been among the organizers of the protests in Brussels earlier that year, they had never called for a simplification of the Common Agricultural Policy (CAP). Their demands had been different, and he noted that other forces had influenced the political process that led to the simplifications announced.

In addition to his advocacy role, L. Van Den Berg shared his personal experience running a farm in Aida, in the Netherlands, alongside his wife. Their one-hectare farm operates under a Community Supported Agriculture (CSA) model, growing around 90 different crops and serving about 200 families. This model, where consumers subscribe and harvest their produce directly from the farm, provides a decent and stable income for them.

However, L. van den Berg also reflected on the environmental challenges they have faced over the past decade. During the first five years of farming, they relied almost entirely on rainfall, needing only minimal manual watering for seedlings. But around six years ago, severe droughts began to hit, and consecutive years of drought forced them to install an irrigation system, effectively marking the end of their reliance on rain-fed agriculture. Recognizing the wider problem, they also invested in agricultural practices that promoted rainwater infiltration, storage, and efficient use—such as mulching and sustainable soil management.

L. van den Berg emphasized that while they were fortunate to have adapted, many farmers in the Netherlands and across Europe had not been as lucky. Some suffered devastating losses, and many ultimately had to leave farming altogether.

Expanding beyond his personal story, L. van den Berg stressed that water must not be treated as an isolated resource. It is embedded within natural systems, provided and recycled by ecosystems. Agroecological farming, he argued, respects this connection by integrating water use sustainably. Yet this approach is increasingly under threat. Water is often redirected to serve large-scale monocultures, private industrial interests, or luxury facilities like golf courses. Furthermore, the construction of large dams and reservoirs frequently displaces local farmers and freezes water resources for the benefit of a select few.

He cited movements like *Soulèvements de la Terre*, which challenge the commodification of water, arguing that water must be treated as a common good rather than a purely economic resource. L. van den Berg urged decision-makers to genuinely listen to small-scale farmers and local communities, warning that failure to do so risks the loss of sustainable agricultural systems that provide healthy food for society.

Thanking L. Van Den Berg *for his powerful testimony, Lenne Topp then turned the conversation towards Philippe Baret, inviting him to speak from the research perspective, particularly on the framing of agroecological transitions and whether these should be seen as a singular or plural phenomenon.*

Philippe Baret then intervened and opened with a frank and sobering observation. He reflected that, given the events of the past months, he sometimes considered stepping away from working on agroecology altogether. Referring to the farmers' protests that had taken place just a few hundred meters away, he lamented how quickly significant parts of the European Green Deal had been dismantled, questioning the

meaning of continuing to advocate for agroecological transitions under such circumstances. Yet, he maintained that it was essential to stay positive and to look at the consequences of the protest movement with a clear and strategic eye.

He outlined two principal consequences: a technical one and a narrative one. The technical consequences were straightforward: the political decisions affecting the Green Deal had been explained earlier in the panel. However, P. Baret emphasized that the narrative consequences were much more significant. Narratives, he argued, are now the most powerful forces shaping both research and policy. While complexity and interdisciplinarity are often discussed in academic circles, P. Baret asserted that the real issue at hand was the battle between conflicting narratives.

According to him, narratives exert power in three major ways. **First**, narratives frame political decisions. As he pointed out, when certain environmental standards were relaxed, it was not purely based on data or analysis, but largely on the persuasive power of a narrative that prioritized farmers' incomes over environmental obligations. There was simply no time or consensus to allow a full analysis to drive decision-making.

Second, narratives frame what he called the socio-technical landscape. P. Baret lamented that in the established transition frameworks, particularly the Multi-Level Perspective (MLP) model[29], much emphasis was placed on regimes and niches, but far too little attention was given to the socio-technical landscape — the broader societal and cultural currents that influence how change happens. In January 2024, he said, a fundamental shift occurred in this landscape: public opinion in France, Belgium, and other countries shifted overwhelmingly in favor of the farmers protesting for deregulation and against the Green Deal. In that context, it became nearly impossible to voice alternative narratives on public platforms like television. P. Baret warned that if researchers failed to understand how and why public opinion so quickly turned against agroecology, all further research efforts risked becoming meaningless.

Third, he argued that narratives even frame research itself. Most research papers, he observed, rely on simplistic framings in their introductions, such as invoking "food security" to justify studies, even when the research topic has little genuine connection to systemic food security challenges. He criticized the habit of embedding research into dominant narratives without critical reflection and urged researchers to be much more attentive to the narrative choices they implicitly reinforce.

Moving towards practical advice, P. Baret stressed that researchers needed to recognize that the academic system resembles a fleet of slow-moving cruise ships. Most researchers will not change their topics overnight, nor should they. However, what they must do is critically assess the narratives their work is supporting. Some researchers, particularly younger or more flexible ones — those on smaller boats rather than cruise ships, as he put it — might even help to reframe these narratives actively.

He called for more attention to be paid to the few researchers already studying narratives directly, mentioning the work of Jeroen Candel[30], who had shown that powerful actors as diverse as Via Campesina and COPA-COGECA often appeal to the same "food security" narrative, albeit in very different ways. Understanding the dynamics of such narrative battles was, for P. Baret, the essential intellectual work that needed to be done immediately, especially in the wake of the recent protests.

[29] Geels, F.W., 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case study. Research Policy 31, 1257–1274
[30] https://www.wur.nl/nl/personen/jeroen-candel.htm

He also touched upon the question of upscaling agroecology. P. Baret cautioned that while many in the agroecology movement aim for broad systemic change, it is unrealistic to assume that agroecology could fully replace commodity-based farming systems in the short term. He questioned whether the target of reaching 30% organic farming in Europe by 2030 was even feasible, urging the community to engage in honest foresight exercises rather than making claims that could not be delivered. Otherwise, he warned, the agroecological narrative risked losing further credibility and political leverage.

