MIXED

EFFICIENT AND RESILIENT MIXED FARMING & AGROFORESTRY

MIXED	
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Please note that this deliverable reflects only the authors' views and that the Commission is not responsible for any use that may be made of the information it contains.

Change log – Table of changes

Comment in review report	Response to comment	Page, section (paragraph)
-	Executive summary adjusted	Executive Summary – final paragraph.
-	Introduction Adjusted	Chapter 1. Introduction – final paragraph.
Provide the themes foreseen for the next batch of PAs.	For the next batch of Practice Abstracts (M36), we will prepare 14 practice abstracts with more practical results from the networks, Each of the 14 networks will identify 2 topics and provide 2 practice abstracts that related to very practical results concerning the MiFAS they are doing. Could be challenges they have overcome, or the focus of their action research project which are to be initiated/implemented over the next year.	Chapter 2, from paragraph 5 and above
Work on foster the multiplying factor of National Teams (National Teams sharing with other NTs) to reach a larger set of primary producers. Make Practice Abstracts relevant for practitioners.	In fact, the first batch of PA submitted was more about the project and the first results. Since we did not have many results at that time, this first batch of PA was more about communication than dissemination. Nevertheless, Communication is also important, especially in the first year and half of the project. Anyway, we will work in 7 additional PA until M36 (the second batch will have 14 instead of only 7) to include results from each of the networks and work together with the National Teams to make PA relevant for the practitioners.	Chapter 2, from paragraph 5 and above
Translate Pas in main consortium languages to ensure wide dissemination among farmers.	Translation of Practice Abstracts was not foreseen in the budget and in the proposal stage. However, towards the end of the project we will consider translation of PA based on available resources, as we agree that it would strengthen dissemination.	Chapter 2, paragraph 9

Important practice abstracts, created also in other projects. The outcome from the initial workshop (D1.1) is being used here. *The practice abstracts are based on literature review on the themes? Practice abstracts (PAs) are intended to provide technical information in a digested way targeted to practitioners. In the PAs produced so far the content is very focused on project presentation.*	In fact, as mentioned, the first batch of PA submitted was more about the project and the first results. Nevertheless, the EIP-AGRI was invited to our consortium meeting, in September 2021, and at that time they didn't make any remarks regarding the themes of the practice abstracts, and they were approved as such to be published in their own platform. Still, we will work in 7 additional PA until M36 (second batch) to include results from each of the networks and work together with the National Teams to make PA relevant for the practitioners. For the next batch of Practice Abstracts (M36), we will prepare 14 practice abstracts with more practical results from the networks, with the topics identified by them.	Chapter 2, from paragraph 5 and above
	Conclusions adjusted	Chapter 3 revised.

Executive Summary

To optimise out-reach and efficiently disseminate the results of the MIXED project, WP7 will seek collaboration with existing European projects, platforms and networks. Collaboration and exchange of knowledge with other networks, projects and/or initiatives in Europe that are implementing or developing mixed farming and/or agroforestry systems will also be promoted, at both regional/national and EU level.

MIXED will connect the project and the dissemination of its results with EIP-AGRI, through the production of practice abstracts to be disseminated through the EIP-AGRI website and to seek connections with relevant Operational Groups, Focus Groups, and Thematic Networks at national, regional and EU level.

The resulting innovative knowledge and easily accessible end-user materials from this project should feed into the EIP-AGRI website for broad dissemination. Practice Abstracts will be an important part of the dissemination to target end-users, in particular the practitioners. With task 7.2b and task 7.3, the project wants to flag an open approach and create as much synergy as possible with other initiatives, within the EIP-AGRI platform.

In MIXED we expect to produce a total number of 35 practice abstracts, of which expected 28 will be based on experiences from the 14 networks.

