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Agroecology as a Driver of Transformation in Local Agri-Food Systems: Evidence from Agroecological Initiatives in the AgrEcoMed Project

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Abstract

Agri-food systems are increasingly exposed to environmental, economic, and social challenges, including climate change, biodiversity loss, resource depletion, and growing territorial inequalities. In this context, agroecology is increasingly recognised as a transformative paradigm integrating ecological, economic, social, cultural, and political dimensions within broader processes of food-system transition. Within the PRIMA AgrEcoMed project, 24 Italian agroecological initiatives led by women and young farmers were analysed to explore their contribution to agroecological transition processes in Mediterranean rural areas. The study adopts a qualitative multiple-case study approach and evaluates the selected initiatives through the framework of the 13 Principles of Agroecology proposed by the High-Level Panel of Experts on Food Security and Nutrition, organised into three operational axes: improving resource efficiency, strengthening resilience, and ensuring social responsibility and fairness. The results show that the analysed initiatives combine ecological farming practices with processes of multifunctionality, territorial networking, knowledge co-creation, short supply chains, and community engagement. The findings suggest that several initiatives move beyond input-reduction strategies associated with “weak agroecology” and display characteristics consistent with stronger agroecological pathways based on territorial embeddedness, collective learning, and the reorganisation of relationships between production, consumption, and local communities. The paper highlights the relevance of agroecology not only as an environmentally sustainable farming approach, but also as a broader socio-ecological and territorial transition process, as well as the importance of policy frameworks to support territorial agroecological systems.

Keywords: agroecology; agroecological transition; agri-food systems; sustainability; best practices; short supply chains; multifunctionality; diversification; territorial networks



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1. Introduction

Agri-food systems in Europe and globally are facing profound, interrelated environmental, economic, and social challenges. Climate change, biodiversity loss, soil degradation, water scarcity, and the depletion of ecosystem services are intertwined with growing socio-economic inequalities, rural marginalisation, and increasing threats to food and nutrition security [1,2].

In this context, sustainable food systems are expected to ensure food and nutrition security while addressing sustainability in its multiple and interconnected dimensions—environmental, economic, social, cultural, and governance—as highlighted in the FAO framework for the Sustainability Assessment of Food and Agriculture Systems [3,4].

In response to these systemic pressures, a wide range of food-transition initiatives has emerged over the last few decades, often rooted in small-scale agriculture, alternative food networks, and place-based strategies [5–12].

The scientific debate increasingly frames food-system transformation as a systemic and multi-level process requiring changes in production, distribution, governance, and knowledge systems, rather than making incremental adjustments within existing models. Within transitions-to-sustainability scholarship, these initiatives are often interpreted as “innovation niches” capable of challenging dominant socio-technical regimes and generating territorially embedded pathways towards sustainability [7,10].

In this perspective, agroecological initiatives can be understood not only as alternative farming experiences, but also as territorially embedded experiments capable of generating social innovation, collective learning, and institutional change.

Within this broader debate, agroecology has gradually evolved from an agronomic discipline focused on ecological interactions within agricultural systems into an integrated transformative paradigm capable of encompassing ecological, economic, social, cultural and political dimensions [12–20].

It is widely recognised as comprising three interconnected dimensions—as a science, a set of practices, and a social movement—which together promote more sustainable and equitable food systems [21–24].

As a science, it promotes interdisciplinarity and the integration of ecological principles such as diversity, recycling, synergies and resilience into agricultural design. As a practice, it encompasses diversified cropping systems, the integration of crops and livestock, the reduction in synthetic inputs, the conservation of local varieties and breeds, and the strengthening of short supply chains. As a movement, it emphasises participatory democracy, equitable access to resources, local roots and the redistribution of power within food systems [25].

In Mediterranean Europe, agroecology assumes additional relevance due to the ecological fragility and socio-economic vulnerability of many rural areas exposed to climate change, water scarcity, land degradation, and depopulation. In this context, agroecology is not only interpreted as a technical or productive approach, but also as a form of territorial resilience and cultural resistance rooted in local knowledge, food traditions, and the preservation of Mediterranean agroecosystems [21].

The multidimensionality identified in the literature is also increasingly accepted at the policy level: agroecology is acknowledged to achieve the Sustainable Development Goals (SDGs) through the transformation of food systems in a sustainability direction using a holistic approach to food and agricultural systems [3,26–28].

At the EU level, the European Green Deal and the Farm to Fork Strategy, which inform the EU Common Agricultural Policy, aim to foster the transition towards more sustainable, resilient and inclusive food systems [29,30], particularly in vulnerable rural and Mediterranean contexts increasingly exposed to climatic and socio-economic pressures.

The growing institutional recognition of agroecology has given rise to differing interpretations. Some approaches view it primarily as a set of environmentally sustainable techniques that can be integrated into existing market-oriented food systems. Other perspectives, however, interpret it as a paradigm shift requiring a profound reconfiguration of governance structures, knowledge systems, supply chains and local economies [21,31–33].

This debate has led to a distinction between ‘weak agroecology’, which is characterised by incremental ecological improvements within dominant systems, and ‘strong agroecology’, associated with structural transformations, the territorial re-embedding of food systems, and greater social justice [34]. Distinguishing between these trajectories is essential to evaluating the true transformative potential of agroecological initiatives. From this perspective, the transition from “weak” to “strong” agroecology depends not only on the adoption of environmentally sustainable practices, but also on the capacity to create socio-ecological infrastructures based on networks, collective learning, territorial governance, and embedded market relations.

International organisations are increasingly recognising agroecology as a strategic path for the sustainable transformation of food systems. The 13 Principles of Agroecology developed by the High-Level Panel of Experts on Food Security and Nutrition [35] and the 10 FAO Elements of Agroecology [36] constitute operational frameworks to guide policy design, implementation and evaluation. These frameworks integrate ecological principles with socio-economic and governance dimensions, strengthening the systemic understanding of agroecology. At the European level, the Green Deal and the Farm to Fork strategy highlight the need for a transition to sustainable, resilient and inclusive food systems, while the debate on the Common Agricultural Policy increasingly incorporates agroecological principles as a reference for reform.

The agroecological transition, however, cannot be reduced to simple technological replacement or farm-level adjustments. It involves territorial reconfiguration, collective learning processes, network building, and innovation in governance. In this context, women and young farmers are receiving growing attention as strategic actors. Gender equality and women’s empowerment are increasingly recognised as essential components of sustainable food systems, given women’s contributions to food production, knowledge preservation, and community resilience [15,37–40].

Recent literature on feminist agroecology also highlights how women-led initiatives often foster multifunctionality, social innovation, participatory governance, and more inclusive forms of territorial development [38]. Their involvement supports multifunctional and adaptive farming systems capable of addressing socio-ecological challenges while strengthening territorial cohesion. Young farmers play a key role in building food systems oriented towards fairness and sustainability, also contributing to the co-creation of knowledge and innovation and spreading benefits to the areas where they operate [20,41].

Despite the expansion of the theoretical debate and the growing institutional recognition of agroecology, territorial and farm-level empirical analyses remain essential to assess how agroecological principles are translated into practice and whether they generate systemic effects [42]. This calls for analytical frameworks capable of capturing not only environmental performance, but also socio-economic, relational and governance dimensions. This debate has led to the distinction between “weak agroecology”, based on incremental ecological improvements within dominant food systems, and “strong agroecology”, associated with broader structural transformations, territorial re-embedding, and greater social justice [34], providing a useful lens to assess the transformative potential of agroecological initiatives.

Drawing on empirical material collected within the PRIMA AgrEcoMed project, this paper analyses 24 Italian agroecological initiatives selected among women- and youth-led experiences to examine how agroecological principles are translated into practice and how these initiatives contribute to the transformation of local agri-food systems in Mediterranean rural areas. The focus on women- and youth-led initiatives reflects the AgrEcoMed project framework and is also supported by the literature, which identifies

these actors as particularly relevant to agroecological innovation, multifunctionality, and generational renewal in rural areas [20,38,43].