Finally, P. Baret emphasized that policymakers do not simply need more information; they need strategic partners. Research should not merely inform policymaking but must be prepared to engage tactically, aware of the narrative battles at play. He concluded by leaving the audience with a crucial question: **is research today a true strategic partner for policymakers**? And **if not, how can it become one?**

Lenne Topp thanked P. Baret *for his thought-provoking intervention and suggested that the audience reflect on his question throughout the rest of the day. She then turned the discussion toward Henrike von der Decken from the Directorate-General for Environment, asking her to outline what changes could be anticipated at the policy and implementation levels in the coming years.*

H. von der Decken thanked L. Topp for the invitation and launching directly into an overview of the major policy and implementation changes anticipated for the coming years. She emphasized that the next political mandate would shift its focus heavily toward the implementation of policies already agreed upon, rather than proposing entirely new legislative frameworks. Nevertheless, she noted that some important legislative efforts that had begun in the previous mandate were still under discussion and would play a significant role in shaping future actions, particularly in areas relevant to agroecology.

One critical initiative she highlighted was the soil monitoring law, a key piece of legislation for promoting sustainable land use practices. H. von der Decken explained that it was important to distinguish between the more "aspirational" targets, such as achieving 25% of land under organic farming, creating at least 10% of high-diversity landscape features, and planting three billion trees, and the more "qualitative" targets, which focused on broader ecosystem restoration efforts. These included reversing pollinator decline and restoring ecosystems, whether urban, agricultural, or forest-based, as well as rehabilitating habitats for endangered species.

In addition to the nature-focused targets, she reminded the audience that significant climate-related targets were also in play, notably greenhouse gas reductions, pesticide reduction strategies, nutrient management targets, and the broader objectives laid out under the Farm to Fork Strategy for sustainable food systems. She acknowledged that the existence of so many targets raised the pressing question of how these ambitions would be turned into concrete results.

Turning to water-related legislation, she mentioned the forthcoming revision of the Nitrates Directive, a particularly important development for water quality and agroecological transitions. She also referred to discussions underway regarding updates to the "daughter" directives of the Water Framework Directive, which focus specifically on water pollutants. These revisions would seek to strengthen Europe's legal arsenal for safeguarding water resources — a matter of crucial relevance to the ongoing conversation about land and water care.

H. von der Decken stressed that a central pillar of the next mandate would be the forthcoming Water Resilience Strategy. This strategy would not seek to replace existing initiatives but would build upon them to create more integrated, cohesive approaches. Here again, she pointed out the importance of distinguishing between binding legal targets and aspirational political goals, a distinction that would affect how these ambitions would be implemented across different levels of governance.

She returned once more to the soil monitoring law, expressing hope that the European institutions currently engaged in trilogue negotiations would succeed in adopting a strong version of it. Sustainable soil management, she insisted, was indispensable not only for land care but also for improving water resilience. She underlined that many complementary approaches were being discussed simultaneously, such as expanding the use of nature-based solutions, which offer holistic methods of managing land and water in a more sustainable way.

H. von der Decken concluded by recognizing the broad and often complex landscape of initiatives and targets now emerging. She noted that this was precisely where agroecology could play an essential role — by acting as a bridge that connects diverse environmental, agricultural, and social objectives. However, she also cautioned that beyond setting targets, the key challenge ahead would be how to ensure effective implementation on the ground, including securing the necessary funding to achieve the intended transformations.

Lenne Topp thanked H. von der Decken *for her comprehensive overview and announced that it was now time to open the floor for questions from the audience. She suggested taking three questions together before passing them on to the speakers for responses*

The first to speak was Daniel López-García from the Spanish National Research Council. Daniel directed his question to Philippe Baret, although he noted that it could apply to any of the speakers. Reflecting on a recent workshop on urban agriculture, Daniel recounted how they had discussed the evidence supporting the benefits of urban farming and yet observed how poorly it was promoted or funded in practice. He pointed to an apparent paradox: despite strong evidence, certain innovations or practices struggle to gain public support or policy backing, while concepts like nature-based solutions, which may lack rigorous empirical evidence, manage to become politically fashionable and attract funding. Daniel highlighted another example from a Horizon Europe project on zero acreage farming — a concept being actively researched even though it did not yet exist in any practical form. This, he argued, pointed to a deeper problem: narratives, rather than evidence alone, seemed to determine which initiatives received attention and support. His question was both practical and philosophical: who actually decides which narratives succeed? And how are choices made, especially when evidence alone does not dictate outcomes?

Following Daniel's intervention, Olcay Bingol, a policy officer from the European Coordination of Via Campesina, asked a related but distinct question. She spoke passionately about the disconnect between policy discussions around environmental solutions like carbon credits and the lived realities of small- and medium-scale farmers practicing agroecology on the ground. From her perspective, carbon credit mechanisms offered "fake solutions" that commodified farming practices already being performed sustainably by agroecological farmers. She lamented that these farmers — who feed communities and steward land responsibly — are often invisible in policymaking spaces, while powerful industrial actors dominate decision-making. Olcay asked a pointed question: why were the voices of real, practicing farmers so often excluded from shaping the very policies that most directly affected them? How could spaces for genuine participation be created so that agroecological farmers could be truly heard and not merely symbolically consulted?

The third question came from Les Levidow from the Open University. Picking up on Baret's earlier reflections, Les proposed thinking about the relationship between narratives, political power, and expertise as a triangular dynamic. He observed that, for the last two decades, the Common Agricultural Policy had been shaped predominantly by a strategic alliance between COPA-COGECA — the powerful agricultural lobby — and the European People's Party. Any alternative agenda had struggled to break through, despite valiant efforts from NGO networks like ARC2020 and Food Sovereignty initiatives. Les argued that to

succeed, agroecological movements needed to strengthen their analytical understanding of how narratives, political alliances, and expertise reinforce each other. Only by doing so could alternative visions for agriculture hope to counter the deeply entrenched structures that favored industrial farming. His closing question was strategic: how could researchers, farmers, and advocates collaborate more effectively to create and sustain counter-narratives that would have real political impact?