Abbreviations

D	Deliverable
EC	European Commission
EIP-AGRI	The agricultural European Innovation Partnership
MiFAS	Mixed farming and agroforestry systems
NT	Network
PA	Practice Abstract
WP	Work Package
WT	Work Task

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1 Introduction

Agricultural systems in Europe face challenges in terms of economic, ecological, and societal performance. Faced with climate change and increasing weather extremes, there is a need to strengthen the resilience of European agricultural production systems and at the same time ensure efficiency of production in terms of the use of resources such as water, nutrients, land, and ecosystem services – thus creating balance and synergy between efficiency and resilience. It is hypothesised that more mixed farming and agroforestry systems (MiFAS) have increased resilience and climate adaptation potential, with a more integral coupling of nutrients and carbon cycles, a diversified ecosystems service delivery and a better 3-dimentional utilization of resources, which could be part of the solution and therefore should be explored. Adopting a holistic perspective, we define efficiency as the ability to simultaneously increase production, decrease input use, and reduce negative environmental and social impacts, including greenhouse gas (GHG) emissions. We define resilience of farming systems as their ability to ensure the provision of system functions in the face of increasingly complex and accumulating economic, social, environmental, and institutional shocks and stresses, through capacities of robustness, adaptability and transformability. MIXED recognizes that efficiency and resilience must be developed with farmers and in the contexts in which farms, farmers' organizations, service suppliers and value chain actors operate.

The overall project objective is to: *support the development of European Mixed Farming and Agroforestry Systems (MiFAS) that optimize efficiency and resource use, reduce GHG emissions, and show greater resilience to climate change by considering agronomic, technical, environmental, economic, institutional, infrastructure and social advantages and constraints.*

The project has a multi-actor, multi-scale, and transdisciplinary approach with focus on:
- Co-creation of knowledge and innovations for enhanced MiFAS
- Development and assessment of MiFAS
- Decision-support for MiFAS
- Dissemination and communication

The specific objective of Dissemination and Communication (Work Package 7) is to: *facilitate the dialogue between scientists, farmers, policymakers, society, and other stakeholders, promote the flow of knowledge regarding efficient and resilient MiFAS, and increase the adoption of innovative practices and new business models by farmers.*

Dissemination and Communication (Work Package 7) is divided into the following tasks:
7.1 Communication planning, coordination, and implementation (Lead: AU-ICROFS)
7.2 Dissemination and exploitation planning, coordination, and implementation
  7.2.a General dissemination and exploitation planning, coordination, and implementation (Lead: AU-ICROFS)
  7.2.b Farmer-to-farmer knowledge exchange and dissemination (Lead: CONSULAI)
7.3 Linking with projects, platforms and networks for enhanced dissemination and communication (Lead: CONSULAI)

CONSULAI leads Task 7.2.b and Task 7.3, supported by AU-ICROFS. The preparation of practice abstracts and facilitation of collaboration with the EIP-AGRI are included in these tasks.

This deliverable is focussed on the first 7 practice abstracts, and has been prepared according to the results that we had on that time, so they were more focused on the project and its first results.

Nevertheless, we will work in 7 additional PA until M36 (the second batch will have 14 instead of only 7) to include results from each of the networks and work together with the National Teams to make PA relevant for the practitioners, for farmer-to-farmer knowledge exchange, practitioners, and other end-users and for dissemination of results and collaboration with the EIP-AGRI.

2 Practice Abstracts

The primary objective of the EIP-AGRI Service Point is to stimulate the interaction between all people involved in the EIP-AGRI network, including farmers, researchers, advisers, NGOs, public authorities in Member States, businesses, and other interested parties. This objective is achieved by:

- gathering and disseminating information from research and innovation project and creating an effective flow of information via the EIP-AGRI website
- bringing together innovation actors in Focus Groups, seminars and workshops to exchange information and experiences on various topics, and
- connecting with other relevant networks at national, regional and/or local levels.

The resulting innovative knowledge and easily accessible end-user materials from this project should feed into the EIP-AGRI website and tools for broad dissemination. The end-user materials to be produced contain a substantial number of summaries for practitioners in the EIP common format ("Practice Abstracts" - short summary of max 1500 characters (word count – no spaces) which describes the main information/recommendation/practices that can serve the end-users in their daily practice). A full package of Practice Abstracts is needed for the project, containing all the outcomes/recommendations, which are ready for practice. The guidance to be followed for these Practice Abstracts and some explanatory text is available on the EIP-AGRI web site (http://ec.europa.eu/eip/agriculture/en/content/eip-agricommon- format).