At the same time, the literature highlights the structural barriers that continue to constrain women's participation and generational renewal in agriculture [44,45].

To achieve this aim, the article addresses the following research questions:

- (RQ1) How are agroecological principles translated into practice within women- and youth-led agroecological initiatives in Mediterranean rural contexts?
- (RQ2) To what extent do these initiatives contribute to the transformation of local agri-food systems across productive, social, economic, and territorial dimensions?
- (RQ3) To what extent do these initiatives reflect trajectories of weak or strong agroecology when interpreted through the HLPE framework?

To answer these questions, the paper adopts a qualitative multiple-case study approach and examines the selected initiatives through the 13 Principles of Agroecology proposed by the HLPE-FSN, organised into three operational axes, to assess the extent to which they reflect trajectories of weak or strong agroecology. The originality of the paper lies in combining the HLPE agroecological framework with a territorial analysis of Mediterranean women- and youth-led farmers' agroecological initiatives, interpreted through the lens of "weak" and "strong" agroecology to explore their transformative potential within local agri-food systems.

2. Materials and Methods

The AgrEcoMed project explored agroecology as a social and political process of territorial regeneration based on co-design, collective learning, and local networks, with a particular focus on agroecological farms led by women and young farmers representing best practices. In this perspective, the project approached agroecological initiatives as territorially embedded transition experiences capable of generating ecological, social, and institutional innovation through participatory processes and local cooperation. The focus used to select and analyse agroecological practices reflects the holistic view and interdisciplinary nature of agroecology in the literature and includes environmental sustainability, the provision of services, both ecosystemic and to population, actions for social inclusion, protection of local traditions and biodiversity, engagement with the local community and local networks and emerging innovations and their transfer. Building on agroecology as a pathway towards more sustainable agri-food systems and—as a dynamic concept of growing relevance in science, policy, and agricultural practice—the project acknowledges multiple dimensions encompassing the productive sphere, the local level, the relational dimension, and the agri-food system as a whole, and therefore requires a systemic approach that integrates them [13,32].

This systemic perspective is consistent with recent agroecological transition literature emphasising the role of collective learning, participatory governance, and territorial networks in enabling food-system transformation [28,46].

The study is based on an exploratory qualitative analysis of 24 selected cases. Data were collected through a public call for agroecological good practices, field visits, and subsequent qualitative systematisation.

The selection of agroecological practices implemented by enterprises led by women and young people was carried out in six phases (Figure 1): (i) theoretical framework definition; (ii) definition of selection criteria and publication of a public call for submissions; (iii) evaluation and selection of applications by a dedicated committee; (iv) field visits to the selected cases; (v) data collection and systematisation; and (vi) analysis of results.



Figure 1. The route taken and the methodological approach. Source: Authors' elaboration.

The unit of analysis for the purposes of selection and analysis was “best practices”, referring to both individual agroecological enterprises and collaborative initiatives, such as networks and consortia.

The literature review aimed at defining the theoretical framework (i) and identified the key dimensions of the agroecological transition—namely sustainable agricultural production systems, networked approaches, and multifunctionality—given their growing importance in the scientific and policy debate.

The selection criteria for candidate applications (ii) were developed by drawing on the agroecological literature—reflecting the interdisciplinary, multidimensional and socio-economic nature of the agroecological approach [21,22,24]—and were aligned with the 2024 methodological document “Methodological document for the selection and analysis of good practices for the ecological transition of women and young people in the Mediterranean area”, which served as a reference framework for the identification and analysis of best practices. The status of being women or youth-led farmers was included among the award criteria for the selection of best practices. The criteria aimed to highlight environmental sustainability, biodiversity protection, the creation of services (ecosystemic and to the population), actions for social inclusion, ties to the territory and local traditions, the relationship between good agroecological practices and rural development, and the role of knowledge, innovation, values, and visions. Attention was also paid to the capacity of the initiatives to activate territorial networks and collaborative relationships, considered essential dimensions of agroecological transition processes.

The selection criteria are organised into two levels. The first level includes three dimensions: (i) characteristics of the farm; (ii) characteristics of the agroecological practice; (iii) effects of the agroecological practice (Table 1).

Table 1. AgrEcoMed selection criteria for agroecological best practices.

Selection Criteria	
Characteristics of the farm	Individual agroecological enterprise/Agroecological association practice (e.g., network, consortium, district) led by women
	Individual agroecological enterprise/Agroecological association practice (e.g., network, consortium, district) led by young people
Characteristics of the agroecological practice	Agroecological practice description
	Relationship between good agroecological practice and rural development
	Role in knowledge, innovation, values, visions

Table 1. *Cont.*

Selection Criteria	
Effects of the agroecological practice	Environmental sustainability
	Protection of biodiversity
	Creation of services (ecosystem, for the population)
	Actions for social inclusion
	Link with the territory and local traditions

Source: Authors' elaboration.

The second level includes additional criteria to investigate specific aspects (Table 2).

Table 2. AgrEcoMed's additional selection criteria.

Additional Criteria
Farm location
Area of environmentally friendly agricultural production
Forms of marketing for farm products
Certification and promotion of the company's products and services
Diversification of business activities (types of activities related to farming)
Investments made for agroecological purposes
Collaboration with other entities (including research institutions)
Distinctive elements of good agroecological practice and their effects

Source: Authors' elaboration.

The process of collecting practices in Italy was further supported by a call for submissions of agroecological best practices, published on the AgrEcoMed website and the Italian National CAP Network portal, and disseminated through various channels, such as professional organisations and regional focal points. The committee responsible for evaluating and selecting the applications consisted of five experts: three researchers from the CREA Research Centre for Policy and Bioeconomy with expertise in agricultural entrepreneurship and local development, one professor from the University of Basilicata, and one professor from the University of Bari, both with expertise in agronomy and soil science. Following the publication of the call for applications, 31 applications were received. The committee evaluated (iii) the agroecological practices implemented by enterprises led by women and young people according to the selection criteria (Tables 1 and 2). The call led to the selection, in 2025 and early 2026, of 24 cases, including 20 individual cases and 4 collaborative cases.

The selected sample does not aim to be statistically representative of the broader population of Italian farms. Rather, it constitutes an exploratory qualitative multiple-case study designed to investigate in depth how agroecological principles are translated into practice across different territorial and organisational contexts. In line with [47], the multiple-case study approach was adopted not to enable statistical generalisation, but to generate analytical insights and support theory building from empirically grounded cases.

The selected agroecological best practices were analysed in-depth, focusing on the local context, the farm's history, primary production activities (including the practices adopted and the characteristics of the agroecological practice), secondary activities (e.g., service provisions and actions for social inclusion, challenges and opportunities), networking capacity, and the farm's relationship with the local area.

All the 24 selected best practices were examined in the field (iv) through individual interviews lasting an average of three hours, including farm visits. During the interviews, the aspects identified through the application were explored in detail, with a view to gathering further information and supplementing that already collected. Field-visit information was recorded using voice memos and subsequently analysed according to four analytical dimensions, aligned with the selection criteria: territorial contexts and business profiles, agroecological practices, services and inclusion, and networks and marketing channels.

To address RQ3, the 24 selected initiatives were analysed through the 13 HLPE Principles of Agroecology and their three operational axes: improving resource efficiency, strengthening resilience, and ensuring fairness and social responsibility [46]. Rather than assigning each initiative to a single HLPE axis, the analysis focused on the empirical elements emerging from the qualitative data—namely farming practices, multifunctional activities, social inclusion, territorial relations, and marketing channels—and examined their predominant contribution to the three operational axes, while acknowledging that some features may simultaneously relate to more than one axis.

