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OPEN LETTER

REVISED Navigating Europe's agricultural transition: Systemic policy approaches to mixed farming and agroforestry

[version 2; peer review: 1 approved, 2 approved with reservations]

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Abstract

Mixed farming and agroforestry systems offer the potential to optimise resource use and reduce environmental impacts by integrating crops, livestock and trees. By improving soil health, biodiversity, and carbon sequestration, these diversified farming systems can help to build sustainable, resilient and climate-smart adapted agri-food systems and make farms more resilient to climate change. However, barriers to widespread adoption include financial constraints, knowledge gaps, and regulatory barriers. To support the transition to more sustainable agri-food systems, European policymakers need to align the support of the Common Agricultural Policy (CAP) with sustainability goals. Simplifying regulations and strengthening research, knowledge-sharing networks, and farmer training will enable the implementation and optimal management of these systems. Cooperation between farms can improve circularity and resource efficiency, including at landscape level. The public goods provided by sustainable agriculture need to be remunerated to ensure viability. Increasing consumer awareness and integrating mixed farming products into mainstream value chains can provide remuneration in the markets, but public funding for sustainable farming practices is likely to remain necessary. As CAP reforms continue, the integration of mixed farming systems into agricultural landscapes will be crucial for long-term environmental and economic resilience. The success of these reforms will determine how well European agriculture adapts to climate challenges while ensuring food security and ecosystem sustainability.

Keywords

Mixed farming, agroforestry, Common Agricultural Policy (CAP), efficiency, resilience, sustainability, agri-food system

Open Peer Review

Approval Status ? ✓ ?

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version 1 27 May 2025	? view	? view	

1. **Elsa Varela**, Institute of Public Goods and Policies, Madrid, Spain
2. **Rosemary Venn**, Coventry University, Coventry, UK
3. **Nicholas Jordan**, University of Minnesota, Saint Paul, USA

Any reports and responses or comments on the article can be found at the end of the article.

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REVISED **Amendments from Version 1**

To provide a better rationale and place the article in context, a particular focus of the revision was the timing of the open letter in spring 2025 and the diverging policy interests and contexts that have emerged since then: The European Commission's proposals and drafts for the 2028-34 Multiannual Financial Framework and the far-reaching changes to the CAP after 2027 in summer 2025 mark a departure from not only the Green Deal, the Farm-to-Fork Strategy, and the Strategic Dialogue, but also from the basis of discussion of this open letter. Therefore, the introduction now clearly dates the article in spring 2025 and, to the extent possible, refers to the ongoing political discussions at EU level.

Other notable changes include an expanded explanation of the MiFAS system concept, which is now more clearly outlined in the introduction and throughout the text. The article now provides a clearer overview of MiFAS in general and covers its historical, cultural, productive and economic aspects.

As suggested by both reviewers, references were made where possible to relevant EU environmental legislation, such as, for example, the Nature Restoration Law, with a view to better integrating the open letter with said legislation. However, given the current declining focus on environmental and climate targets within the EU and worldwide, the authors have decided against incorporating such legislation in detail.

Additional changes were made to improve the article's credibility, including the incorporation of further references and minor details regarding target groups for campaigns and the importance of innovation as a driver of the transition to more MiFAS.

There have been no changes to the title or author list. The figures and data have not changed. The changes to the abstract were only of a formatting nature and did not change the content.

Any further responses from the reviewers can be found at the end of the article

Introduction

European agriculture is at a crossroads, facing increasing pressures from climate change, biodiversity loss, economic uncertainties, and changing societal expectations. The ongoing transformation of the European Union's (EU) Common Agricultural Policy (CAP) aims to address these challenges by promoting greater sustainability, resilience, and competitiveness in the farming sector. A milestone in this transition was the European Commission's (EC) Strategic Dialogue on the Future of EU Agriculture[1] in December 2024. Bringing together key stakeholders, it has fostered a broad consensus on the need for a CAP that better supports farmers, enhances sustainability, and strengthens rural communities. The report further emphasizes that without adaptation, farming in some regions could become unsustainable due to climate-induced challenges. Hence, adaptation measures will need to be strengthened at both farm and landscape scales to improve resource efficiency, ecosystem resilience and economic stability.[1] In this context, the Strategic Dialogue calls for systematic support for resilient farming systems and highlights the role of diversified farming models,[1] such as Mixed Farming and Agroforestry Systems (MiFAS).

However, this is at odds with Commissioner Hansen's Vision for Agriculture and Food[2] presented in early 2025. His roadmap focuses on the attractiveness, competitiveness and innovation of the agricultural sector and is less oriented towards the sustainability aspects mentioned in the final report of the Strategic Dialogue. Since then, discussions about the 2028-34 Multiannual Financial Framework and thus the CAP after 2027, have gained further momentum. This includes the introduction of a massive restructuring into the European Fund for economic, social and territorial cohesion, agriculture and rural, fisheries and maritime, prosperity and security. Alongside this come budget cuts and greater design freedom for the Member States,[3] as well as far less emphasis on environmental objectives and standards.[4,5] It is therefore increasingly important to advocate for sustainability and resilience goals as part of the next CAP.