In addition to collaborate with the EIP-AGRI to facilitate the publication of MIXED dissemination materials and to potentiate the dissemination of project results (task 7.3), the MIXED project aims to develop 35 Practice Abstracts.

- ✓ A target number of a total of 7 Practice Abstracts is foreseen by month 18.
- ✓ A target number of a total of 14 Practice Abstracts is foreseen by month 36.
- ✓ A target number of a total of 35 Practice Abstracts is foreseen by month 48.

CONSULAI faciltates the preparation of Practice Abstracts, helps the NTs select the focus of the Practice Abstracts and ask for content for Abstract preparation. CONSULAI collated all the contents delivered by the NTs, organises the text and submit the Practice Abstracts to the EIP-AGRI platform, to reach the targeted number in due time. CONSULAI also prepared this Deliverable (7.8) for submission, according to plans (D7.8: month 18/March 2022; D7.9: month 36/September 2023; and D7.10: month 48/September 2024).

Table 1 - Practice abstracts – summary.

Practice Abstracts	
Who	**CONSULAI** facilitates the preparation of Practice Abstract, help the NTs select the focus of the Practice Abstracts and ask for contents. **Network coordinators** prepare and send the contents to CONSULAI
What	EIP-AGRI - practice abstracts
Objective	Increase the dissemination of project results

Practice Abstracts	
Success indicator	35 Practice Abstracts (in English) are foreseen by month 48
When	March 2022: 7 Practice Abstracts September 2023: 14 Practice Abstracts September 2024: 14 Practice Abstracts
Output	Practice abstracts: published in EIP-AGRI platform

Since we experienced that month 18 was too early for results related to practices at field level, this first batch of PAs were used to disseminate the MIXED approach to engaging multi-actors, lessons learnt from the so-called back-casting workshops in 10 countries, the MIXED framework developed in the project for studying and assessing MiFAS, a handbook of indicators which will form the basis for the data collection in the project, an initial introductory review of research projects and the wider literature on the topic of mixed farming and agroforestry in Europe, as well as information about activities in two of networks. We expect that these results would be relevant to some groups of practitioners (coordinators and policy makers) working at project level.

Although the next batch of practice abstracts (deliverable 7.9) is only planned to be submitted on Month 36 (September 2023), we are already working on that. The second batch will have 14 PAs instead of only 7 to include experiences from each of the networks. We will work together with the National Teams to make the PAs relevant for practitioners. Therefore, we will have a total of 14 practice abstracts by September 2023 and a total of 35 practice abstracts by the end of the project – September 2024 (only a total of 28 were foreseen in the proposal).

Each of the 14 networks are already identifying two topics for practice abstracts that related to very practical results concerning the MiFAS they are doing. These themes could be challenges they have overcome and would like to share with other farmers, or the focus of their action research project which are to be initiated/implemented over the next year. The networks are different in terms of focus, relations and collaboration, and the PA will therefore also present a variety of different experiences and lessons learnt to share.

Identification of lessons learned to be disseminated through PAs is an ongoing process. The following list includes tentative topics for the next PAs for some of the networks:

- Austria
  1. Feeding laying hens in a mixed system: Orchards as a feed resource
  2. A guide for construction of small mobile chicken barns for an agroforestry system

- Denmark – Network 1:
  1. Selection of species: Designing Agroforestry systems with different tree species for different effects in Denmark
  2. Development of systems: Designing spatial Agroforestry systems for management and impact in Denmark
  3. Maneuvering the rules of agricultural subsidies for Agroforestry in Denmark.

- Denmark – Network 2:
  1. MIXED agricultural landscapes via farm collaboration

2. Organic pigs and willow

- France 1:
  1. Logistic and regulatory barriers to crop livestock exchange among farms
  2. Mid-term effects of organic matter (manure, green wastes, etc.) applications on cropped soils

- France 2:
  1. Improving the Pig Agroforestry system: how to improve the fodder tree production?
  2. Improving the Pig Agroforestry system: how to improve the tree protection?