To support the comparative reading of the cases and to capture the dynamic role of practices in agroecological transition, each initiative was assessed qualitatively in relation to the three HLPE axes.

The distinction between weak and strong agroecology was used as an interpretative continuum rather than as a binary classification. Initiatives mainly characterised by ecological farming practices, resource-efficiency strategies, and farm-level adjustments were interpreted as reflecting features commonly associated with weak agroecology. By contrast, diversification, multifunctionality, territorial networks, knowledge co-creation, and community engagement were considered indicators of stronger agroecological orientations.

Building on the information collected for each farm—covering territorial profiles, farming practices, multifunctional activities, and network relations—each initiative was associated with one or more of the 13 HLPE agroecological principles through qualitative content analysis of interview materials and field visits. The presence or absence of each principle was assessed through dichotomous coding (presence/absence) for each of the 24 agroecological best practices (Appendix A), and the identified principles were subsequently grouped into the three HLPE operational axes.

This assessment served as an interpretative tool to examine how different configurations of practices reflected more incremental or more transformative agroecological trajectories along a continuum from weak to strong agroecology. In this study, the distinction between weak and strong agroecology is therefore used as an analytical lens rather than as a rigid dichotomous classification. Initiatives are considered closer to weak agroecology when they are mainly associated with input reduction, resource efficiency, and ecological adjustment within existing food-system structures, whereas strong agroecology refers to broader processes of multifunctionality, territorial embeddedness, knowledge co-creation, collective action, and the reconfiguration of relationships between production, consumption, and local communities.

The 10 FAO Elements and the 13 HLPE Principles provide an analytical framework to operationalise agroecology (including at the farm level) and to support the planning, management and evaluation of agroecological transitions by considering social and political dimensions alongside ecological ones, thereby capturing overall “agroecologicalness”. This framework conceptualises agroecology as a paradigm shift rather than a set of incremental improvements to existing food systems, and it enables global comparability while allowing for context-specific interpretation of each principle [46,48].

Recent literature on Agroecological Living Labs further highlights the relevance of participatory and place-based approaches as entry points for agroecological transition,

particularly through co-design, stakeholder interaction, experimentation, and collective learning processes [28,43]. Although the AgrEcoMed project does not formally define the analysed initiatives as Living Labs, several methodological elements adopted within the project—including participatory analysis, field-based knowledge exchange, territorial networking, and co-creation processes—are consistent with the Living Lab approach to agroecological transition.

In particular, the 10 Elements of Agroecology by the FAO act as an analytical framework to guide the transformation of food and agricultural systems towards sustainability. They link environmental, social, and economic dimensions and create resilient systems, encompassing diversity, knowledge co-creation, synergies, efficiency, recycling, resilience, human/social values, culture/food traditions, responsible governance, and circular and solidarity economy. In 2019, the HLPE on Food Security and Nutrition, emanating from the Committee on Food Security, drew up a list of 13 principles characterising agroecology, aligned with the 10 elements of the FAO and guiding the agroecological transition approaches from the plot to the food system as illustrated by the Gliessman scale [49–51].

They express the multidimensionality of this approach by contemplating specific aspects related to social, environmental, and economic issues (biodiversity, soil health, governance of soil and land, reduction in external inputs, economic diversification, participation, synergy, social values and diets, and co-creation of knowledge). The 10 elements and the 13 principles are complementary: the elements define agroecology in a global and inclusive way, while the principles list the practices and the concepts that must be applied for agroecological transition to take place and are slightly more differentiated [48].

Agroecological initiatives led by women and young farmers act as entry points for transformation, mobilising agroecology as a multidimensional paradigm. Through the interaction of farm-level practices, territorial dynamics, and knowledge and governance processes, these initiatives generate effects across the three HLPE axes (resource efficiency, resilience, and fairness). These dynamics contribute to the transformation of local agri-food systems and position initiatives along a continuum from weak to strong agroecology (Figure 2).

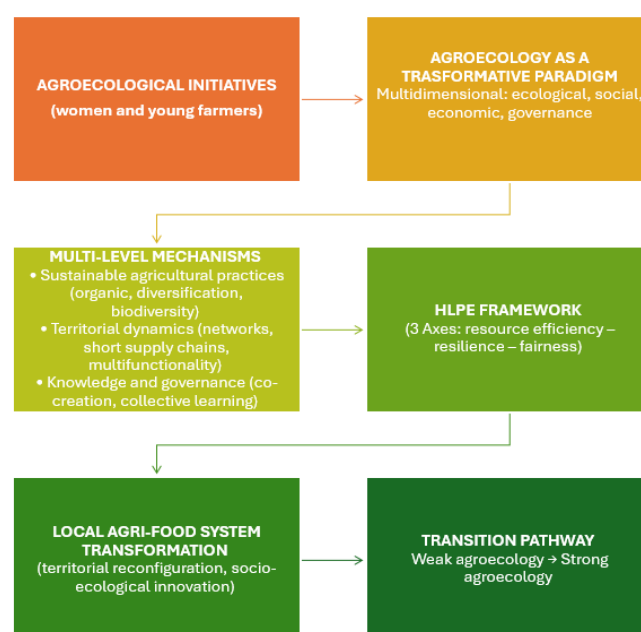


Figure 2. Conceptual model of agroecology-driven transformation of local agri-food systems. Source: Authors' elaboration.

3. Results

The expert panel identified 24 examples of good agroecological practice, including four cooperatives.

Among the selected cases, 18 were led by women and 16 by young farmers (women and men). The average utilised agricultural area (UAA) of the farms was 39.5 hectares, with farm sizes ranging from 3 to 160 hectares, whereas that of the cooperatives was 1.098 hectares. In terms of production orientation, arable cropping predominated, characterising 18 of the 24 cases. The selected farms are located mainly in central and southern Italy. The low participation of cases from northern Italy may partly reflect the wording of the call, which explicitly referred to the Mediterranean area and may therefore have influenced participation patterns. A systematic comparison of the cases is provided in Figures 3 and 4, which summarise the main characteristics of farms and farmers.



Figure 3. Size and production orientation of 24 farms. Source: Authors' elaboration.

Based on the qualitative analysis of the 24 selected initiatives, the results highlight recurring patterns across territorial profiles, farming practices, multifunctional activities, and network relations. These patterns provide empirical evidence of how agroecological principles are enacted in practice and how they connect farm-level strategies with broader territorial dynamics.

The agroecological farms analysed show both the adoption of ecological and agromomic strategies aimed at improving resource efficiency and resilience and broader relational, socio-economic, and governance dynamics. This systemic characteristic is not particularly evident with reference to most sustainable farms, e.g., farms that practise conservation agriculture. Agroecological transition in fact does not take place solely at an individual level but rather requires a territorial perspective that captures the systemic and transformative dimension of agroecology. The studied farms apply the agroecological models they have adopted for the benefit of their local areas and communities.

The empirical outcomes reveal the adoption of agroecological principles to varying degrees. The analysed initiatives are engaged in the production of high-quality food that

embodies values and knowledge, promote low-energy, low-input agricultural systems based on traditional techniques and practices, and reshape producer–consumer relationships towards greater social and environmental equity, while also addressing the aspect of participatory democracy in the governance of agri-food systems. Taken together, the analysed initiatives suggest that agroecological transition is not limited to technical adjustments, but involves broader processes of territorial reconfiguration, collective learning, and socio-ecological innovation.