This brings us back to MiFAS, which the authors define as diverse farm activities that integrate crop, forestry, and livestock production within a field, farm, or landscape, to optimize resource use through synergies, collaboration and diversification.[6] Mixedness at the farm-level includes diversified farming systems like agroforestry and integrated farming, while landscape-level mixedness involves cooperation between farms, improving circularity beyond individual farms.[7] Overall, this increases sustainability by improving resource use, land use efficiency and productivity compared to more specialized systems.[8–10]

MiFAS are not a new concept, but rather the product of a long-term, context- and region-specific adaptive learning process.[6] Such systems are often referred to as 'traditional' or 'historically grown', and examples include the Montado on the Iberian Peninsula, fruit orchards in Central Europe, and forest meadows. While traditional systems can be highly efficient in terms of land use and non-labour inputs, they are often small-scale and labour-intensive.[8] Technological advances, continually changing political, ecological and economic conditions, and the inherent complexity of these

traditional systems have led to a sharp decline in their competitiveness and neglect in funding policies. Despite the well-documented potential advantages in terms of productivity and resilience, MiFAS are now the exception rather than the rule. However, the integration of contemporary knowledge with innovative technologies has led to modern versions of MiFAS, providing a viable approach to achieving the EU's agricultural sustainability goals, including boosting rural employment and sustaining family farming.

At present, farmers and the wider agri-food system are facing substantial challenges in the transition to and continued management of MiFAS. The transition requires cultural shifts as well as systemic changes that need financial investments and infrastructure development.[11] While these may not be specific to MiFAS, there are broad gaps and challenges that need to be addressed to create a policy environment conducive to MiFAS. But what might such a conducive policy environment look like?

To answer this question, the authors analysed the challenges outlined above and formulated potential recommendations. Through workshops with relevant stakeholders and stakeholder networks, potential barriers, gaps and opportunities were identified. Key transition challenges identified in workshops across 10 countries were technical issues, knowledge gaps, profitability concerns, supply chain constraints, regulatory barriers, lack of public funding, and cultural and societal challenges, including psychological factors.[11] Further dialogue and interactive online sessions led to the identification of policy objectives, key supporting factors and existing policy instruments. In December 2024, a final policy workshop was held in Brussels with stakeholders from policy, administration, civil society, and farming organisations, which aligned the recommendations with the political debates and decision-making processes at that time. The authors are aware of the ongoing work at EU level regarding the CAP after 2027 (see above). However, the methodological approach adopted in preparing this open letter does not allow for an in-depth consideration of subsequent developments. Consequently, the article refers to the state of political discussions in spring 2025.

The work was undertaken as part of the EU-funded MIXED project[12] and this contribution presents the project's perspective accordingly. The present article provides recommendations in five policy areas (Figure 1) that outline ways to better anchor MiFAS in the political dialogue, and in this way align EU agricultural policies with the urgent need for sustainable and resilient food systems. It also shares a common vision for a sustainable, diversified and resilient agricultural system with the White Paper Transforming European Food Systems with Agroforestry.[13]

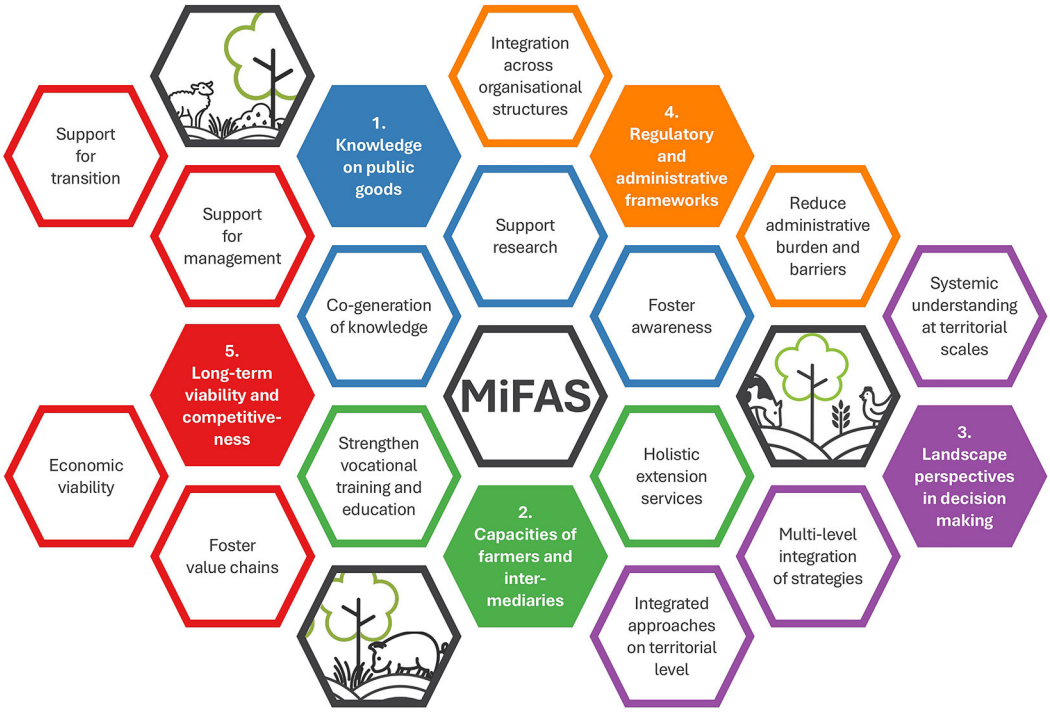

Figure 1. Schematic illustration of the five identified policy areas for a transition to sustainable, resilient and efficient MiFAS.