- Germany 1:
  1. Climate protecting farming: Possible uses of paludiculture
  2. CO2 storage through extensive grazing in wetland areas

- Germany 2:
  1. A citizen science approach to monitor agroforestry systems
  2. Agriculture, agroforestry and public relations work

- Netherlands:
  1. Intra-farm cooperation between arable and dairy farmers in the Northeast of the Netherlands - Bottlenecks and opportunities of intra-farm cooperation between arable and dairy farmers
  2. Impact of intra-farm cooperation between arable and dairy farmers

- Poland:
  1. Good practices on establishing tree belts in agricultural landscapes
  2. Growing seedlings from trees/ establishing a tree nursery

- Portugal:
  1. Good practices to avoid desertification in the Montado mixed systems
  2. Increasing the Montado production efficiency through emergetic assessments. Good management practices

- Romania:
  1. Improving valorization of local agri-food products through agrotourism
  2. Inputs for agritourism guesthouses obtained in the agricultural holdings of mixed farms

- Switzerland:
  1. Participatory methods for consolidating a community of practice network: The example of a Swiss network to promote high stem fruit trees
  2. Strategies to improve tree protection in the Swiss High stem fruit growing system.

- United Kingdom 1:
  1. Returning Livestock to Arable Farms: outwintering breeding cattle on crop stubbles

2. Returning Livestock to Arable Farms: benefits of a 3 year grass ley to an arable system

- United Kingdom 2:
  1. Quality of winter cereals as forage
  2. The practice of grazing sheep on winter cereals

Translation of Practice Abstracts was not foreseen in the budget and in the proposal stage. However, towards the end of the project we will consider translation of PAs based on available resources, as we agree that it would strengthen dissemination.

2.1 Project Information submitted to the EIP-AGRI platform

Objective:

MIXED supports the development of European Mixed Farming and Agroforestry Systems (MiFAS) that optimize efficiency and resource use, reduce GHG emissions, and show greater resilience to climate change by considering agronomic, technical, environmental, economic, institutional, infrastructure and social advantages and constraints. The project will assess impacts of MiFAS at farm, landscape and value chains level, in collaboration with networks of farmers, and support the transition to MiFAS through farmer-to-farmer exchange of knowledge and decision support at farm and policy level.

Description of project activities:

- Co-creation of knowledge and innovations for enhanced Mixed Farming and Agroforestry Systems (MiFAS)
- Development of efficient and resilient MiFAS and assessment of effects of MiFAS on environment, climate change resilience and other ecosystem services
- Decision-support for MiFAS to ease farmers' transition to MiFAS
- Estimations at multiple scales of consequences of the introduction of MiFAS for the development of supporting policies
- Communication of MiFAS and dissemination of project results

Description of the context of the project:

MIXED explores the benefits of mixed farming and agroforestry systems (MiFAS) to climate, environment, and society in general and support the further development of such systems. The assumption is that MiFAS have the potential to be both efficient and resilient and at the same time and provide eco-system services for the benefit of society and the environment. The different networks (organic and conventional farmers) have different knowledge and experience that others can benefit from. In MIXED, we create the opportunity for farmers to learn from each other and for researchers to learn from and generate new knowledge from undertaking research together with farmers. The project works with these groups of farmers and develop networks across Europe covering a wide range of different mixed agricultural and agroforestry systems. Joint activities between researchers and farmers will create valuable scientific knowledge about the methods and systems, how best to facilitate a wider take-up of MiFAS across Europe and how policies can support this.

MiFAS come in many shapes and dimensions – operating within a field, a farm, between farms or even in an entire landscape or food-chain. The concept aims at optimizing the use of resources

through collaboration and diversified production (crops, trees, animals) where the different enterprises benefit from each other. Resources can be used more efficiently in MiFAS, for example, by using crops, grasslands and woody vegetation to feed and shelter animals and fertilise fields with manure from the animals, as well as provide benefits such as sequester carbon in the system and improve biodiversity.

Additional information on the project:

Who: MIXED consists of 19 partners from 10 different EU countries, with Aarhus University, Department of Agroecology in Denmark, as the coordinator of the project. MIXED is using a multi-actor approach whereby various stakeholders will be involved throughout the project.