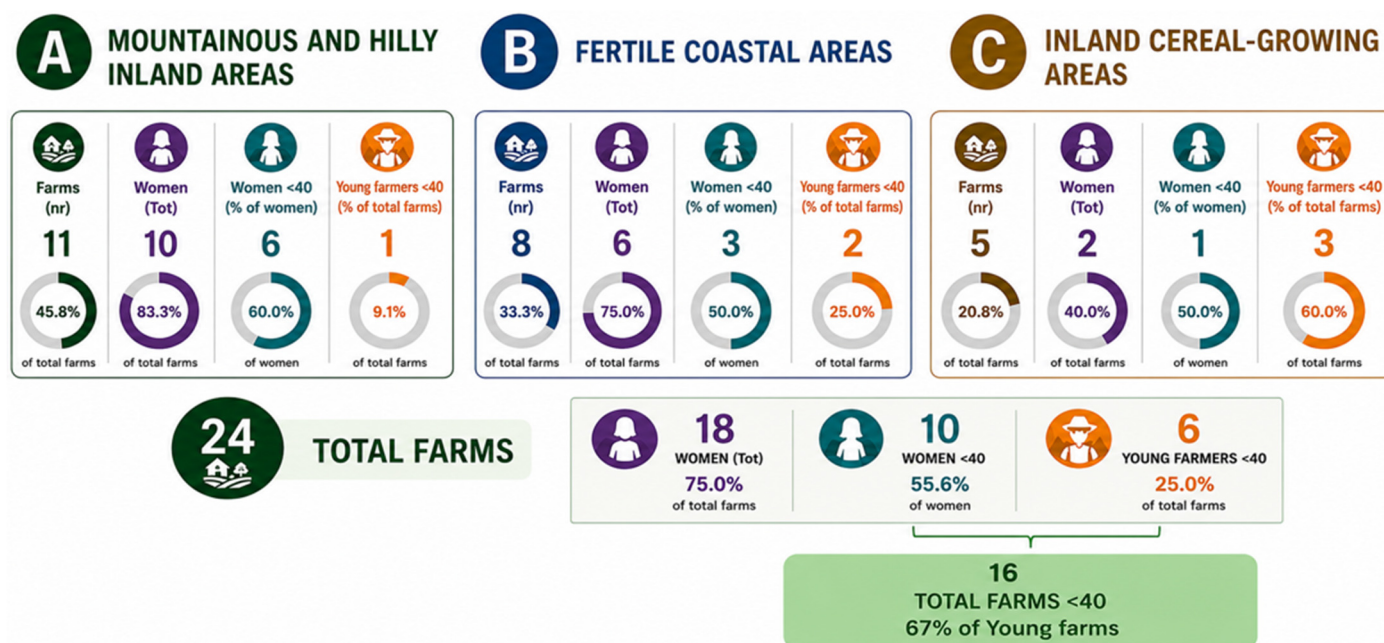


Figure 4. Farmers by territorial context and gender. Source: Authors' elaboration.

The following sections examine these patterns across the four analytical dimensions.

3.1. Territorial Contexts, Company Histories, and Business Profile

From a territorial point of view, the cases analysed, both individual and collective, are mainly located in: (a) mountainous and hilly inland areas of central and southern Italy, characterised by high natural value ecosystems, rich biodiversity, and socio-economic vulnerabilities; (b) fertile coastal areas specialised in fruit and vegetable production, with a mild climate and access to irrigation resources; (c) inland cereal-growing areas characterised by arid climates and strong links between agriculture, landscape, and local identity.

Across these contexts, agriculture performs multiple productive, environmental, and social functions, contributing to land management, rural development, and landscape preservation. In high natural value contexts, agroecological practices are adopted both as an ethical choice and as a strategy to enhance biodiversity, soil conservation, and farm resilience. Although these practices may be less productive in the short term, they are essential for maintaining agrobiodiversity, cultural values, and landscape quality, while supporting the vitality of inland and local areas.

Most businesses are family farms that have undergone increasing professionalisation through generational renewal. Second- and third-generation entrepreneurs have frequently reoriented previously conventional farms towards organic and agroecological models, combining the revitalisation of family traditions with innovation and multifunctionality [52].

Generational transition is associated with strategic repositioning toward sustainability, quality production, and market differentiation. Entrepreneurial renewal is often associated with higher levels of formal education, university-based training, and greater openness to

technological innovation and digitalisation [41]. These farms often result from deliberate life choices or the revitalisation of family farms and play a decisive role in promoting organic conversion, multifunctionality, and social innovation.

In several cases, women-led initiatives also show a stronger orientation towards educational activities, community engagement, diversification, and relational forms of territorial development, confirming recent interpretations of feminist agroecology as a driver of social inclusion and participatory innovation [38].

3.2. Agricultural Activities and Agroecological Practices

The territorial setting strongly influences the strategic orientation of farms, particularly regarding sustainability and resource management. All the farms analysed adopt organic production methods, and the cooperatives are composed exclusively of certified organic producers. Organic farming provides an operational basis for an agroecological approach that integrates socio-economic aspects within a broader sustainability framework, with positive impacts on biodiversity, soils, ecosystems, and local communities [21].

Production activities are diversified and include cereals and arable crops, legumes, orchards and nut trees, olive groves, vineyards, forage crops, medicinal and wild herbs, vegetables, chestnut groves, agroforestry systems, livestock farming, pasture-based systems, and beekeeping.

A recurring feature across the cases is the structural role of crop diversification as an alternative to monoculture. Farms implement diversified rotations, including legumes and multiannual sequences, intercropping systems, grass cover management, and integration between crop and livestock activities. Crop choices are consistently adapted to local pedoclimatic conditions, with a preference for varieties suited to organic cultivation and capable of reducing water requirements and dependence on external inputs [49]. In several cases, farms cultivate and promote local varieties of cereals, fruit trees, and olive trees. Some entrepreneurs actively preserve native genetic resources and local breeds. The use of evolutionary populations in cereal systems emerges in specific cases as an adaptive strategy to climate variability.

Soil fertility management relies on green manuring, composting, organic amendments, and the integration of livestock manure into cropping systems. Reduced or minimal tillage practices are widely adopted to preserve soil structure and organic matter. These practices aim to enhance soil fertility and improve water retention capacity, which is particularly relevant in Mediterranean areas characterised by seasonal water scarcity.

Biodiversity conservation is supported through the maintenance of hedgerows, agroforestry systems, ecological corridors, pollinator-friendly habitats, and controlled grassing for biological pest regulation. Pest management primarily relies on functional biodiversity and beneficial insects rather than synthetic inputs.

A further recurring feature is the combination of traditional agricultural knowledge with innovation-oriented solutions. In some cases, digital tools and precision agriculture techniques are used to optimise irrigation and soil management. These systems produce wheat, olive oil, meat, dairy products, cured meats, vegetables, medicinal herbs, fruit, chestnuts, artisanal pasta, legumes, honey, and bread, generally marketed through short supply chains and direct sales [53]. The coexistence of traditional ecological knowledge and selective technological innovation suggests that agroecological transition does not imply a return to pre-modern agriculture, but rather the development of context-specific hybrid systems combining ecological principles, local knowledge, and adaptive innovation.

3.3. Services, Community, Inclusion

The analysis shows that these farms rarely confine themselves to primary production alone. In addition to traditional agricultural activities, they often develop a range of related functions such as on-farm processing, short supply chains, educational activities, rural hospitality, social initiatives, and participation in local networks. These activities contribute to economic resilience and reflect the multifunctional character of the analysed farming systems [51,54].

In several cases, these activities are embedded within broader cooperative or territorial networks, which support collective action, knowledge exchange, and the consolidation of local agroecological initiatives.

Diversification does not simply represent an expansion of activities, but a strategic response to agricultural price volatility, rising input costs, climate change and the marginalisation of rural areas. In some contexts, these multifunctional pathways are supported or facilitated by rural development policies and agri-environmental schemes that encourage diversification and social innovation in agriculture.