Lenne Topp thanked the speakers for these thought-provoking questions and turned back to the panel for their responses, signaling that this round of discussion would aim to address these deep challenges about knowledge, power, and strategy in agroecological transitions.

After these rich rounds of reflections and discussion, Philippe Baret was the first to respond to the audience questions, particularly tackling the triangular relationship between narratives, political power, and expertise. He acknowledged that while the dominant partnership between COPA-COGECA and the European People's Party had long shaped agricultural policy, this analysis missed another key dimension: the socio-technical landscape, which is often hidden from public view. P.Baret explained that this landscape, ignored by media and most of the general public, includes powerful networks of influence — not farmers directly, but businesspeople and large corporate actors shaping farming narratives from behind the scenes. He illustrated this with the case of Soil Capital, a Belgian company promoting soil carbon credits, whose main investor is IBA, a company specializing in cancer treatments. Here, networks of businessmen, convinced they are serving the public good, influence agroecological debates in ways that bypass farmers entirely. Moving to the question of urban agriculture, P. Baret criticized the way researchers often justify their own specialization rather than posing systemic questions about urban food supply. He pointed out that many claims about urban agriculture's benefits are self-declared and do not align neatly with policymakers' expectations. Without genuine dialogue, this mismatch perpetuates a deaf conversation where evidence alone is insufficient. He emphasized that even solid evidence does not automatically create impact — it must be actively framed to resonate politically. His final suggestion was practical: future partnerships should include a ***"framing officer"*** who would ensure that the framing of research aligns more strategically with societal and policy goals. Only by mastering narratives and framing could agroecology hope to gain influence.

Henrike von der Decken then responded, acknowledging the frustrations expressed, especially by those farmers already practicing agroecology yet feeling unheard. She stressed that the European Commission does offer formal channels for input, notably through the "Have Your Say" portal, public consultations, and the newly announced European Board on Agriculture and Food, which would offer fresh opportunities for farmers and organizations to participate more directly in policy shaping. H. von der Decken also addressed the skepticism around carbon credits, sharing that alternative mechanisms such as nature credits were being considered to better serve small and medium-scale farmers already implementing agroecological practices. She closed by urging researchers, farmers, and activists not to give up, even when progress feels slow. Diverse narratives, she emphasized, were crucial; without them, policymakers would have nothing to choose from. Their continued activism and contributions remained essential for the transformations sought.

Francesca Ricardi then offered a regional perspective, emphasizing that narrative-building is fundamentally a co-creation process within partnerships. It is not easy, she admitted, because researchers, policymakers, and practitioners often hold diverging understandings of what constitutes valid evidence and what impacts matter most. F. Ricardi also highlighted P. Baret's idea of a *framing officer* as valuable and echoed the importance of local researchers providing inputs to regional authorities, creating stronger synergies between ground-level realities and policy frameworks. This active collaboration between regional governments and research actors was, in her view, critical for successful agroecological transitions.

Leonardo van den Berg then took the floor to push back against the claim that small-scale farming generates low income. On the contrary, he asserted, small farms often produce more value per hectare than large-scale farms and provide crucial employment and ecosystem services. L. van den Berg emphasized that the European Coordination Via Campesina represented not only small but also medium-scale farmers, and increasingly even conventional farmers seeking a transition. However, the dominant economic system, with its relentless competitiveness and low food prices, continued to erode farmers' livelihoods, pushing them toward unsustainable intensification. He called for fairer pricing mechanisms, reforms to the Common Market Organization, and the abandonment of free trade agreements like EU-Mercosur, which undermine farmers in Europe. Moreover, he urged the EU to adopt a Land Directive to guarantee young farmers' access to land. Without serious reforms to restore farmers' incomes and land rights, he warned, agroecological transitions would remain a distant dream. Finally, L. van den Berg stressed that farmers must be at the decision-making table themselves, not represented by others.

Kor Van Hoof returned with a more technical but important reflection, noting that partnerships must do more to bridge the gap between water managers and agroecological researchers. Diffuse pollution and water overuse from agriculture remain pressing problems, but the fragmentation between sectors and actors made coherent responses difficult. K.Van Hoof called for more systematic exchange between partnerships, recognizing that many themes — like water, land use, and agroecology — intersect and should not be siloed.

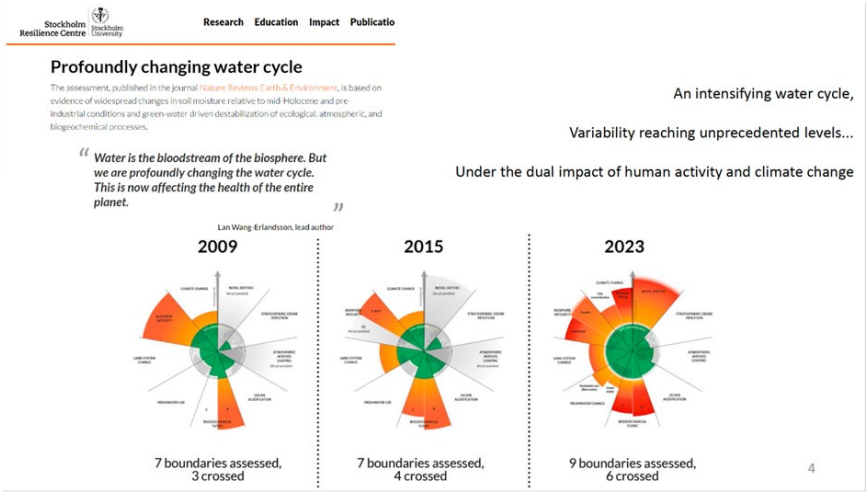
Closing the panel, Christine Falter reflected on the themes that emerged. She acknowledged that while simplification efforts in the CAP had been driven by farmers' protests, the deeper underlying issue was fair farmer income and their weak position in the supply chain. She found the discussions enlightening, especially the notion that agroecology is not just a collection of practices but a systemic and holistic approach to farming and land stewardship. Drawing from her own work on CAP Strategic Plans, C. Falter noted that while Member States had the tools to support systemic change, many still defaulted to short-term technological fixes like irrigation, rather than addressing broader landscape resilience needs. She called for a shift from piecemeal interventions toward long-term, territorial approaches. Furthermore, she noted a widespread lack of understanding of the water cycle among policymakers and stakeholders, emphasizing that partnerships like those gathered here had a crucial role to play in promoting more systemic, integrated solutions.