Where: MIXED involves 10 networks of farmers that practice or are in the process of transforming to MiFAS across Europe, including Austria, Denmark, France, Germany, Poland, Portugal, Romania, Switzerland, The Netherlands, and United Kingdom.

What: Systems such as different forms of organic and non-organic agroforestry, land/manure/nutrients as well as grazing exchange between arable and livestock farmers, (re)wetting of arable land in livestock arable land exchange and agrotourism are all represented in the MIXED networks.

When: The project duration is from October 2020 and 4 years onwards.

2.2 Practice Abstracts submitted to the EIP-AGRI platform

Practice Abstracts will be an important part of the dissemination to target end-users. With this task, the project wants to flag an open approach and create as much synergy as possible with other initiatives, within the EIP-AGRI platform.

At the time of the first submission of D7.8 (March 2022), this were the 7 practice abstracts prepared, focus on the the project and the first results, since we did not have many results at that time, this first batch of PA was more about communication:

PA 1: MIXED multi-actor and participatory approach

The project recognizes that agricultural sustainability, efficiency, and resilience must be developed with farmers and in the contexts in which farms, farmers' organizations, service suppliers and value chain actors operate.

In the MIXED project, the hypothesis is that the development of more Mixed Farming and Agroforestry Systems (MiFAS) is key to delivering multiple needs. Researchers, advisors and farmers will work together with other actors in the rural environment to demonstrate this in selected collaborative networks of farmers in 10 countries across Europe, serving as showcases for successful implementation of MiFAS.

Multi-actor approach: In each of the 10 countries the project is implemented by a national team of researchers, a network coordinator (NGO, farmers' organization, or consultancy), and a network/group of farmers practicing. Project activities aimed at developing MiFAS involves research pilots at farm level as well as landscape level and value chains. Furthermore, the activities aimed at developing decision support for farm level as well as policy level will in the process address stakeholders at multiple levels.

Participatory approach: Co-creation of knowledge and innovations is fundamental in MIXED. The project involves a series of workshops with the networks of farmers focussed on bottlenecks and

solutions. Through the workshops small-scale action research projects supporting the development and implementation of MiFAS will be identified and implemented by farmers.

Farmer-to-farmer dissemination: To facilitate that the knowledge generated by farmers will be made available to other farmers, the national teams will document this in videos, photos and storytelling made available at the project website mixed-project.eu and through various social media as well as through field days and stakeholder workshops.

Read more on co-creation of knowledge and innovation in MIXED: https://projects.au.dk/mixed/mixed-research-step-by-step/co-creation-of-knowledge-and-innovations

PA 2: Common visions for mixed farming and agroforestry systems in Europe – but different pathways to get there

To develop an understanding of the current state of mixed farming in Europe a participatory back casting approach was implemented in the MIXED project to identify possible transition pathways to future sustainable mixed farming systems. “Back casting” sets targets at a future date based on expert judgment, best available technologies, and other factors, with technical pathways subsequently developed for achieving those targets by working backwards in time towards the present. It is a problem-solving approach which enables stakeholders to set priorities, rank solutions and identify steps that need to be taken (and when) to reach desired outcomes.

The back casting workshops were conducted in all 10 countries participating in the MIXED project. In total 13 workshops took place in the UK (Scotland), Austria, France (2), Germany (2), Denmark (2), Portugal, Poland, Switzerland, Romania, and The Netherlands.

The following six broad themes of challenges were identified from the workshop outputs:

- Technical issues
- Knowledge and skills
- Farm business
- Supply chain
- Policy
- Cultural challenges

Each of these individual challenges is further divided into sub-categories. The full report and overview of categories can be found here:

https://projects.au.dk/fileadmin/projects/mixed/MIXED_D1.1.pdf

Outputs from the back casting workshops are extremely important for not only providing context for the development of mixed farming and agroforestry in Europe but they also provide alternative future pathways and scenarios for testing in the various activities in MIXED.

PA 3: New comprehensive catalogue of scientific literature about mixed farming and agroforestry (D3.1)

The project MIXED has completed an initial introductory review of research projects and the wider literature on the topic of mixed farming and agroforestry in Europe.