By integrating multiple value-generating activities, farms enhance resource efficiency, reduce dependence on external inputs, and strengthen economic autonomy through a more intensive use of internal resources. Diversification emerges as a key strategy for reinforcing both farm autonomy and economic sustainability [35,55].

Beyond its economic effects, it also strengthens the social embeddedness of farms within local communities and contributes to the creation of relational infrastructures that support agroecological transition processes. These initiatives reinforce the social role of agriculture, support inclusion processes, and strengthen farm–community relations, thereby consolidating the socio-cultural dimension of agroecology [34]. They also contribute to the diversification of rural employment opportunities and to the inclusion of vulnerable social groups, fostering new forms of work organisation within multifunctional farm systems.

3.4. Networks and Marketing Channels

The analysed experiences show that farms operate as interconnected nodes, generating economic, social, cultural, and environmental benefits for their territories. Deeply embedded in local contexts, these farms contribute to the revitalisation of rural areas through cooperative relationships, knowledge exchange, and shared initiatives. Networking capacity emerges as a distinctive feature, as innovation arises from interactions among farmers, researchers, and local communities within systems that foster knowledge co-creation [12].

Some farms participate in agroecological districts, the Murge and Bradano Agroecological District, located between the Apulian Murgia and the northern part of Basilicata, and the Valle dei Templi Agroecological District in Agrigento province, Sicily. These initiatives represent spaces for collective experimentation and active resistance, offering concrete alternatives to the dominant industrial agricultural model.

The analysis of the case studies highlights that agroecological networks represent a key enabling factor of agroecological transition, as they extend processes beyond the individual farm level and foster collective action among multiple actors. These networks function as socio-ecological infrastructures that enable the circulation of resources and knowledge, promote collective learning and context-specific adaptation and strengthen the resilience of local food systems through diversification, adaptation, and local autonomy [36]. They also support the conservation of agrobiodiversity and traditional knowledge, reinforce short supply chains, and improve access to markets.

Several analysed initiatives also operate as local reference points capable of disseminating agroecological knowledge through peer-to-peer learning dynamics, thus functioning as “agroecological lighthouses” within their territories [56].

Collaborations with research institutions further reinforce these dynamics by supporting reciprocal learning, experimentation, and the co-creation of agroecological knowledge. First, agroecological networks facilitate knowledge co-creation and innovation by linking farmers with researchers and institutional actors, thereby supporting participatory experimentation and the adoption of more resilient agroecological practices. At the same time, farms adopt marketing strategies consistent with these principles, supporting embedded distribution strategies within territorial governance frameworks. Even when engaging with broader markets, they maintain strong territorial embeddedness. The adoption of direct sales channels enhances value retention and traceability, while fostering closer relationships with consumers through farmers' markets, buying groups, and local food networks. These direct interactions contribute to building trust and relational capital, thereby strengthening economic resilience [57]. Overall, the findings confirm that agroecological sustainability depends not only on farm-level practices, but also on the quality of relationships among actors within territorially embedded networks.

Finally, agroecological networks enhance the social and territorial dimension of sustainability by fostering inclusion, community engagement and rural resilience, particularly in marginal areas.

Table 3 summarises the contribution of the 24 analysed initiatives to the HLPE Principles of agroecological transition, providing a cross-cutting, concise and comparative analysis.

Across the initiatives, the most significant contributions relate to the first HLPE axis, particularly in relation to organic farming methods, crop diversification and rotation, soil fertility management, biodiversity conservation, and the adaptation of crops to local pedoclimatic conditions. These practices indicate a widespread orientation towards reducing external inputs and enhancing ecological processes within farming systems. At the same time, many initiatives contribute to the second HLPE axis, reflecting the presence of multifunctional strategies and the integration of productive, social, and educational activities. These functions broaden the role of farms within their local contexts and show how agroecological practices are often embedded in multifunctional and community-oriented strategies [34,54,58].

A further relevant contribution concerns the third Axis, as many initiatives activate networks among farms and other local actors, including research institutions, consumers, and communities. These relations range from informal collaborations to more formalised collective arrangements and support knowledge sharing and the circulation of value within local contexts, reinforcing the relational dimension of the analysed agroecological pathways [12,59,60]. Direct marketing channels and territorial promotion strategies also emerge as relevant elements in strengthening the connection between production, consumption, and place [57,59].

Taken together, the results show that the selected initiatives contribute to all three HLPE Axes. As summarised in Table 3, these initiatives combine environmentally sound practices with broader social, territorial, and relational dimensions. This overall pattern provides the basis for discussing the extent to which the analysed initiatives reflect not only input-reducing practices, but also broader dynamics of agroecological transition. A systemic approach is adopted by many initiatives and constitutes a defining feature of strong agroecology.

Figure 5 gives an overview of the 24 Italian agroecological best practices for principles and axes in aggregate form.

Table 3. Contribution of the 24 Italian agroecological best practices to the HLPE Principles.

Territorial Context, Company Histories and Business Profiles	HLPE Axes	Involved Principles in Agricultural Activities and Practices			Involved Principles in Services, Community, Inclusion			Involved Principles in Networks and Marketing Channels			
Function of environmental protection and social regeneration	1-2-3	Organic farming methods combine traditional farming with innovation	Principles	1,2,3,5,12	Diversification of agricultural activities to strengthen farm autonomy and sustainability	Principles	6,7	Networking between farmers, researchers and local communities	Principles	8,13	
			Farms	20		Farms	20		Farms	24	
Preservation of biodiversity, the landscape, cultural values, and the vitality of local communities	2-3	Crop diversification and rotation	Principles	5,6	Social and educational activities, social farming and environmental education	Principles	7,9,13	Territorial promotion through local brands	Principles	11,12	
			Farms	15		Farms	16		Farms	12	
Generational renewal towards sustainable and socially family farming	1-2-3	Adapting crops to the region’s soil and climate conditions and employing organic farming techniques	Principles	2,3,5,12	Rural hospitality and tourism	Principles	7	Knowledge exchange	Principles	8	
			Farms	22		Farms	6		Farms	21	
Tradition, innovation, and multifunctionality	2-3	Cultivation of local varieties and evolving populations	Principles	5,8	Socio-cultural dimension of agroecology		7,9,13	Direct sales channels and close relations with consumers		10,11	
			Farms	7							
		Improving soil fertility	Principles	1,3							
			Farms	19							
		Conserving biodiversity	Principles	5							
			Farms	24							
		Combining both traditional farming and innovation	Principles	1,2,8		Farms	17			Farms	19
			Farms	20							

Source: Authors' elaboration.

