

## Deliverable 4.3

# White paper analysis of policy barriers: Agroforestry and mixed farming systems for climate change adaptation and mitigation

### Document history

Date	Author	Action	Status
2024.06.14	Denis Ayrál, Andrea Casadesús, Diana Jiménez, Rosa Vilaplana, Sergio Ponsá, Antonella Iurato, Sebastiano Andrea Corinzia, Giuseppe Mancini, Sami Z. Mohamed, Mohamed Rashad, Mohamed Benidir, Abderrahmane Hannachi	1 <sup>st</sup> draft	Draft
2024.07.01	Denis Ayrál, Andrea Casadesús, Diana Jiménez, Rosa Vilaplana, Sergio Ponsá, Antonella Iurato, Sebastiano Andrea Corinzia, Giuseppe Mancini, Sami Z. Mohamed, Mohamed Rashad, Mohamed Benidir, Abderrahmane Hannachi	2 <sup>nd</sup> draft	Draft
2024.07.15	Denis Ayrál, Andrea Casadesús, Diana Jiménez, Sergio Ponsá	3 <sup>rd</sup> draft*	Final
2024.09.15	Denis Ayrál	3 <sup>rd</sup> amended version	Final

**\*\*Disclaimer:** This deliverable: a. Reflects only the authors' view; b. Exempts the PRIMA Commission from any use that may be made of the information it contains.



# Table of contents

Chapter 1: INTRODUCTION .....	1
1.1 History .....	1
1.2. Advantages of agroforestry and mixed farming systems .....	1
1.3. TRANSITION project .....	2
1.4. Transition and the policy framework .....	2
Chapter 2: DEFINITIONS, REGULATIONS, AND FINANCIAL OPPORTUNITIES FOR AGROFORESTRY AND MIXED FARMING SYSTEMS .....	5
2.1. Definitions .....	5
2.2. Regulation and financial devices .....	6
Chapter 3: TECHNICAL, SOCIAL, ECONOMIC, AND POLITICAL CHALLENGES FOR MEDITERRANEAN AGROFORESTRY AND MIXED FARMING SYSTEMS ADOPTION .....	13
3.1. Technical and social challenges .....	13
3.2. Economic challenges .....	21
3.3. Political challenges .....	27
Chapter 4: INITIATIVES AND STRATEGIES PROMOTING AGROFORESTRY AND MIXED FARMING SYSTEMS IN THE MEDITERRANEAN REGION .....	33
Chapter 5: POLICY PRIORITIES TO PROMOTE AGROFORESTRY AND MIXED FARMING SYSTEMS .....	36
Chapter 6: CONCLUSIONS .....	38
Chapter 7. BIBLIOGRAPHY .....	41
Chapter 8. ANNEX INFORMATION .....	46
ANNEX I: Actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems .....	46
ANNEX II: Systems identified through participatory methods with farmers and stakeholders .....	57
ANNEX III: Regulations and financial opportunities for agroforestry and mixed farming systems by countries .....	61

## List of figures

Figure 1. Map of the studied regions in the TRANSITION project. ....	4
Figure 2. Summary of the participatory approach to the white paper on challenges for agroforestry and mixed farming systems in the Mediterranean region. Proportion of a) participatory method, b) sector, c) actors, d) territorial scope, e) gender is provided.....	5

## List of tables

Table 1. Technical and social challenges for Mediterranean agroforestry and mixed farming systems adoption. Coloured cells indicate that the country identified the challenge as relevant for their context. ....	20
Table 2. Economic challenges for Mediterranean agroforestry and mixed farming systems adoption. Coloured cells indicate that the country identified the challenge as relevant for their context. ....	27
Table 3. Political challenges for Mediterranean agroforestry and mixed farming systems adoption. Coloured cells indicate that the country identified the challenge as relevant for their context. ....	33
Table 4. Main opportunities (policies) and existing potential initiatives to support the agroforestry and mixed farming systems adoption at each of the five study regions. ....	34
Table 5. Summary of strategies and initiatives to support agroforestry and mixed farming adoption across the different regions and at different levels. Supporting region indicates that the proposal was identified as relevant for northern (N), southern (S) or both (N-S), studied regions of the Mediterranean basin at each level of analysis (regional, national, supra-national). Proposals not supported at a specific level are marked as no-data (nd). ....	36
Table A 1. Actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems in Algeria (INRAA). ....	47
Table A 2. Actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems in Egypt (SRTA-City). ....	48
Table A 3. Actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems in France (INRAE and AFAF). ....	49
Table A 4. Actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems in Italy (UNICT). ....	51
Table A 5. Actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems in Spain (CTFC and Uvic-UCC). ....	51
Table A 6. Distribution (%) of the actors characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Algeria (17 interviews). ....	54
Table A 7. Distribution (%) of the actors characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Egypt (38 interviews). ....	54
Table A 8. Distribution (%) of the actors characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in France (31 interviews). ....	55