The result of this thorough literature study is a comprehensive catalogue, which can be used as a go-to resource for the further work in the MIXED project. The catalogue can also be used as a solid starting point by other projects within mixed farming and agroforestry as a field of research.

The present catalogue contains a database of literature bibliography of 882 records and a Project Matrix of 52 projects and their focus areas. Even though the content of the database is comprehensive, the catalogue cannot be considered as a complete list.

A point worth paying attention to when reviewing the existing literature, is that mixed farming and agroforestry is a very broad concept and the complexity surrounding its definition can pose challenges on the selection between what is included and what is not. As an example, organic farming systems often are within the definition of a mixed system but may not identify themselves as such. For that reason, there may be further relevant research projects that are not included in the present catalogue – not because such research projects were discarded, but because of differences in terminology and categorisation and therefore may not have been identified.

Furthermore, 22 projects from France were discarded from the analysis, because the dissemination of the research projects were not available in English, which highlights another potential barrier for knowledgebase sharing in the broad field of mixed farming and agroforestry.

Read more https://projects.au.dk/fileadmin/projects/mixed/MIXED_D3.1.pdf

PA 4: Framework for development of mixed-farming and agroforestry systems

In the MIXED project, a framework is needed to give a general context to all the activities, including participatory workshops, data collections, and modelling. The framework includes conceptual tools for studying the transition to Mixed Farming and Agroforestry Systems (MiFAS) and for assessing its performance. Transition to improved MiFAS is expected to be key to climate-change adaptation and to promote farming systems not only merely focused on food production, but also on other ecosystem services, while being financially attractive, efficient in resource use, and resilient to fluctuating environmental and socio-economic conditions. Assessing the performance of a MiFAS is an important condition for promoting and guiding its transition, therefore, the MIXED framework provides ways of assessing environmental, economic, and social aspects, along with aspects related to resilience and efficiency. First, the framework defines the concept of 'mixedness' at different levels: farm, landscape, value chain, country, Europe. Thereafter, it explains

- The transition to MiFAS at all levels along with barriers and enables to transition
- The concepts of sustainability, efficiency, and resilience.

The framework may be adapted and applied to other projects or initiatives that address transformation to more efficient and resilient production systems in complex, multidisciplinary and multidimensional system.

Read more https://projects.au.dk/fileadmin/projects/mixed/MIXED_D6.1.pdf

PA 5: Handbook of indicators – a basis for assessing changes in system functioning, farm management for efficiency and resilience

The project, MIXED, has developed a supportive guide - the Handbook of indicators - to be used in the collection of farm level data across all work areas in MIXED.

The list of indicators in the Handbook includes basic agronomic and environmental indicators, and indicators developed to measure integration from the point of view of the farming system. The indicators and data collection points described in the Handbook addresses soil, crop, livestock, environmental impacts, economics, social aspects, the position of farmers in respective value chains and efficiency and resilience of Mixed farming and agroforestry systems (MiFAS).

The process of making the Handbook of indicators

Indicators of resilience and efficiency at farm level were collected and discussed among the researchers responsible for analysing mixed farming systems in the project. After extending this into

a first list of indicators among the authors - the list was discussed, refined, and prioritized according to relevance for efficiency and resilience of MIFAS and the needs of project partners.

The Handbook is a base for data collection in MIXED

The Handbook is not a full and completely comprehensive list of any indicators you might think about, it is a *base* for data collection. In many cases there will be a need for adaptation to the individual MiFAS situation - each MIFAS has its own specificities and additional indicators may be necessary.

Read the full description of "Handbook of indicators and methodology for assessing changes in system functioning, farm management for efficiency and resilience": https://projects.au.dk/fileadmin/ingen_mappe_valgt/PDFs/MIXED_D2.2.pdf

PA 6: Integrated production of pastures, cork, and high value meat products – the Montado mixed system

In Portugal the MIXED project is implemented by ISA-UL, CONSULAI and a network of farmers practicing Mixed Farming and Agroforestry Systems, in particular the Montado, a UNESCO protected Mediterranean mixed system, comprising agroforestry activities and extensive livestock production. The Montado system is dominated by scattered oak trees (*Quercus suber, Q. ilex, Q. rotundifolia*), associated with pastures, forages, or feed crops. The livestock (beef cattle, sheep, goats and/or pigs) is characterised by low stocking rates, adapted to the poor soils and unfavourable climate conditions of the region.