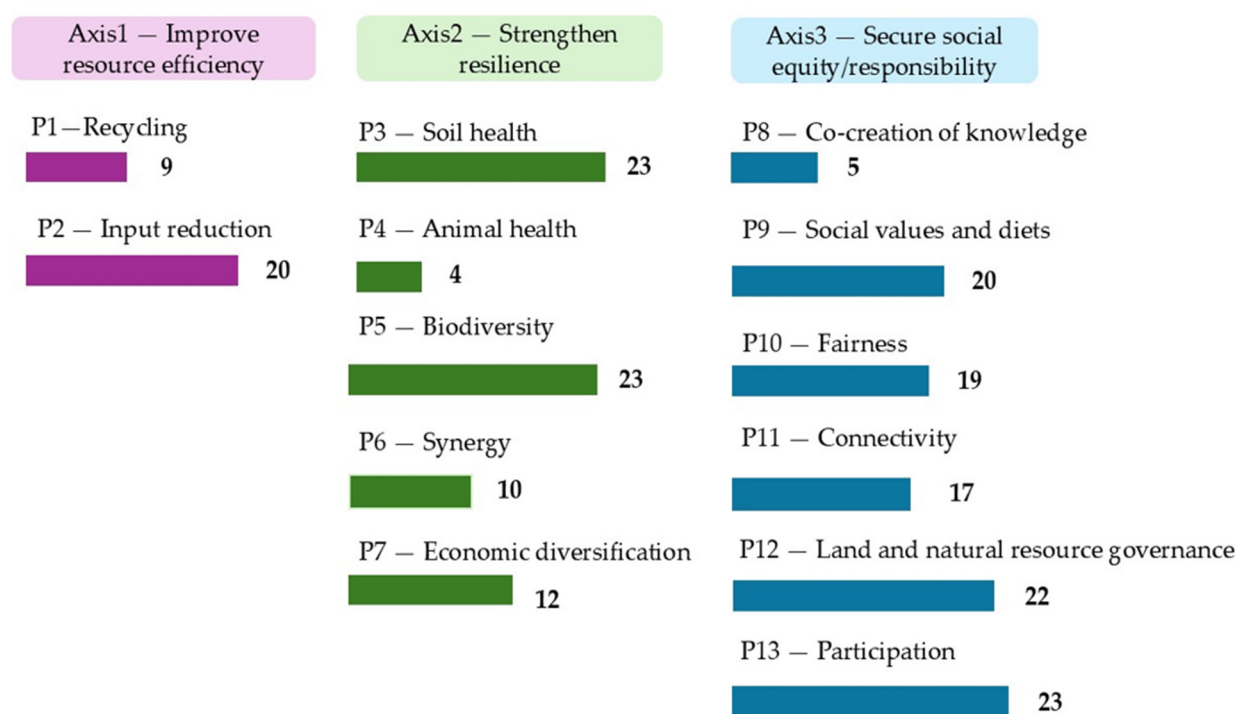


Figure 5. Number of farms by HLPE agroecological principles and axes. Source: Authors' elaboration.

4. Discussion

The contribution of this article is empirical and analytical: it provides original evidence from 24 Italian cases and uses the HLPE framework to interpret how agroecological initiatives contribute to local agri-food system transformation.

This study shows that the analysed initiatives combine farm-level ecological practices with broader territorial, relational, and multifunctional dynamics. This empirical pattern suggests that agroecological transition, in these cases, extends beyond input reduction and includes features associated with stronger agroecological pathways.

The empirical material shows that the 24 initiatives appear to combine features typically associated with weak agroecology—such as input reduction, organic farming, crop diversification, and the enhancement of ecological processes—with elements that point towards stronger agroecological pathways, including multifunctionality, local networks, territorial embeddedness, and community-oriented strategies. In line with the literature, these findings suggest that agroecology cannot be understood only as a set of environmentally sound farming techniques, but rather as a broader transformative process that mobilises natural and social resources, knowledge exchange, and relationships within and beyond the farm [13,35,61]. In this sense, the AgrEcoMed cases confirm that agroecology operates as an innovative approach to resource management, biodiversity enhancement, resilience building, and the transformation of local agri-food systems [12]. The analysed initiatives can therefore be interpreted as territorially embedded “innovation niches” within broader socio-technical transition processes, capable of challenging dominant agri-food regimes through locally rooted socio-ecological experimentation and alternative governance arrangements [10].

Evidence from the analysed cases indicates that the first relevant aspect concerns the ecological and agronomic basis of the analysed initiatives. The widespread adoption of organic farming methods, crop diversification and rotation, soil fertility management, biodiversity conservation, and the adaptation of crops to local pedoclimatic conditions points to a strong orientation towards resource efficiency and resilience. These practices contribute to reducing dependence on external inputs, enhancing ecological processes within farming

systems, and improving the adaptive capacity of farms in the face of environmental and climatic pressures. In this sense, the cases examined display a solid agroecological basis, as essential conditions for sustainable food production and systems [46], advocating for transitions toward sustainability, largely attributable to a “weak” agroecological orientation, centred on input reduction, diversification, and the strengthening of ecosystem functions [21,35,62]. However, the findings also suggest that the distinction between “weak” and “strong” agroecology cannot be reduced solely to the adoption of ecological farming techniques. Rather, it increasingly depends on the capacity of agroecological initiatives to generate socio-ecological infrastructures based on territorial networks, local value chains, knowledge exchange, collective learning, and participatory governance mechanisms.

Across the 24 cases, a further relevant dimension concerns networks, territorial embeddedness, and the reconfiguration of relationships beyond the individual farm scale. The analysed initiatives show the presence of networks among farms and other local actors, including research institutions, consumers, and communities. These relations range from informal collaborations to more formalised collective arrangements, suggesting a recurrent tendency to activate exchanges and cooperation at the territorial level. Such networks support knowledge sharing, collective learning, and the circulation of value within local contexts, thereby reinforcing the relational dimension of the analysed agroecological pathways [12,59]. Collaboration between farms and research institutions is particularly relevant, as it appears to support reciprocal learning and the co-creation of knowledge, thereby helping both sides to improve, adapt, and consolidate agroecological practices over time. These processes are consistent with recent interpretations of Agroecological Living Labs as territorial spaces for experimentation, co-design, and participatory innovation capable of facilitating systemic transition processes [28,46]. At the same time, direct marketing channels and territorial promotion strategies emerge as relevant elements in strengthening the connection between production, consumption, and place. Through farmers’ markets, buying groups, local brands, and other embedded distribution channels, these initiatives retain value locally, foster trust-based relationships with consumers, and strengthen the territorial anchoring of agroecological transition [57,59]. The analysed experiences therefore suggest that agroecological transition should be interpreted not as a linear process of technological substitution, but rather as a multidimensional territorial transformation involving ecological, economic, cultural, and governance dimensions simultaneously.

Taken together, these elements suggest that several of the analysed initiatives move beyond a merely input-reducing approach and display features consistent with stronger agroecological pathways. This applies particularly to the multifunctional role of farms, the activation of territorial networks, the collaboration with research institutions, and the reconfiguration of producer–consumer relations through embedded marketing channels. In these cases, agroecology is expressed not only through ecological farming practices, but also through broader processes of social organisation, knowledge co-creation, territorial coordination, and local value retention. This confirms that the transition observed in the analysed initiatives tends, in several cases, to extend beyond farm-level ecological adjustment towards a more relational, territorial, and transformative understanding of agroecology [59,61].

Although the analysis focuses on initiatives led by women and young people, since the aim of the study was detecting and analysing gender dimension and generational renewal in agroecological practices in Mediterranean agri-food systems, the limited size and non-representative nature of the sample call for caution in drawing broader conclusions on gender- or age-specific patterns. Rather than supporting generalisations, the cases suggest that women and young farmers may play an important role in fostering multifunctionality, innovation, and territorial activation within agroecological pathways.

The selected sample is the result of a public call and does not aim to be statistically representative of the broader population of Italian farms, as our aim is to conduct an exploratory qualitative multiple-case study designed to investigate in depth how agroecological principles are translated into practice across different territorial and organisational contexts.

Despite the small sample size, deriving from voluntary responses from farms, findings can be transferred to other similar contexts, especially of the Mediterranean area, sharing territorial characteristics (e.g., mountainous and hilly inland areas with high natural value and socio-economic vulnerabilities) and similarities concerning climate and water constraints.

While the results highlight several positive outcomes, a more critical perspective is needed to fully understand the improvement and replicability of these practices. Given the characteristics of the analysed farms, which are predominantly family farms, critical reflections and limitations emerge from the study. Market-related constraints may limit the broader diffusion of these initiatives, particularly where access to stable value chains or markets is uncertain. These models often face conditions such as high costs (transition costs, certification, diversification) and uncertain profit margins. Agroecological practices frequently require higher labour inputs and specialised knowledge, which may represent a barrier for farmers with limited size and resources. Policy and institutional barriers can represent further constraints, particularly in contexts where existing regulatory frameworks do not adequately support diversified or alternative production models.