Lenne Topp concluded the session by thanking all panelists and participants. She emphasized that evidence alone is not enough — political decision-making is inherently shaped by context, values, and strategic considerations. Referencing her experience at the Joint Research Centre, she recalled the importance of promoting evidence-informed policymaking, recognizing that while evidence is critical, it is ultimately only one of many factors influencing political choices. With that, the panelists returned to their seats, and the session moved forward, leaving participants with renewed energy — and challenging questions — for the road ahead.

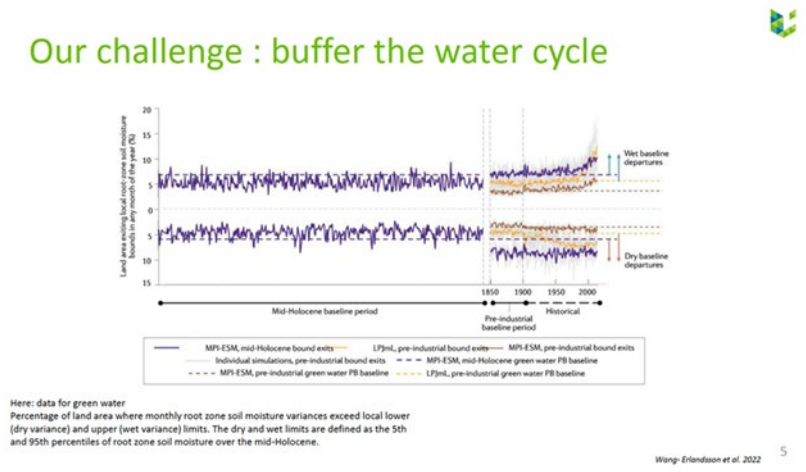
7.4 Annex 4: Addressing water and land care in Agroecology (Aurore Degré Gembloux Agro-Bio Tech ULiège and Gaetano Ladisa, CIHEAM Bari)

Aurore Degré, a hydrologist from Gembloux Agro-Bio Tech (University of Liège), brought a complementary and critical perspective to the discussion on agroecological transitions by focusing on water systems and their relation to landscape management and climate change.

She began her presentation by reminding the audience that the water cycle, while essential, is only one part of a broader environmental system governed by complex water–energy interactions. Emphasizing that energy is the engine driving the water cycle, she presented maps that illustrate how climate change is altering the balance of water and energy across different regions. Areas marked in red signified zones particularly vulnerable to major disruptions, underlining the urgent need to consider energy dynamics alongside water management strategies.



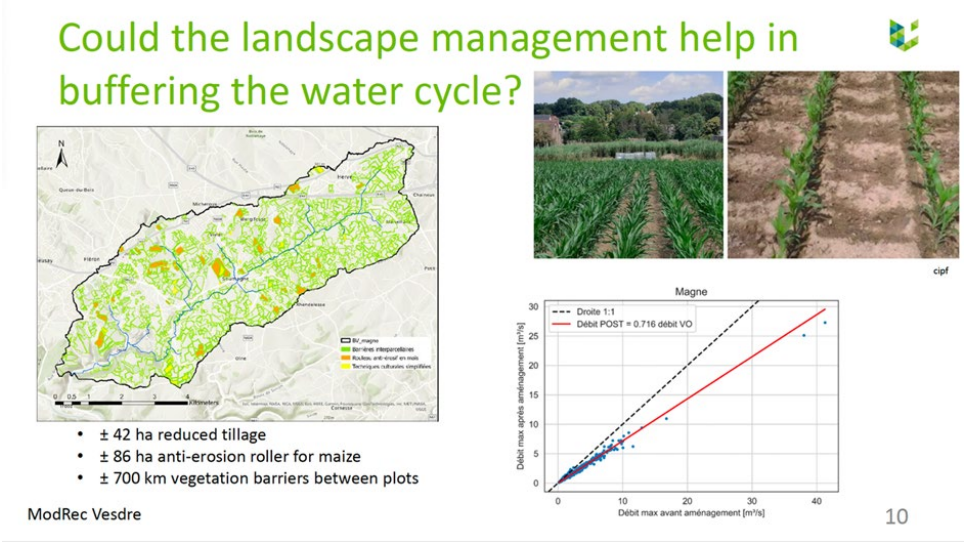
A. Degré then connected these transformations to the framework of planetary boundaries. She pointed out that, globally, we have already transgressed the safe thresholds for water both in terms of green water (soil moisture) and blue water (surface and groundwater). Importantly, she clarified that this transgression does not necessarily imply overuse or pollution, but rather reflects a growing variability in water availability and distribution. For green water in particular, the increasing variability in soil moisture compared to pre-industrial times stems from two main drivers: climate evolution and the way we alter our landscapes through soil sealing, water diversion, dam construction, and other land use changes.



This variability, A. Degré noted, is not a recent phenomenon. By presenting historical data and hydrological modelling, she showed that soil moisture variability has been rising over time, even if the average levels remain constant. In this context, she introduced the concept of "buffering the water cycle" as a strategic objective. Using projections from Belgium, her home country, she described plausible future scenarios derived

from global climate models. Regardless of whether temperatures rise by two or four degrees, the modelling consistently predicts an increase in extreme weather events. For example, the catastrophic floods that struck Belgium and Germany in July 2021, during which 160 millimetres of rain fell in just three days, are likely to recur under all projected climate scenarios.