Farmers joined the MIXED network in Portugal with a motivation of sharing experiences and improving their practices. Climate change and soil degradation, as well as poor crop management practices, have opened the floor to the decline of the Montado, due to low organic matter contents, soil erosion, and the proliferation of pests. A new paradigm is required to adapt to climate change, while ensuring the economic viability and environmental sustainability of the farms.

The Portuguese network aims at restoring and modernising the Montado ecosystem, by working in collaboration with farmers, researchers, policy makers and other stakeholders. The main objective is to find solutions for the future and develop more sustainable management practices, accommodating the interests of stakeholders at all levels of the value chain.

The network integrates 15 farms, with over 20.000 hectares of farmland in the Alentejo region, south of Portugal. The aim is to share experiences and improve practices to be both efficient and resilient, increasing economic returns and providing eco-system services for the benefit of society and the environment. Read more (https://projects.au.dk/mixed/networks-national-teams/portugal)

PA 7: Improved nutrient cycling and green biomass production via biorefinery and farm collaboration

In Denmark, MIXED is working with a subgroup of 8-15 farmers, practicing a mix of livestock and crop production, situated in a watershed with shallow estuaries and groundwater reservoirs for drinking water extraction, vulnerable to nitrogen leaching (168,000 Ha), where farmers are required to reduce the nitrate leaching significantly. Together with MIXED they will investigate ways of doing that with focus on a new biorefinery technology combined with biogas production and sustainable grassland management.

The bio-refinery technology can transform grass to a high-quality protein, e.g. to be used for a growing organic pig and poultry production (SuperGrassPork) independent of imported soybean based protein, and with two by-products - a fibre-pulp for ruminant fodder, and a ‘juice’ that can also be used for biogas production and bio-based fertilisers for fodder and cash crops. The group of farmers are part of a larger initiative – a collaboration between Aarhus University, local municipalities, farmers and bio-based industries, with the objective to support local food production, a more circular economy, and at the same time protect environment and reduce climate impacts.

It is expected that MIXED will help farmers to reduce the nitrate leaching, reduce greenhouse gas emissions (including potentials for carbon storage in the soil), while increasing efficiency as well as resilience by reducing the areas with cereals (mainly wheat and maize) and replace it with grass and clover grass for a more diverse range of products (fodder for non-ruminants as well as ruminants, biogas and biobased fertilisers for local high value production, and potentially more high value biorefinery products for human consumption), and other types of land use. Thereby it can serve as an enabler for a more sustainable agricultural production, including potentials for more organic farming, and a more diverse agricultural landscapes. Thereby, it is expected that the project will facilitate a more integrated landscape approach within groups of farmers – an approach that might be replicated in other areas.

Read more (https://projects.au.dk/mixed/networks-national-teams/denmark)

3 Conclusions

This deliverable formalises the requirement for multi-actor projects with the first batch of 'Practice Abstracts'. For the first batch of the practice abstracts, the project has provided 7 practice abstracts.

This first batch of PA submitted was based on results regarding the projects framework and approach which we found relevant to share with certain groups of practitioners.

The second batch of PAs will have 14 instead of only 7 containing practical results from the networks, and providing technical information in a digested way, targeted to practitioners. These 14 PAs (M36) as well as the 14 PAs of the third batch (M48) will address farmers and consultants and be based on experiences and results from each of the networks.

The practice abstracts are shared on MIXED's website, with a template provided by CONSULAI (Annex 1) and will be shared on social media channels such as Twitter, LinkedIn, and Facebook.

MIXED project's information and the summaries of the practice abstracts have been filled in the Excel Sheet of the Common EIP-AGRI format, to be submitted to the EIP-AGRI website.

Some practice abstracts include project results with practical recommendations for the end-users, and some of them include expected outcomes, impact, and the added value if the results of the study/project are implemented. The results and outcomes of the ongoing studies will be included in the next deliverables (D7.9: month 36/September 2023; and D7.10: month 48/September 2024).