Future research should therefore further investigate how these constraints interact with local socio-economic conditions and policy environments. Future research could also investigate whether and to what extent agroecological best practices may operate as “agroecological lighthouses”, with particular attention to the role of agroecological farms in disseminating knowledge, practices, and relational models to other farms, communities, and local institutions [56]. In this perspective, further studies should explore the mechanisms through which agroecological principles are diffused at the territorial level, including farmer-to-farmer learning, collaboration with research institutions, participation in local networks, and embedded market relations. Attention should also be paid to the policy and governance conditions that may support the scaling-out and scaling-up of these experiences. Further comparative research could also investigate how Mediterranean agroecological initiatives respond to climate vulnerability, water scarcity, and rural marginalisation through context-specific forms of socio-ecological resilience.

5. Conclusions

This paper uses empirical evidence from 24 agroecological initiatives led by women and young farmers within the AgrEcoMed project to analyse how agroecology operates in practice and what this reveals about local agri-food system transformation. The findings show that, although with varying intensities across cases, these analysed initiatives contribute to all three HLPE Axes—resource efficiency, resilience, and fairness and social responsibility—by combining ecological farming practices with broader social, territorial, and relational dimensions.

The results highlight a solid agroecological basis rooted in organic farming, crop diversification, biodiversity conservation, soil fertility management, and the adaptation of production systems to local pedoclimatic conditions. At the same time, many of the analysed initiatives extend beyond the productive sphere through multifunctionality, social and educational activities, direct marketing channels, territorial networks, and collaboration with research institutions. These findings suggest that agroecological transition cannot be reduced to farm-level ecological adjustment, but increasingly involves broader processes of

territorial reconfiguration, knowledge co-creation, socio-ecological networking, and the reorganisation of relationships between production, consumption, and local communities.

This study also confirms the usefulness of the HLPE framework for interpreting agroecological practices not only in ecological terms, but also in relation to their social, territorial, and governance dimensions.

In this sense, the analysed initiatives provide relevant insights for the design of policies and support measures capable of strengthening territorial networks, multifunctionality, and collective learning processes as key conditions for the consolidation of agroecological transition.

From a policy perspective, the results highlight the need to recognise the public value generated by agroecological farms, particularly in inland and high natural value areas, through their contribution to ecosystem conservation, cultural heritage, and territorial cohesion. Current policies may support agroecological transition, but they are not sufficient, on their own, to sustain resilient and adaptive territorial agroecological systems. Making agroecology a more structural policy orientation requires targeted investments, multi-level governance arrangements, and stronger coordination among national governments, regions, research institutions, and local actors. In this perspective, payments for ecosystem and social services, support for territorial food networks, participatory governance mechanisms, and investments in collective learning infrastructures may represent strategic policy tools for consolidating agroecological transition in Mediterranean rural areas. More broadly, the findings point to the need for post-2027 CAP strategies to support integrated territorial agroecological systems that are able to generate environmental, social, cultural, and relational public goods. Two policy implications can be drawn from these findings. First, agroecology should be supported not only through agri-environmental measures at the farm level, but also through territorial instruments that recognise ecosystem and social services, multifunctionality, and the conservation of local agrobiodiversity, especially in inland and high natural value areas. Second, collective learning infrastructures, advisory services, and local agroecological networks that bring together farmers, research institutions, consumers, and public authorities should be strengthened, thereby enabling the agroecological transition to extend beyond individual farms.

The analysed initiatives also suggest that agroecological farms may act not as adopters of sustainable practices, but also as territorial actors capable of supporting wider processes of dissemination and transition. In several cases, they may be interpreted as “agroecological lighthouses” capable of activating territorial learning dynamics and facilitating the diffusion of agroecological principles beyond the farm scale.

In this direction, the AgrEcoMed project contributed to strengthening agroecological transition processes by connecting the analysis of good practices with the construction of territorial networks involving women and young farmers. Through knowledge exchange, participatory activities, and collective reflection, the project promoted agroecology not only as a production model, but also as a broader cultural, social, and territorial paradigm. The creation of the Agroecological Network and the Manifesto for Mediterranean Agroecology represent an attempt to consolidate participatory governance mechanisms and foster the dissemination of agroecological principles across Mediterranean rural areas. The Good Practices Report and Manual developed within the project further contribute to knowledge transfer and may support future agroecological initiatives, policies, and territorial learning processes aimed at promoting more resilient, inclusive, and sustainable food systems. In this perspective, agroecology emerges not only as an alternative production model, but as a broader territorial and societal project for the transition towards more sustainable and democratic food systems.

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Institutional Review Board Statement: No ethical review or approval was required for this study. Given its non-clinical nature, data were collected through a public call for participants and field visits to selected farms involving adult participants and were anonymised during transcription and analysis. No personally identifiable or sensitive personal data were collected, and results are reported exclusively in anonymous form. The study was conducted in compliance with the applicable EU legal framework, in particular Regulation (EU) 2016/679 (General Data Protection Regulation—GDPR). The Italian Data Protection Code (Legislative Decree No. 196/2003, as amended by Legislative Decree No. 101/2018) was also fully observed.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Participation of the farmers was voluntary and written informed consent was collected prior to data collection.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author.

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Appendix A Characteristics of Farms and Contribution of Each Italian Agroecological Best Practice to HLPE Axes and Principles

Farms	UAA (ha)	Geographical Context	Production Orientation	Agroecological Practices		
				Agricultural Practices	Secondary Farm Activities	Networking and Marketing Channels
Farm 1	30	A	Arable crops Legumes Horticulture Fruit and olive growing	Evolutionary plant populations Crop rotation Cover crops Minimum tillage Water management	Supply chain Rural tourism Environmental education	Local farms Research centres Rural Seeds Network Solidarity Purchasing Groups Direct sales
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Principles	2	3,7
Farm 2	8	A	Fruit growing Horticulture	Mechanical weeding Green manure Mycorrhizal inoculation	Agritourism Environmental education	Slow food Valley of the Temples District Sicilian Agroecology
				Rainwater harvesting and supplemental irrigation Agroforestry	Renewable energies Social inclusion initiatives	Coordination Direct sales European organic wholesalers

Farms	UAA (ha)	Geographical Context	Production Orientation	Agroecological Practices		
				Agricultural Practices	Secondary Farm Activities	Networking and Marketing Channels
Farm 2			HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				1,2	3,5,6,7	9,10,11,12,13
Farm 3	77	C	Arboriculture Arable crops Forage crops livestock Small fruits	Intercropping Crop rotation Integrated crop and livestock farming	Territorial promotion activities	Slow Food Regional association of medicinal plant and saffron producers Local supply chains Universities Association of Lucanian organic producers (sale)
						Axis 3 Secure social equity/responsibility
						Axis 2 Strengthen resilience
						Axis 1 Improve resource efficiency
Farm 4	23	A	Arable crops Traditional and endangered vegetables Medicinal and honey-producing plants	Crop rotations Grass cover Fallow periods Minimum tillage	Supply chain Scientific Dissemination Workshop	Local farms Cooperative member Buying groups Wholesalers E-commerce
						Axis 3 Secure social equity/responsibility
						Axis 2 Strengthen resilience
						Axis 1 Improve resource efficiency
Farm 5	13	B	Fruit growing Horticulture	Precision irrigation Biological pest control with beneficial insects		Research institutes Regional research body Cooperative members Direct sales E-commerce
						Axis 3 Secure social equity/responsibility
						Axis 2 Strengthen resilience
						Axis 1 Improve resource efficiency
Farm 6	120	C	Arable crops Olive growing Legumes	Use of heirloom varieties Crop rotations Minimal tillage Natural fertilisation	Supply chain Educational and social farm Custodian farmer	Local farms Research centres Direct sales E-commerce
						Axis 3 Secure social equity/responsibility
						Axis 2 Strengthen resilience
						Axis 1 Improve resource efficiency
Farm 7	90	A	Cereal arable crops Forage crops Livestock	Extensive livestock farming Farm-produced forage feeding Sustainable pasture management	Supply chain Farmers' markets	Local institutions Cooperative Local farms Direct sales
						Axis 3 Secure social equity/responsibility
						Axis 2 Strengthen resilience
						Axis 1 Improve resource efficiency