Droughts, too, are expected to intensify. Referring to Belgium's drought index, she reminded the audience of the severe dry years in 1976, 2019, and 2022. Although wet years will still occur, they will increasingly be interspersed with more frequent and severe droughts. This dual threat of both water scarcity and excess will define the evolution of the hydrological cycle in the coming decades. The implications are profound: summers will be characterized by water deficits, while winters will bring excessive rainfall, leading to erosion, infrastructure strain, and threats to water quality.



Against this backdrop, A. Degré presented the findings of a modelling project her team initiated following the 2021 floods. The objective was to evaluate how landscape management practices could enhance watershed resilience. Using a fully distributed hydrological model applied to a 40-square-kilometre agricultural catchment composed of grasslands and maize fields near the city of Herve, the team simulated the impact of various agroecological interventions. These included simple but strategic changes such as drilling small infiltration holes between maize rows, increasing hedgerow density, and adopting reduced or no-till soil management practices. Collectively, these measures resulted in a 30% reduction in water discharge during rainfall events, significantly lowering the risk of downstream flooding. Crucially, she stressed that this is not about blaming farmers, but about recognizing the role that permeable, high-quality agricultural soils can play in delivering societal benefits.

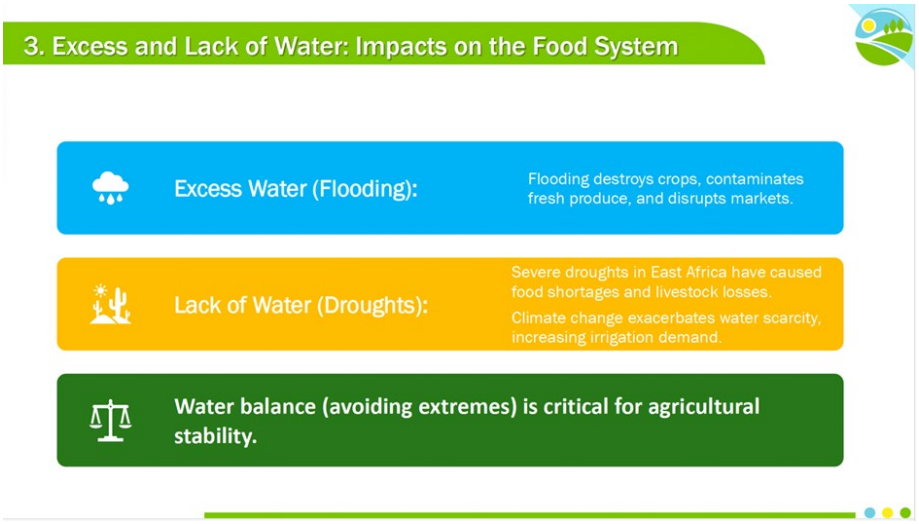
The team then generated efficiency maps and selected key indicators such as cumulative infiltration and the timing of runoff to better understand which measures performed best under different conditions. The analysis revealed the importance of tailoring interventions to specific landscape contexts and highlighted both synergies and trade-offs. Some measures, while effective in one location, may offer limited benefits or unintended consequences elsewhere. A. Degré emphasized that this kind of spatially sensitive modelling can help inform targeted, cost-effective water management strategies.

In a more experimental scenario, the team went further and reimagined the catchment's field boundaries altogether. By digitally redesigning the landscape, they explored the additional benefits of hydrologically optimized land-use planning. These changes, while hypothetical demonstrated an additional 10% reduction in discharge, pointing to the potential of landscape-level planning to further enhance water resilience. A. Degré acknowledged the many political, legal, and social questions this raises particularly around private property but urged the audience to consider landscape redesign not only as a tool for productivity (as was done in post-war Europe), but also for environmental health and long-term climate adaptation.

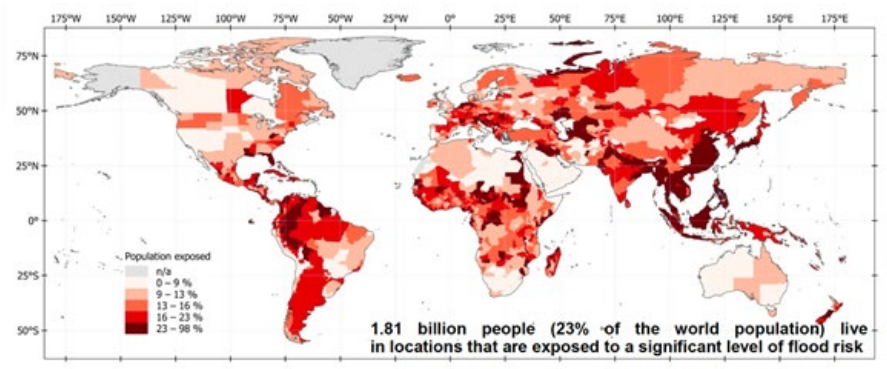
In closing, A. Degré called for stronger integration between water science and agroecology. She argued that hydrological modelling and water cycle analysis can meaningfully contribute to agroecological transitions, not just by identifying technical solutions, but by helping structure the debate around what forms of land management are most effective, where, and why. Her presentation offered a compelling case for including hydrologists in agroecology partnerships and for viewing water not only as a natural resource to be managed, but as a vital entry point for systems thinking in climate-resilient agriculture[31].

Dr. Gaetano Ladisa: The Interconnections Between Agriculture, Landscape, and Water

Gaetano Ladisa emphasized the deeply intertwined relationship between agriculture, landscape, and water systems, highlighting how poor land management practices can set off a cascade of negative feedback loops; ranging from soil erosion to declining biodiversity and reduced agricultural productivity. He framed this interconnectedness as a triangle of dependencies between food systems, agricultural practices, and the landscape. When any side of this triangle is mismanaged, the stability of the entire system is at risk.