ANNEX 1. Template for Practice Abstract dissemination

MIXED

EFFICIENT AND RESILIENT
MIXED FARMING & AGROFORESTRY

PRACTICE ABSTRACT

01

7M€
budget

19
partners

10
countries

The EU-project MIXED (Multi-actor and transdisciplinary development of efficient and resilient MIXED farming and agroforestry systems) is supporting the development of European Mixed Farming and Agroforestry Systems that optimize efficiency and resource use, reduce GHG emissions, and show greater resilience to climate change by considering agronomic, technical, environmental, economic, institutional, infrastructure and social advantages and constraints.

PA TITLE

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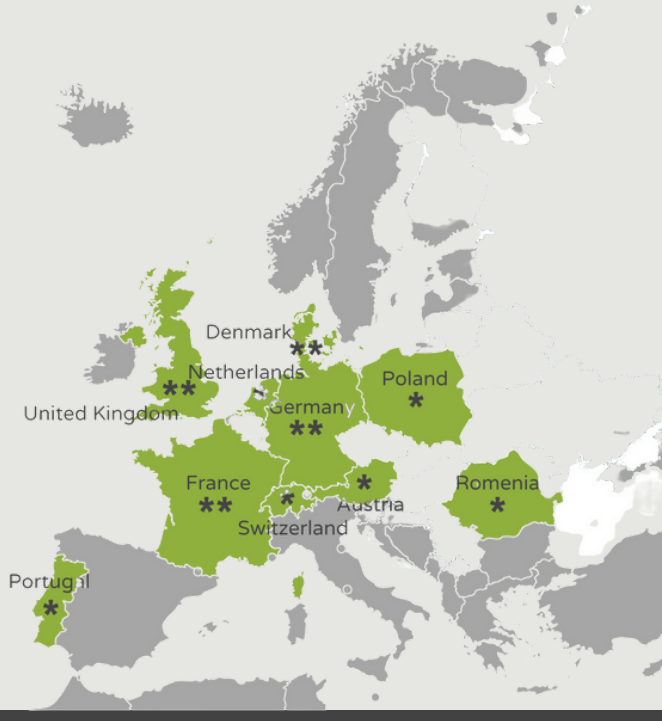

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Country

Portugal

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More info

www.mixed-project.eu

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MIXED
EFFICIENT AND RESILIENT
MIXED FARMING & AGROFORESTRY

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PRACTICE ABSTRACT

01

7M€
budget

19
partners

10
countries

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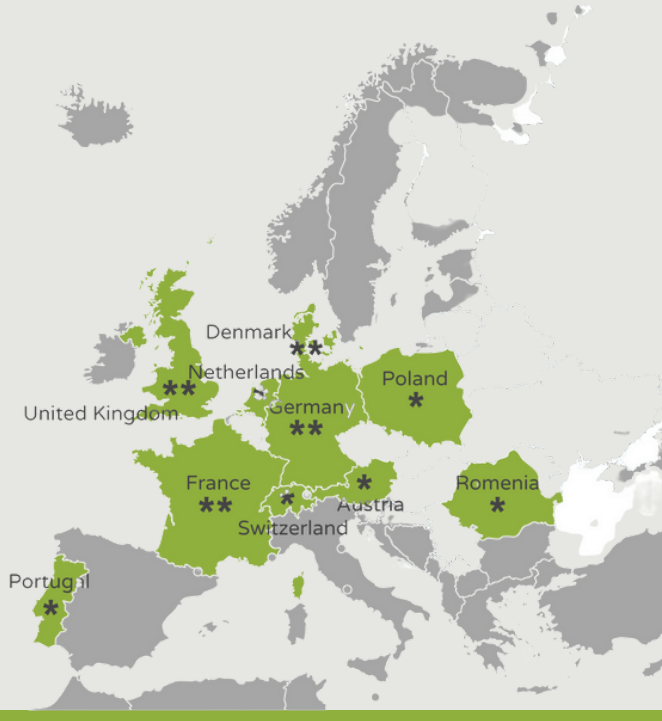

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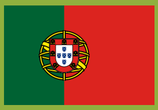

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