Knowledge on public goods

The Strategic Dialogue identifies knowledge gaps on sustainability metrics and the provision of public goods in different farming models and emphasises the need for benchmarking systems.[1] This is also evident for MiFAS, as their performance in terms of efficiency, resilience and sustainability is highly context-specific,[7–9] and knowledge of the long-term benefits of different MiFAS is lacking. This lack of knowledge perpetuates a system that encourages specialisation and prevents appreciation of the benefits of as well as innovation in mixed farming. To effectively value and remunerate the public goods provided by MiFAS, stakeholders must first understand MiFAS and acknowledge how they benefit society – both are still lacking among the public as well as among policymakers and administrators. Still, evidence-based policymaking requires a transdisciplinary perspective and consolidated knowledge of the conditions under which MiFAS deliver public goods.

To address the knowledge gaps surrounding MiFAS, it is essential to strengthen research support through increased funding and extended project durations. This enhances understanding of MiFAS impacts, provision of public goods, and optimal management strategies. Transdisciplinary and landscape-scale research needs to be encouraged. Farmers need to be involved as equal partners and appropriately remunerated for on-farm, participatory and long-term trials. In order not to hamper research progress, regulatory exemptions for research should be considered.

Collaborative systems involving all stakeholders should be set up to improve knowledge sharing and uptake of MiFAS research. Resources should be allocated to on-farm trials, lighthouse farms and landscape-scale living labs to raise awareness and encourage mutual learning, e.g. through cross visits and field days. A structured knowledge-sharing network should not only link farmers, processors, retailers, consumers, scientists, policymakers and administrators, but also include an accessible database to strengthen synergies and practical application.

Communication campaigns can raise awareness of the public goods provided by MiFAS. Depending on the content to be disseminated by a campaign, its intended recipients may differ between campaigns and may include the general public, farmers, value chain actors, and/or policymakers. Local campaigns should address local issues and should emphasize the benefits of mixed farming; for example, in terms of biodiversity, soil health, carbon sequestration, and the link to established values such as tradition and animal welfare. All campaigns should be transparent about the trade-offs involved, presenting both the benefits and drawbacks of mainstream and mixed farming systems.

Capacities of farmers and intermediaries

As noted above, the Strategic Dialogue highlights the knowledge gap in diversified farming practices and states that current vocational training systems favour specialisation over holistic systems thinking.[1] It calls for a review of education and training systems to support sustainable models of agriculture.

The prevalent specialisation paradigm in agriculture today results in deep but segmented knowledge among farmers and intermediaries, including vocational training institutions and extension services. In contrast to specialised agriculture, MiFAS depend on knowledge of a wide range of different farming practices. While knowledge of crop, livestock and fruit production is widely available but remains isolated or in silos, capacity building is increasingly important within the context of new, innovative but also traditional MiFAS that require specific as well as integrated knowledge.[11]

In view of this, curricula in schools, colleges and universities should be revised to include broader, systems-based perspectives for farmers and related sectors. Courses should be offered to help farmers explore diversification and mixed farming options, and to equip them and their workers with the skills for implementation and innovation. In addition, the promotion and integration of traditional agricultural knowledge with systems thinking should be encouraged.

There is a need for holistic extension services. Farm advisors with both broad and specific knowledge, as well as administrative skills can develop plans tailored to each farm using systems thinking and considering the landscape level. The long-term planning periods of the agricultural sector need to be matched by funding for such holistic advisory services.

Landscape perspective in strategies and decision making

Landscape level mixedness allows for the efficiency of specialised farming while improving circularity within a region, leading to greater sustainability. Interactions between farms can counteract specialisation tendencies of whole regions with negative consequences such as water eutrophication. The Strategic Dialogue recognises the importance of regional cooperation between farmers to counteract the negative effects of specialised agricultural landscapes.[1] It emphasises that landscape level strategies can improve sustainability and economic viability. Such strategies to achieve mixedness on a landscape level are called for to be able to promote cooperation between farms and across value chains, and to overcome

path dependencies. A landscape perspective also helps to identify potential synergies and constraints, to set objectives and to address problems of collective action.[8,14] Consequences that would be external to farm business considerations are, to varying degrees, internal in a landscape perspective. Thus, a shift to landscapes provides both the incentives and the means to address negative externalities of agriculture. In this context, it is important to bear in mind that trust, social cohesion and strong cooperation between all regional actors are the basis for achieving landscape-level objectives.