A central theme of the presentation was the importance of maintaining a stable and achievable water balance to support agricultural resilience. **Both droughts and floods** were identified as major disruptors of this balance.

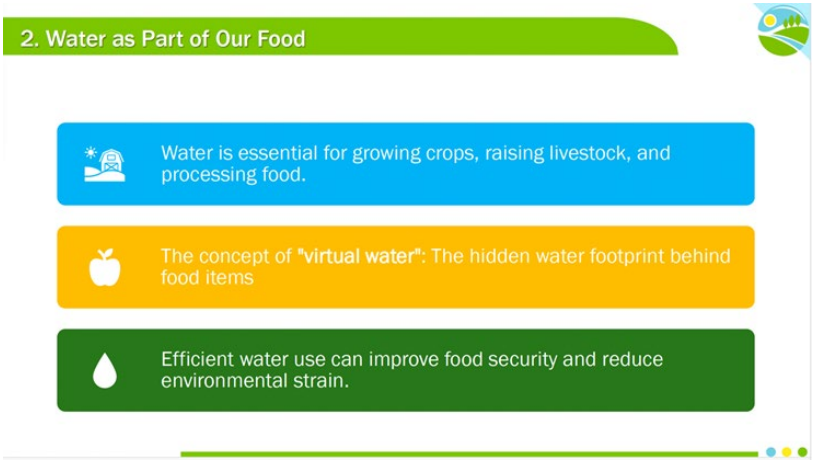


Percentage of population exposed to medium-high flood risk at sub-national level.
Source: Rentschler, J., Salhab, M. & Jafino, B.A. - Flood exposure and poverty in 188 countries. 2022

G. Ladisa noted that approximately one-quarter of the global population resides in areas exposed to significant flood risk. Strikingly, 89% of these vulnerable populations live in low- and middle-income countries, which typically lack sufficient recovery mechanisms in the aftermath of such disasters. The situation is no better with droughts. The year 2022 was identified as one of the driest ever recorded, while 2024 is already tracking to be the hottest. The impacts include widespread crop

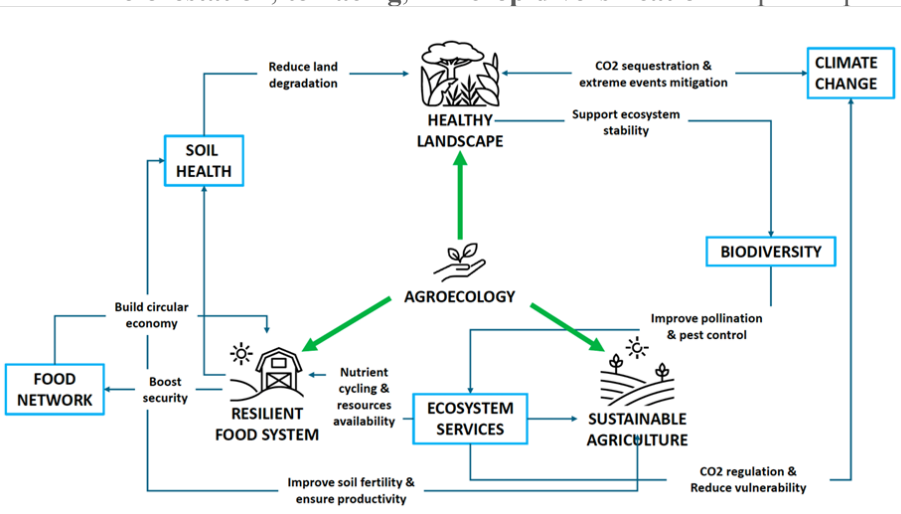
[31] Also see https://economicsofwater.watercommission.org/report/economics-of-water.pdf

failures, shrinking water supply windows, and declining food production in several regions, including parts of Southern Europe where even basic water provisioning is increasingly constrained.



Beyond quantity, the **quality of water** emerged as a pressing issue. Polluted water, contaminated with heavy metals, pesticides, and other agricultural runoff - not only harms crops and livestock but also poses risks to food safety and human health. In this context, water is more than a production input; it is a vector for both health and ecological integrity. G. Ladisa also introduced the concept of **virtual water**, referring to the hidden water footprint embedded in food products, and the implications this has for global food trade and sustainability.

Turning to solutions, G. Ladisa pointed to agroecology as a strategic and balancing force that can enhance ecosystem services at the landscape level. Agroecological practices such as **agroforestry**, **cover cropping**, **reforestation**, **terracing**, and **crop diversification** help to improve biodiversity, reduce soil erosion, and strengthen the resilience of landscapes to climate extremes. In particular, **agroforestry systems** not only conserve biodiversity but also enhance water retention and reduce runoff. Furthermore, **organic farming methods** that avoid synthetic inputs preserve soil fertility and reduce water contamination risks.



On the water management side, **efficient irrigation techniques** such as **drip irrigation** and **rainwater harvesting** were highlighted as essential tools to reduce wastage and dependence on external sources. In many Mediterranean and arid regions, inefficient surface irrigation remains dominant, worsening water stress and reducing agricultural output. Transitioning toward more efficient and sustainable water use is thus an imperative.

G. Ladisa also stressed the importance of **restoring degraded lands** through agroecological techniques, noting that such practices not only rehabilitate ecosystems but also contribute to climate change mitigation through **carbon sequestration**. Practices like **no-till farming** and **perennial cropping systems** build soil organic carbon and improve the long-term health of agroecosystems.

Ultimately, he concluded that agroecology provides an integrative lens for addressing the **multiple crises facing the food-water-landscape nexus**. Because **water is the "fil rouge"** - the common thread linking food production, landscape design, and ecosystem function, it must be managed efficiently and equitably

at the **basin scale**. Agroecological transitions should therefore be guided by principles of sustainability, inclusivity, and scientific rigor, particularly in vulnerable and resource-scarce regions.