Farms	UAA (ha)	Geographical Context	Production Orientation	Agroecological Practices		
				Agricultural Practices	Secondary Farm Activities	Networking and Marketing Channels
Farm 7			HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				1,2	3,5	9,10,11,12,13
Farm 8	15	A	Arable crops Fruit and olive growing Horticulture Wild medicinal herbs	Crop diversification Organic fertilisation Organic mulching Reuse of pruning residues	On-farm processing Restaurant Cultural initiatives Cookery courses Custodian chef	Local female entrepreneurs Slow food
			HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
			HLPE Principles	1,2	3,4,5,7	9,10,11,12,13
Farm 9	7		Arable and nut crops Olive growing Wild medicinal herbs Horticulture	Crop diversification Crop intercropping Grass cover Minimal tillage Self-produced organic fertiliser Minimal irrigation Propagation from old plants	Environmental education Social inclusion	Partnerships with public bodies and third-sector organisations AIAB organic association (sale) Buying groups Home deliveries
			HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
			HLPE Principles	2	3,5,6	9,10,11,12
Farm 10	160	C	Arable crops	Crop rotations On-farm reseeded Crop–livestock integration Fallow grazing Shallow tillage Organic fertilisation with manure and plant residues		Local farms
			HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
			HLPE Principles	1	3,5	12,13
Farm 11	11	A	Livestock Olive and fruit growing Horticulture	Crop–livestock integration Crop rotations and intercropping Extensive grazing with mobile fencing Composting and use of compost	Social activities Environmental education Guided tours Workshops Summer camps	Local authorities Schools Libraries Cultural centres Direct sales
			HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
			HLPE Principles	2	3,5,6,7	9,10,11,13

Farms	UAA (ha)	Geographical Context	Production Orientation	Agroecological Practices		
				Agricultural Practices	Secondary Farm Activities	Networking and Marketing Channels
Farm 12	7	B	Olive and fruit growing Horticulture	Composting Use of biofertilizers Keyline design Crop rotations Rotational grazing Mobile chicken coops Reduced tillage	Supply chain Educational and social initiatives Tasting workshops Cultural activities	Local farmers Cooperatives Schools Associations Local buying groups Direct sales
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	HLPE Principles	1,2 3,4,5,6,7 8,9,10,11,12,13
Farm 13	12	A	Arable land Legumes Vine Olive and almond growing	Grain–legume rotation Vermicompost Rainwater harvesting and supplemental irrigation Controlled cover cropping Crop–livestock integration with mobile coops		Agroecological District of Murge and Bradano Consortium Farmers’ Supply Chains and Ethical Networks Direct sales
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	HLPE Principles	3,5 9,10,12,13
Farm 14	14	B	Arable land Vine, olive and fruit growing Horticulture	Crop rotations Use of natural fertilisers Crop diversification	Supply chain Hospitality Educational and social initiatives Farm-based learning programmes Renewable energy	Schools Universities Public and private institutions Local organisations Network of Parks and Protected Areas Large-scale-retail
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	HLPE Principles	2 3,5 9,10,11,12,13
Farm 15	89	B	Arable crop Olive growing	Mechanical weeding Green manure Organic fertilisation with mycorrhizae No-till seeding Agroforestry Conservation tillage	Supply chain Agritourism Social farm Renewable energy	Valley of the Temples District Agricultural professional organisation Social organisation Direct sales Confagricoltura Women’s Marketplace
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	HLPE Principles	2 3,5,6,7 8,9,10,11,12,13

Farms	UAA (ha)	Geographical Context	Production Orientation	Agroecological Practices		
				Agricultural Practices	Secondary Farm Activities	Networking and Marketing Channels
Farm 16	3	B	Olive, fruit and nuts growing Horticulture Cereals and other arable crops Wild herbs	Crop diversification Permanent soil cover Reduced and shallow tillage Attractant and repellent plants Low water-demanding crops Organic manure fertilisation	Supply chain Environmental workshop Educational farm	Consortium Cooperative Simeto Valley Bio-district Direct sales Farmers' market
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	2	3,5,6,7
Farm 17	10	B	Arable land	Cultivation of evolutionary wheat populations Use of heterogeneous organic material (MEB)		Agroecological District of Murge and Bradano National agricultural movements Universities Research centres Local outlets
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	2	3,5
Farm 18	7	A	Chestnut cultivation	Agroforestry Sustainable management of chestnut orchards	Social farm Educational activities	Research centres Local farms Local institutions Young women farmers Direct sales
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	3,5,6,7	9,10,11,12,13
Farm 19	55	A	Arable crops Livestock Horticulture	Voisin rotational grazing Rainwater harvesting Keyline design Cultivation without synthetic pesticides	Supply chain Agricamping Workshops Cultural activities Renewable energy	Research centres Local farms Local institutions Slow grain network Ancient Grains Cooperative of the Rieti area Direct sales Retail outlets
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	2	3,5,7
Farm 20	30	C	Arable crops	Crop diversification Crop rotations Natural fertilisation Low-impact cultivation without synthetic pesticides Use of local traditional varieties	Supply chain Educational and social farm	Research centres Local farms Local institutions Solidarity purchasing groups Wholesale sales
				Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity/responsibility
				HLPE Axes	2	3,5,7

Farms	UAA (ha)	Geographical Context	Production Orientation	Agroecological Practices						
				Agricultural Practices	Secondary Farm Activities	Networking and Marketing Channels				
Farm 20		HLPE Axes		Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity /responsibility				
		HLPE Principles			3,5	12,13				
Cooperatives										
Farm 21	1.320	A	Livestock Olive and fruit growing Horticulture	Transhumance Seasonal grazing Herd mobility	Supply chain Agritourism Educational farm Renewable energy E-commerce	Research centres Local farms Local institutions Solidarity purchasing groups				
							HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity /responsibility
							HLPE Principles	1,2	4,5,7	8,9,10,11,12,13
Farm 22	20	B	Cultivation of barley and durum wheat	Local varieties Evolutionary populations Organic fertilisation Crop rotations Conservation tillage	Supply chain	Local farms Research centres Agroecological District of Murge and Bradano Direct sales Wine shops and specialist retailers				
							HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity /responsibility
							HLPE Principles	1,2	3,5,6,7	9,12,13
Farm 23	250.000	B	Arable crops	Ancient grains and local varieties Crop rotations Reduction in chemical inputs	Supply chain Information activities on food and supply chains	Agroecological District of Murge and Bradano Local institutions Local farms Cooperative Local points of sale				
							HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity /responsibility
							HLPE Principles	2	3,5	9,12,13
Farm 24	2.500	C	Native seed Flowers and fruit growing Horticulture Legume	Use of local seed populations Use of locally adapted varieties	On-farm processing Training activities Technical support to farmers Research and field experimentation Workshops	Local institutions Cooperative Local farms Direct sales Local markets				
							HLPE Axes	Axis 1 Improve resource efficiency	Axis 2 Strengthen resilience	Axis 3 Secure social equity /responsibility
							HLPE Principles	1,2	3,5,6	8,9,10,11,12,13

A—mountainous and hilly inland areas of central and southern Italy, characterised by high natural value ecosystems, rich biodiversity, and socio-economic vulnerabilities. B—fertile coastal areas specialised in fruit and vegetable production, with a mild climate and access to irrigation resources. C—inland cereal-growing areas characterised by arid climates and strong links between agriculture, landscape, and local identity.

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