Long-term landscape strategies need to be jointly developed with all relevant stakeholders. They must not only account for specific regional needs and services along the value chain and in relation to agricultural practices affecting landscapes, but also consider overarching European policies and objectives, such as the Nature Restoration Law (NRL), Biodiversity Strategy, Soil Strategy or the European Climate Law. For example, the NRL is expected to have positive long-term effects on agriculture. However, there are initially short-term opportunity costs for farmers, which should be offset by agricultural policy or other funding.[15]

Improving access to farming system data through public data repositories will help enable landscape perspectives and promote evidence-based setting of targets. This entails a need to bolster the capacity of regional actors to analyse landscape-level information, as well as supporting better stakeholder involvement and strengthening the interface between research and policy.

Territorial mechanisms with "landscape coordinators" should be established to facilitate interaction between farmers, as well as with other stakeholders. Equipped with tools to build trust, resolve conflicts and create cross-sectoral agreements, such coordinators will encourage collaboration to achieve synergies and regional landscape objectives.

Regulatory and administrative frameworks

Administrative systems are often inadequate for MiFAS, as the diversity of farming practices within MiFAS leads to extensive bureaucracy and increased administrative burden.[11] This is directly related to regulatory coherence, as a lack of integration across regulatory domains can create barriers. However, stakeholders can develop practical, economically viable and mutually beneficial solutions through collaboration and continuous dialogue. In addition, as agriculture, including MiFAS, is a long-term endeavour, policies need to ensure long-term stability and adaptability, as returns on investments can take decades. The Strategic Dialogue recognises regulatory fragmentation and administrative burden as significant barriers to sustainable agriculture and emphasises the need for a simplified regulatory framework.[1] In the context of the transition to more mixed land use systems in Europe, it is important to note that such simplification must not be traded off against accountability and compliance with policies targeting overarching objectives (e.g. NRL, European Climate Law).

Administration must improve their understanding of farm management and set up farmer-friendly frameworks to reduce the administrative burden for MiFAS operators. In addition, regulatory frameworks need to be sufficiently stable to allow for long-term commitments and investments, while being flexible enough to accommodate different MiFAS and ensuring compliance with environmental legislation. Also, responsive and concise communication between administrations, farmers and intermediaries must focus predominantly on key obligations.

Strengthened interdisciplinary organisations, such as levy boards or producer organisations may facilitate knowledge transfer and collaboration. These organisations can act as intermediaries and provide practical feedback to administrators and policy makers to improve the coherence of policies and the support for MiFAS. In addition, fast-track communication and decision-making structures should be established at national or sub-national levels across different regulatory domains.

Long-term viability and competitiveness

MiFAS may face significant challenges in achieving economic viability due to reduced economies of scale, increased labour requirements etc. This is also underlined by the Strategic Dialogue, which identifies economic viability as a key challenge for small and mixed farms and emphasises the need for targeted financial support.[1] Profitability is often achieved long after the introduction of MiFAS, as some mixed systems require significant investment due to extensive changes in land management, purchase of new machinery and adaptation of production methods.

As of now, the range of public goods that MiFAS provide is not sufficiently remunerated by the markets. While there is some potential for specialised marketing to a sustainability-aware clientele, this approach has quantitative limitations. If the benefits of MiFAS are to be obtained at a larger scale, their respective products will additionally have to be incorporated into existing processing and marketing channels that deal with large amounts of agricultural goods with less regard to their origin and method of production. Therefore, the realisation of the transformation of the European

agricultural system must consider "the long-term investment cycles in the sector" and should be financed by both public and private capital.[1] This is especially relevant given that mixed farms will be more productive than specialised agricultural systems in the long term, in addition to the expected positive environmental effects.[10]

In order to ensure the economic viability of practices that provide public goods, the existing support framework must be assessed and adapted to the objectives of the agri-food system transformation (e.g. public money for public goods principle). Investment support schemes that encourage mixed farming at both farm and landscape level are needed to meet the different needs for the establishment and management of MiFAS. Additional support to offset increased costs and reduced income during the transition period needs to be accompanied by criteria for agri-environmental schemes to compensate for economic disadvantages and to support collective action at the landscape level. Finally, the promotion of value chains for MiFAS products, such as through cooperatives, can strengthen market positions by pooling resources and knowledge, helping to offset the challenges faced by smaller production systems.

Conclusion

Policy frameworks in European countries not only change over time, but are diverse, influenced by unique historical, cultural and socio-economic factors. They often consider specificities at the sub-national level, in natural conditions, traditional farming practices and the resulting cultural landscapes. Due to this diversity, the policy recommendations provided here are rather general and aim to address common challenges and opportunities across Europe. They include considerations that must be part of, but do not encompass the whole extent of tailored, subsidiary policies that are called for.