Table A 9. Distribution (%) of the actors characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Italy (8 interviews). .....	55
Table A 10. Distribution (%) of the actors characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Spain (44 interviews). .....	56
Table A 11. List of the different agroforestry and mixed farming systems studied in the TRANSITION project. ....	57
Table A 12. Relevant laws, regulations, policies, and strategies which may affect the propagation of the agroforestry and mixed farming systems can be found on multiple levels in the Sétif region at supra-national, national and regional levels. ....	61
Table A 13. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies in the Sétif region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels. ....	63
Table A 14. Relevant laws, regulations, policies, and strategies which may affect the propagation of the agroforestry and mixed farming systems can be found on multiple levels in the Mutubas Kafr El-Sheikh region at supra-national, national, and regional levels. ....	64
Table A 15. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies in the Mutubas Kafr El-Sheikh region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels. ....	65
Table A 16. Relevant laws, regulations, policies, and strategies which may affect the propagation of the systems can be found on multiple levels in the Languedoc-Roussillon (Occitanie) and Provence Alpes Côte d’Azur region at supra-national, national and regional levels. ....	66
Table A 17. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies Languedoc-Roussillon (Occitanie) and Provence Alpes Côte d’Azur region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels. ....	66
Table A 18. Relevant laws, regulations, policies, and strategies which may affect the propagation of the systems can be found on multiple levels in the Sicily region at supra-national, national and regional levels. ....	67
Table A 19. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies Sicily region to enhance the development of agroforestry and mixed farming systems at supra-national, national, and regional levels. ....	68
Table A 20. Relevant laws, regulations, policies and strategies which may affect the propagation of the systems can be found on multiple levels in the Catalonia region at supra-national, national and regional levels. ....	69
Table A 21. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies Catalonia region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels. ....	70

## 1 Chapter 1: INTRODUCTION

### 2 1.1 History

3 In 2006, Bertrand Hervieu and Sébastien Abis described the Mediterranean as "an intimate encounter  
4 between history and geography" [1]. How can we address Mediterranean agroforestry systems  
5 without mentioning the diversity of Mediterranean landscapes, their biodiversity and its history? The  
6 diversity of farming systems varies depending on the territory (from coastal to mid-mountain areas,  
7 from humid landscapes to arid or semi-arid zones) and the farming communities occupying it.

8 Historically, Mediterranean agroforestry systems were based on cereals, olive trees and vines, fruit,  
9 and vegetables [2]. This has continued to this day, with some remaining olive groves and vineyards  
10 still being grazed or combined with trees such as in France, Spain, Italy, and Algeria [3, 4]. In Egypt,  
11 most farms are mixed crop/livestock systems that include goats, sheep, cattle, and buffalo [5].

12 Silvopastoralism, an ancient agroforestry system, is still practised in the forests of south-east France,  
13 Greece, Italy and Spain and further afield in the Spanish *dehesa* and Portuguese *montado* covering the  
14 largest agroforestry landscape in Europe, a large southwestern quarter of the Iberian Peninsula [6,7  
15 8, 9, 10]. Spain is also a country where the historical practice of *pomeradas* was being developed on a  
16 larger scale. *Pomeradas* are systems where livestock farming was combined with apple production.  
17 [7, 11]. Oak forests are grazed by goats, sheep, cows, and hogs [12]. Recently, modern agroforestry  
18 systems based on intercropping vegetables or aromatic and medicinal plants associated with olive and  
19 fruit and timber trees are redeveloping and being studied [13, 14, 15]. For example, *coltura promiscua*  
20 in Italy combines vegetables and fruit trees like walnut trees [16].