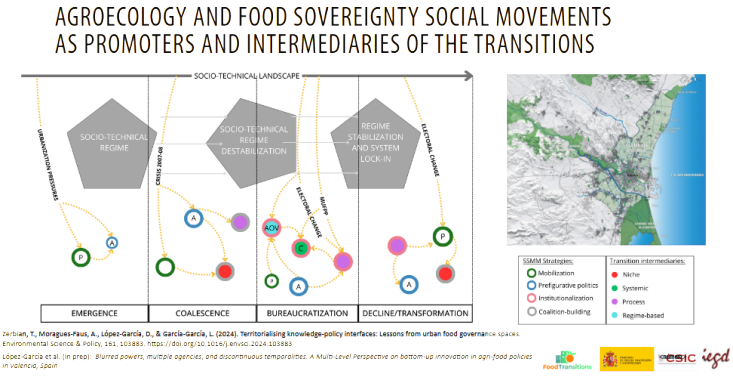
7.5 Annex 5: Regional cases and cities (Daniel López-García, IEGD/CSIC)

Dr. Daniel López-García, Institute of Economics, Geography and Demography; Spanish National Research Council (IEGD/CSIC): "Regional cases and cities: translation into public policies at infra levels"

Daniel López-García's research at the IEGD/CSIC in Madrid, Spain, focuses on territorial approaches to agroecological transitions. His work bridges multi-level policy and governance analysis, territorial multi-actor dynamics, knowledge-policy interfaces, and participatory processes of agri-food policy co-production and evaluation. He is the former coordinator of the Spanish Network of Municipalities for Agroecology and has facilitated the participatory drafting of Local Food Strategies and food policies in several Spanish cities, including Barcelona, Valencia, Zaragoza and Valladolid. He is also part of the Thematic Interdisciplinary Platform 'Agriambio' for the socio-ecological assessment of the Common Agricultural Policy of the EU in Spain (2023–2027).

Daniel emphasised the pivotal role of city governments in championing urban agri-food policies that promote social and ecological sustainability. Following the signing of the Milan Urban Food Policy Pact (MUFPP) in 2015, a new field of policymaking emerged in the urban agenda, with sustainability and multi-stakeholder approaches at its core. This new area of the urban agenda has shown strong potential to integrate various traditional policy areas, including the environment, the economy, territorial planning, health, education and equity. In Spain, 5 big cities were included amongst the intial signatories of the MUFPP, and two of its World summits were held in Spain (València 2017; Barcelona 2021). Additionally, in 2017 was created the Spanish Network of Municipalities for Agroecology[32], bringing together different cities and towns to set a common framework of cooperation to develop and scale agri-food policies for socio-ecological sustainability,a s an exercise of trans-local governance[33].

Since the municipal elections in 2015, municipalist coalitions had gained access to local governments in many of the biggest Spanish cities, resulting in a renewed agenda in different areas such as climate, mobility, housing or food. The MUFPP provided the administrative and political framework to implement public policies for sustainable, healthy and fair food systems, and urban agri-food policies have been linked to agroecology from the outset. Indeed, the local agroecology and



[32] https://www.municipiosagroeco.red/

[33] Moragues-Faus, A., & Sonnino, R. (2018). Re-assembling sustainable food cities: An exploration of translocal governance and its multiple agencies. Urban Studies, 56(4), 778-794. https://doi.org/10.1177/0042098018763038 (Original work published 2019)

food sovereignty movements set the conceptual framework for this new policy area as they had been preparing such proposals for ten to fifteen years[34]. This emerging field in the urban agenda is not just composed of legal texts, but also of a wide, complex and heterogeneous web of socio-economic actors committed to the agroecological transition. These actors include socio-economic experiences, civil society organisations (from neighbours associations to NGOs and grassroots movements), and the interrelations among them. Local agri-food movements have become intermediaries of transition, combining different roles (e.g. niche, systemic) and strategies (e.g. mobilisation, promotion of the socio-economic fabric, coalition building), which have evolved over time as socio-technical and political landscapes have changed[35].

The Spanish cities have since deployed a wide range of policy tools to promote transitions towards sustainable, healthy and fair food systems framed in agroecology in some of the main Spanish city regions[36]. The catalogue of activities ranges from scaling up alternative food networks for local, organic produce (including public procurement, creating public infrastructure for local logistics and processing, and increasing marketing channels for local organic produce), to territorial planning (including protecting agricultural land and promoting agricultural parks and land banks within and around cities), and strengthening multi-actor networks and coalitions to support the transition[37] with a particular focus on agroecology-oriented farmers' groups[38] This set of policies is consistent with activities developed in other European countries, while being adapted to national and local conditions[39].

[34] Reina-Usuga, L., Parra-López, C., De Haro-Giménez, T., & Carmona-Torres, C. (2023). Sustainability assessment of Territorial Short Food Supply Chains versus Large-Scale Food Distribution: The case of Colombia and Spain. Land Use Policy, 126, 106529. https://doi.org/10.1016/j.landusepol.2022.106529; Vara-Sánchez, I., Gallar-Hernández, D., García-García, L., Morán Alonso, N., & Moragues-Faus, A. (2021). The co-production of urban food policies: Exploring the emergence of new governance spaces in three Spanish cities. Food Policy, 103, 102120. https://doi.org/10.1016/j.foodpol.2021.102120 ; López-García D, Cruz-Maceín JL and DiPaula M. (2024). Agri vs. Food? Perceptions of local policymakers on agri-food policies from a multilevel approach. Frontiers in Sustainable Food Systems, 8, 1399746. https://doi.org/10.3389/fsufs.2024.1399746