Several stakeholder groups each have a crucial role to play in facilitating transitions to mixed practices at different levels, including farm, inter-farm and landscape levels. Ideally, intermediaries, such as for example advisory and extension services, regional environment/climate protection managers or "landscape coordinators", can take all perspectives into account and effectively communicate requirements between all stakeholders. Farmers need financial, technical, and knowledge support for the adoption of mixed systems. Financial support, training in diverse farming systems, and specialized advisory services will help. Digital tools can aid decision-making, while farmer-led research and peer exchanges will promote practical learning and adaptation. Advisors and extension services are vital for the adoption of mixed systems, requiring specialized training in areas like crop-livestock integration and agroforestry. On-farm training, demonstration projects, and knowledge-sharing platforms will help improve advisory support and provide best practices. Farmer cooperatives and networks can support by enabling resource-sharing, cost reduction, and joint investments in infrastructure. They enhance efficiency, sustainability, and access to funding, while fostering trust and developing sustainable value chains. Guided by sustainability objectives, policymakers must reform regulations, simplify procedures, and provide financial support for adoption. A CAP targeting mixed farming with long-term funding as well as regional policies should prioritize areas with the greatest potential to benefit from diversification. Research needs to prove the sustainability and economic viability of mixed farming and involve farmers in research trials, while revised agricultural curricula need to embrace systems thinking. Endorsing sustainably sourced products in public procurement, including those from mixed farming systems, will stabilise markets and encourage the transition. Retailers can support mixed farming by increasing demand for sustainably produced food through awareness, certification schemes, and direct-to-consumer models. Encouraging retailers to include such products and running public campaigns will further boost market demand. Landscape planners should integrate mixed agricultural systems into land-use strategies, focusing on regions facing environmental challenges, while incentives for landscape-level transitions and regional coordination can align mixed farming policies with local priorities and encourage farm cooperation.

Although there is still a need for more research on mixed farming systems, the article demonstrates that an effective and targeted support policy at national and sub-national level will be necessary to realise a transition in European agriculture.

Outlook

This paper highlights the challenges of the transition to resilient MiFAS under the current policy framework as of spring 2025, and key challenges appear to persist as the EU's 2023 CAP implementation unfolds. The preparations for the post-2027 CAP are well underway, and both EU's Vision for Agriculture and Food[2] as well as the draft for the 2028-34 Multiannual Financial Framework have been met with scepticism and criticism, particularly regarding the preservation and protection of natural resources and public goods.[4,16] In the face of global developments, crises and geopolitical challenges, it remains to be seen to what extent the future of European agriculture will favour MiFAS. Considering the ongoing reform processes, the policy recommendations presented are timely and well positioned to inform the next CAP framework to support a more resilient, sustainable and integrated agricultural future for Europe.

Ethics and consent statement
Ethical approval and consent were not required.

Disclaimer
The views expressed in this article are those of the author(s). Publication in Open Research Europe does not imply endorsement by the European Commission, and the European Commission is not responsible for any use that may be made of the information contained therein.

Data availability statement
No data associated with this article.

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The abstract and the plain language summary were prepared using Generative AI tools (Chat GPT-4, November 2023; DeepL Write, January 2026), based on the article. Subsequently, the outputs were subjected to a thorough review by the authors and any issues identified were addressed before the parts were included in the final submitted version.

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Open Peer Review

Current Peer Review Status: ? ✓ ?

Version 2

Reviewer Report 24 March 2026

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Nicholas Jordan
University of Minnesota, Saint Paul, Minnesota, USA

Summary statement: This open letter provides an integrated set of actions to support the expansion of Mixed Farming and Agroforestry Systems (MiFAS) as part of a program of sustainability transition for European agriculture. After outlining the merits of MiFAS agriculture, the letter presents a policy proposal encompassing five major focal points (knowledge on public goods, capacities of farmers and intermediaries, landscape perspectives in decision making, regulatory and administrative frameworks and long-term viability and competitiveness). The letter appears to be motivated by a belief that it is "...increasingly important to advocate for sustainability and resilience goals as part of the next CAP.", because of various political processes that are tending to reduce emphasis on such goals.

Overview comment: In my opinion, this is an incisive policy proposal that provides a decently comprehensive account of leverage points to address systemic barriers to development and scaling of diversified farming systems that meet contemporary needs for multifunctional, resilient, and regenerative agroecosystems. I think that this concise review and synthesis of a broad policy agenda will be helpful to advocates and coalitions working on regional sustainability challenges. The text struck me as lucid and polished. As a person working to advance agricultural diversification on regional scales, I found it useful: interesting, informative, and energizing!

I do perceive a gap in the policy recommendations: policy related to organizing and supporting the dynamic processes of extensive scaling of Mixed Farming and Agroforestry Systems. Such scaling qualifies as a sustainability transition, I think. Supportive policy for the underlying processes of transition—according to current understanding of how sustainability transitions can be undertaken—would address matters such as support for transformative transdisciplinary initiatives in support of agricultural diversification, support for organization of regional transformation initiatives, support for public-sector leadership in organization and support for public/private/NGO cooperation on the timescales needed for sustainability transitions, and other measures in similar veins.

The point is that such policy is key to create enabling conditions for range innovation and

investments needed to pursue the policy agenda proposed by the authors. To add a broad account of this latter sort of policy would substantially enhance the scope of the article, and I don't think that is necessary. I do think it would be quite valuable for the authors to acknowledge that additional policy (and also policy experimentation and learning) will be necessary to support comprehensive implementation of the policy agenda that they have identified. Also, given the current situation – need for a comprehensive and systemic approach to supporting development and support, can the authors suggest any elements of strategy for organizing and implementing such an approach?

I have several more minor comments. First, I think it would be helpful for the authors to say a bit more about what their intentions are for this article. What is the intended audience, and how might this audience be benefited by the contents of the article? Second, and relatedly, it would helpful to the authors to be a bit more explicit about what knowledge gap(s) they are filling through this work. Lastly, it would help readers, I think, if the authors were to provide a few specific examples of "modern versions of MiFAS, providing a viable approach to achieving the EU's agricultural sustainability goals, including boosting rural employment and sustaining family farming."

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Partly

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: agroecology; agricultural diversification; sustainability transitions; innovation and scaling systems.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have

significant reservations, as outlined above.

Reviewer Report 25 February 2026

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Rosemary Venn
Coventry University, Coventry, England, UK

I appreciate the edits made by the authors and am happy for this to now be indexing.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 27 September 2025

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Rosemary Venn
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This open letter champions Mixed Farming and Agroforestry Systems (MiFAS) as a critical approach to Europe's agricultural transition, arguing the many benefits these mixed systems have on social, economic and environmental resilience. The letter positions itself at the intersection of diverging policy agendas seen in the European Commission's Strategic Dialogue on the Future of EU Agriculture, and Commissioner Hansen's Vision for Agriculture and Food. The letter draws on findings from the Horizon 2020 MIXED project as well as ongoing policy debate and negotiations. The authors identify five key areas for policymakers to focus on, which they argue will improve farmer uptake of MiFAS: knowledge on public goods, capacities of farmers and intermediaries, landscape perspectives in decision making, regulatory and administrative frameworks and long-term viability and competitiveness. These recommendations are situated within other Horizon 2020 project results such as AGROMIX and are supportive of each other.

The letter goes on to unpack the five key policy areas needed to promote the transition to MiFAS, with actions and recommendations put forward for different stakeholders (farmers, communities, policy makers), taking into consideration various barriers to transition. There is some discussion on the cost and / or feasibility of the recommendations put forward, but more could be included. The open letter is timely and relevant to ongoing discussions around CAP reform (post 2027), as well as local action needed.

If the authors unpacked a little more of the diverging policy interests and contexts, the case for MiFAS could be more strongly made and indeed, the rationale for the open letter made clearer. Not all readers will be aware of how significant the subtle shift away from the Strategic Dialogue and Green Deal for Europe is. Additionally, spending a bit more time in the text considering issues around productivity of MiFAS in the long term (vis a vis conventional agriculture) with climate projects would make the case for the MiFAS stronger.

Suggestions:

- Make the policy context clearer in the introduction, so the rationale of the open letter is more obvious.
- Setting the scene for non-MiFAS practitioners would be helpful and bring the open letter into scope of more readers. There is assumed knowledge on how these systems work, why they are no longer the norm, as well as their current support or lack of in agricultural policies. It might be helpful to include some land use figures for MiFAS as well as where in Europe these systems are best suited for development and support. There could be a link to 2025's summer heatwaves and fires discussed, positioning MiFAS in this context as climate resilient and adaptation.
- Including links to other key policies could give this open letter further reach and impact. I note this is also a suggestion from the first reviewer who mentions Nature Restoration Law. I agree with this and also suggest including or providing clear links to the EU Soil Strategy (and forthcoming Soil Monitoring Law) and European Climate Law.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)

Partly

Does the article adequately reference differing views and opinions?

Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?

Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)

Yes

Where applicable, are recommendations and next steps explained clearly for others to

follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Transitions to sustainable food systems via agroecology, agroforestry land use policy

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 27 Jan 2026

Holger Pabst

Responses to the Reviewers comments: **General remarks**: Reviewer: *More unpacking of diverging policy interests for clearer rationale and context of the open letter*

- Authors: The majority of the work on this open letter was carried out in spring 2025, based on EU documents relevant at the time, including those on the strategic dialogue and Commissioner Hansen's vision. Since then, discussions on the multiannual financial framework and the CAP 2027 have progressed inexorably, including some far-reaching and drastic changes (e.g. consolidation in the new fund, abandonment of the pillar principle and budget reductions) that could not have been foreseen at the time, at least not to this extent. Due to these fundamental changes in the political discussion, and given that this is a constantly changing and volatile field, the authors do not consider it advisable to revise the open letter or the methodology the closed MIXED project. Instead, we view the open letter as reflecting the status quo as of spring 2025. However, the introduction now includes a short paragraph regarding the aforementioned changes and discussions at EU level.

Reviewer: *More consideration of MiFAS productivity*

- Authors: We agree with the reviewer that MiFAS's productivity will be a decisive factor in determining the extent to which, and the speed at which, a transition can or will take place. We have therefore added some explanation to the paragraph on long-term viability and competitiveness. Unfortunately, the MIXED project does not provide any concrete information on the long-term productivity of the examined MiFAS, partly because the issue of productivity was not addressed in such detail. Nevertheless, we believe that the additional notes emphasise the importance of considering long-term productivity. We've also included an explanation of the diverging efficiencies in terms of labour and of non-labour resources in the introduction, which are major factors for productivity.