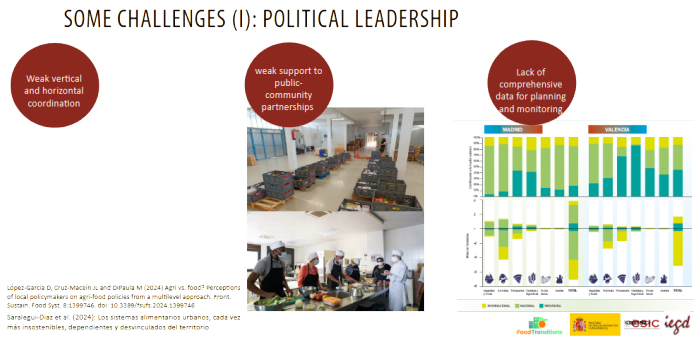
[35] López-García, D., Zerbian, T., Cuevas, S., & Moragues-Faus, A. M. (2025). Blurred powers, multiple agencies, and discontinuous temporalities. A multi-level perspective on bottom-up innovation in agri-food policies. Environmental Innovation and Societal Transitions, 57, 101002. https://doi.org/10.1016/j.eist.2025.101002

[36] López-García, D., & Carrascosa-García, M. (2023). Sustainable food policies without sustainable farming? Challenges for agroecology-oriented farmers in relation to urban (sustainable) food policies. Journal of Rural Studies, 105, 103160. https://doi.org/10.1016/j.jrurstud.2023.103160

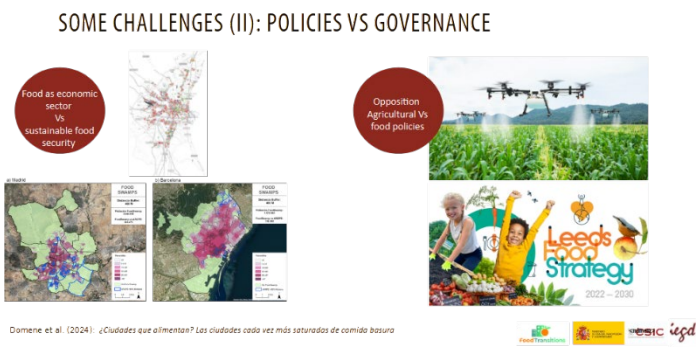
[37] Reina-Usuga et al. 2023 (Ídem.); Facchini, F., López-García, D., Villamayor-Tomas, S. et al. Intersectional coalitions towards a just agroecology: weaving mutual aid and agroecology in Barcelona and Seville. Agric Hum Values 41, 955–973 (2024). https://doi.org/10.1007/s10460-023-10529-0

[38] López-García & Carrascosa, 2023 (Ídem.)

[39] López-García et al., 2024 (Ídem.) ; Doernberg, A., Horn, P., Zasada, I., & Piorr, A. (2019). Urban food policies in German city regions: An overview of key players and policy instruments. Food Policy, 89, 101782. https://doi.org/10.1016/j.foodpol.2019.101782



The experience of ten years of policy co-production towards agroecology in Spanish city-region food systems has provided valuable insights, as documented in the cited literature. However, we would like to highlight two ongoing challenges to deepening the transition: political leadership and enabling governance frameworks. Regarding the former, significant disparities have been observed in cases characterised by robust political will and commitment. The transition has advanced and deepened in cities where agroecological transitions are promoted not only by alternative actors committed to socio-ecological transformations, but also by other, mainstream and conventional actors. This occurs when the agroecological approach enters the realm of policymaking[40] and becomes institutionalised in specific policy tools, budgets, and personnel within local administrations[41]. Public support has been identified as a key factor in activities such as vertical and horizontal coordination within public administrations; supporting local agri-food movements, public-community partnerships and entrepreneurships; and providing and assessing comprehensive data for planning and monitoring. This creates a virtuous cycle that further enhances political support.



The second challenge is that, beyond political will within a given political cycle, strong resistance within the incumbent agri-food regime sets a specific governance landscape that could hinder the implementation of an agroecological approach to agri-food policy. There are different goals for the EU food system, ranging from food security and sustainable and healthy food to balanced international commercial trade and the secure provision of cheap raw materials for the food industry or food sovereignty, and these goals are sometimes contradictory. These different aims require different configurations of agri-food systems that benefit some actors and social groups while not meeting the needs of others, creating a challenging governance framework. Power imbalances within the current European agri-food regime could hinder the mainstreaming of agroecology into European agri-food policies[42] or, at best, lead to the co-optation of the transformative potential of the agroecological approach[43].

[40] Marsden, T., Hebinck, P. & Mathijs, E. Re-building food systems: embedding assemblages, infrastructures and reflexive governance for food systems transformations in Europe. Food Sec. 10, 1301–1309 (2018). https://doi.org/10.1007/s12571-018-0870-8; López-García et al., 2024 (Ídem)

[41] López-García et al., 2025 (Ídem.)

[42] López-García et al., 2023 (Ídem.)

[43] Ajates Gonzalez, R., Thomas, J., & Chang, M. (2018). Translating Agroecology into Policy: The Case of France and the United Kingdom. Sustainability, 10(8), 2930. https://doi.org/10.3390/su10082930; Walthall, B., Vicente-Vicente, J. L., Friedrich, J., Piorr, A., & López-García, D. (2024). Complementing or co-opting? Applying an integrative framework to assess the transformative capacity of approaches that make use of the term agroecology. Environmental Science & Policy, 156, 103748. https://doi.org/10.1016/j.envsci.2024.103748

To address such challenges, as a conclussion, Daniel López suggests three strands of work to support agroecological transitions in the European city-region food systems: first, acknowledging sustainable and healthy food systems as priority systems for city-regions, and thus explicitly include the agroecological approach in the policy and governance frameworks; second applying such an agroecological approach within the current planning tools and policy instruments, to harmonize and make coherent the different aims and outcomes to be expected from the food systems; and third, support and strengthening the local actors and coalitions committed to agroecology and food system's ttransformation as champions to lead the transition, and more especially agroecology-farmers groups that are to lead the transformation in the agricultural sector.