Reviewer's suggestions: Reviewer: *Clearer policy context in the introduction for a more obvious rationale of the open letter*

- Authors: See answer to general remarks and the changes on EU-Level

Reviewer: *More explanations around MiFAS*

- Authors: In the introduction, we added some short explanation of the traditionality of

MiFAS, with some examples, and that they are more and more falling behind today's technical agriculture – but also economically wise. Now bringing together new technique and tools with this old knowledge might lead to new MiFAS with multiple benefits to the environment but also economies. MiFAS encompass a multitude of different land use systems, although it would be nice to have, it is not possible to put this into single numbers, maps, etc. The authors are also of the opinion of it not being feasible to speak of areas best suited for MiFAS development. As an assumption, the most could be in already diverse agricultural landscapes, whereas the diversity reflects also the agricultural infrastructure as well as the processing and markets sectors.

Reviewer: *Better refer to other key environmental policies.*

- Authors: The authors consider this point raised by both reviewers to be valid. However, given the numerous changes in the environmental and agricultural fields at the EU level since spring 2025, it is debatable whether referencing legal acts such as the NRL or the EU Soil Strategy would enrich the article. Given the current volatile political environment and declining focus on environmental and climate targets within the EU and worldwide, the authors have decided against incorporating such references in detail. However, the revised version briefly mentions possible synergies with relevant legislation in the fields of nature conservation and the environment. See chapter on landscape perspective in strategies.

Competing Interests: No competing interests were disclosed.

Reviewer Report 26 July 2025

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Elsa Varela
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This open letter discusses the role of Mixed Farming and Agroforestry Systems (MiFAS) in Europe's transition toward more sustainable, resilient agricultural landscapes. The authors argue that MiFAS offer significant environmental and social benefits, including improved resource efficiency, biodiversity conservation, and climate adaptation. The paper identifies five key policy areas necessary to support the transition: knowledge on public goods, capacities of farmers and intermediaries, landscape-level strategies, regulatory and administrative frameworks, and long-term economic viability. The recommendations draw on findings from the Horizon 2020 MIXED project and are positioned as timely contributions to ongoing debates around the EU Common Agricultural Policy (CAP) and the European Green Deal.

Overall, this is a well-structured and timely manuscript that provides relevant insights for policymakers, researchers, and practitioners working on agri-environmental policy and mixed farming. The paper is accessible and synthesizes a large body of work, including project findings and stakeholder dialogues.

Use of Citations and Examples
While most statements and arguments are supported by references (notably to the MIXED project deliverables and EU policy documents), some sections—particularly those relating to behavioural barriers, payment schemes, and value chain development—would benefit from additional examples and citations to strengthen credibility.

Overall Assessment
This is a relevant and well-organized paper that addresses a timely topic and contributes useful policy recommendations. I provide some detailed comments below aimed to make the article more robust and practically valuable.
I look forward to seeing a revised version that incorporates these suggestions.

Detailed comments and suggestions
1. Contextualization of the Extent and Potential of MiFAS
The introduction would benefit from a clearer quantification of the current prevalence and distribution of MiFAS in Europe, as well as estimates of their potential expansion.This context would allow readers to understand both the baseline and the opportunity for increasing MiFAs land uses.

2. Framing of innovation and competitiveness
The manuscript at times appears to frame sustainability and innovation/competitiveness as competing priorities. In practice, innovation—including technical, organizational, and social innovation—will be essential for MiFAS to remain economically viable and it can be a driver of both sustainability and competitiveness. Consider adding examples of innovative practices or technologies that enhance MiFAS performance (e.g., precision grazing, collaborative machinery use).

3. Labour Intensity and Family Farming
The letter notes that MiFAS are more labour-intensive but does not link this to broader structural trends, such as the decline of family farms. I would maybe consider briefly discussing whether support for MiFAS could also help sustain family farming structures and rural employment.

4. **Target audience for communication campaigns**
The manuscript recommends communication campaigns but does not specify their target audience. Please clarify whether these campaigns are aimed at the general public, policymakers, supply chain actors, or multiple audiences. This will help readers assess the feasibility and intended impact of such campaigns.

5. Opportunities under the Nature Restoration Law
The authors mention a number of relevant policies, but I woudl like to draw their attention to the recently passed NRL. I reckon that to enhance the policy relevance of their letter, the NRL can be at least briefly mentioned, since it introduces binding targets and funding mechanisms that may be relevant for MiFAS to create additional incentives or funding streams for MiFAS transitions.

6. Behavioural factors affecting shift towards sustainable practices
The manuscript emphasizes structural and economic factors but less so behavioural aspects that can play a key role in farmers' adoption of sustainable practices. I would briefly reflect on how behavioural and cultural factors shape adoption, potentially citing relevant literature (e.g., Barnes et al. 2019 on behavioural change in agri-environmental schemes).

7. Indicators and result-based payments
The authors note the importance of developing indicators for policy making. This links to transforming also the payment schemes and monetary incentives towards more result-based payments. Referring briefly to this shift towards result and not only practice -based payments would also address the need for stronger evidence and examples supporting statements about incentives.

8. Value Chains and Market Integration
There appears to be some inconsistency between integrating MiFAS products into existing value chains and developing dedicated value chains. Please clarify how these approaches might be sequenced or combined. Are dedicated value chains envisioned as transitional measures before mainstream integration?

9. Definition of Intermediaries
The term “intermediaries” is used in the conclusions without specifying which actors this includes. Please, clarify which organizations or individuals are considered intermediaries (e.g., cooperatives, advisory services, supply chain coordinators).

References
1. Schaub S, Ghazoul J, Huber R, Zhang W, et al.: The role of behavioural factors and opportunity costs in farmers' participation in voluntary agri-environmental schemes: A systematic review. *Journal of Agricultural Economics*. 2023; **74** (3): 617-660 Publisher Full Text

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Yes

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Agroforestry systems; Economic valuation of public goods; socioeconomic dimensions of wildfires; farmer's adoption of agro-environmental schemes

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 15 Aug 2025

Holger Pabst

Dear Elsa, Thank you for providing this valuable review of our article — you certainly have some valid points. Please note that we are currently waiting for the second review before we start revising the open letter. Regards, Holger

Competing Interests: No competing interests were disclosed.

Author Response 27 Jan 2026

Holger Pabst

Responses to the Reviewers comments: **General remarks:** Reviewer: *More use of external citations for better credibility.*

- Authors: We added more scientific citations where feasible.

Reviewer's suggestions: Reviewer: *Contextualization of the extent and potential of MiFAS*

- Authors: In the introduction, we added some short explanation of the traditionality of MiFAS, with some examples, and that they are more and more falling behind today's technical agriculture – but also economically wise. Now bringing together new technique and tools with this old knowledge might lead to new MiFAS with multiple benefits to the environment but also economies. MiFAS encompass a multitude of different land use systems, although it would be nice to have, it is not possible to put this into single numbers, maps, etc. The authors are also of the opinion of it not being feasible to speak of areas best suited for MiFAS development. As an assumption, the most could be in already diverse agricultural landscapes, whereas the diversity reflects also the agricultural infrastructure as well as the processing and markets sectors

Reviewer: *Framing of innovation and competitiveness*

- Authors: The authors did not intend to present sustainability and innovation/competitiveness as competing priorities. Rather, they see them as mutually beneficial. We have therefore rephrased the relevant paragraphs where

appropriate.

Reviewer: *Labour Intensity and Family Farming*

- Authors: We have included this in a section of the introduction that also clarifies what we mean by traditional MiFAS and where we try to clarify the relation of traditional and modern ones.

Reviewer: *Target audience for communication campaigns*

- Authors: We revised the respective paragraph to make it clearer that the target audience and the intended recipients of the information campaigns may vary depending on the context and content of the campaign.

Reviewer: *Opportunities under the Nature Restoration Law*

- Authors: The authors consider the point raised by both reviewers to be valid. However, given the numerous changes in the environmental and agricultural fields at the EU level since spring 2025, it is debatable whether referencing legal acts such as the NRL or the EU Soil Strategy would enrich the article. Given the current volatile political environment and declining focus on environmental and climate targets within the EU and worldwide, the authors have decided against incorporating such references in detail. However, the revised version briefly mentions possible synergies with relevant legislation in the fields of nature conservation and the environment. See paragraph regarding landscape perspective in strategies and reference to the NRL as well as other environmental policies.

Reviewer: *Behavioural factors affecting shift towards sustainable practices*

- Authors: We have now noted that in addition to cultural factors, behavioural ones are also relevant to adoption, as conceptualised in the project as a knowledge-intention-action process, and reference as the source a deliverable from the MiXED project.

Reviewer: *Indicators and result-based payments*

- Authors: Although we would welcome the idea of a shift towards more results-oriented funding, we deliberately did not elaborate on this approach in the article. This is mainly because there are currently few results-oriented funding measures in place. This, in turn, is linked to the problem of verification, which is based on sufficient knowledge of the relevant agricultural practices. We therefore focused on the recommendation to expand research, as we consider this to be a prerequisite for any results-oriented funding. Nevertheless, the establishment of such funding remains questionable in view of the numerous and complex MiFAS. The conclusion referred to sustainability indicators. To avoid misunderstandings and achieve greater clarity, this was changed to objectives.

Reviewer: *Value Chains and Market Integration*

- Authors: We hope to have clarified this by spelling out that both approaches are necessary and complementary; we cannot, however, speak to specifics in sequencing or combination, as we have no data on that and suspect they will be highly individual to value chains, What is clear is that marketing MiFAS products as specialty, niche products, while it has advantages in terms of appreciation and prices that can be realised, is not scalable to what is needed in the face of the necessary transition of the agri-food system.

Reviewer: *Definition of Intermediaries*

- Authors: This is a valid point. The reviewer is right in both points, a) the term intermediaries was not clear enough, and b) the term relates advisory and extension services and cooperatives, etc. We revised the text accordingly.

Competing Interests: No competing interests were disclosed.