### 21 1.2. Advantages of agroforestry and mixed farming systems

22 Agroforestry practices are unanimously recognized as a means of adapting agriculture in order to  
23 mitigate climate change [17, 18, 19, 20, 21]. The European Green Deal, Farm to Fork Strategy, the EU  
24 Biodiversity, Forest and Soil Strategies and the Circular Economy Action plan mention agroforestry,  
25 and the new Common Agricultural Policy lists agroforestry among the potential agricultural practices  
26 that support the achievement of the EU's climate objectives [22].

27 The widespread adoption of Mediterranean agroforestry systems is driven by the need to address the  
28 fragility of Mediterranean landscapes. Farmers in these territories face environmental constraints

29 (drought, water erosion, flooding, salinisation, steep relief), which have proven the interest in  
30 combining trees, livestock, and crops [23]. In this area, water is a limiting factor for agricultural activity,  
31 especially in the current context of climate change. The countries around the southern shores of the  
32 Mediterranean basin use 76-82% of the available water resources for agriculture, which shows that  
33 water can be a source of conflicts [1, 24, 25]. Water resources are expected to decrease and the risk  
34 of drought to increase in this area, which will be strongly affected by climate change [24, 26].

35 In the Mediterranean basin, agroforestry systems provide several ecosystem services. They reduce  
36 soil erosion and increase water infiltration into the soil. Used as windbreak, they provide shadow and  
37 fodder for the animals. They serve as sanctuaries for pollinating insects, increasing biodiversity on the  
38 lands and in the soil. In addition, agroforestry systems help prevent and mitigate the risk of forest fires  
39 [27,28].

40 Over time, agroforestry and mixed farming systems have been developed and adapted to the local  
41 characteristics of climate, soil and existing crops [29,30]. For example, in Algeria, mixed farming and  
42 agroforestry rely on rainfall systems. Silvopastoral practices aim to preserve sensitive mountain areas  
43 from water erosion, while mixed farming systems are found in wetlands [31]. On the contrary, Egypt  
44 has a limited development of agroforestry system, but a long tradition of mixed farming of crops and  
45 vegetables, depending on the fluvial system. In France, Italy, and Spain, Mediterranean agroforestry  
46 systems also rely on the rainfall systems. We can observe many different systems such as fruit  
47 production mixed with cereals production, fruit and orchard production, silvopastoral, and  
48 agrosilvopastoral systems.

### 49 1.3. TRANSITION project

50 Moving toward resilient agricultural systems in the Mediterranean Rim is crucial to cope with the  
51 effects of climate change. The adoption of agroforestry practices adapted to Mediterranean realities,  
52 considering agroforestry (agrosilvopastoral, silvoarable, and silvopastoral) systems together with  
53 mixed farming systems (where various crops are combined or where crops and livestock are  
54 combined), can increase the resilience of ecosystems.

55 The Transition Project focuses on 5 heterogeneous study regions, three in the North of the  
56 Mediterranean (Catalonia, Spain; Sicily, Italy; Regions Occitanie and PACA, France) and two in the  
57 South (Sétif, Algeria; the Behia and Kafr Elsheikh Governorates of Egypt) (Figure 1), representing  
58 different pedo-climatic areas, cultures, and agricultural practices.



#### 59 1.4. Transition and the policy framework

60 The Transition project aims to promote alignment between stakeholders' resilience-building priorities  
61 and policies of governmental and intergovernmental organisations. The involvement of transnational  
62 and multicultural partners and stakeholders widens the scope of innovative practices to address the  
63 crucial issue of climate resilience of agriculture in Mediterranean countries. The socio-economic  
64 barriers and national agricultural policies of the participating countries are shared and compared in a  
65 unique framework. This framework serves as a knowledge base and helps identify commonalities and  
66 raise awareness about the potential of these systems. This diversity is crucial from an international  
67 policy standpoint, since the inherent complexity of these systems is recognized by policy initiatives  
68 e.g. 2030 Agenda for Sustainable Development.

69 This goal is mainly addressed by the current white paper on challenges for agroforestry and mixed  
70 farming systems in the Mediterranean Rim and by the creation of basin-wide roadmap for alignment  
71 of agricultural policy with societal goals and climate resilience.

##### 72 *1.4.1. TRANSITION participatory approach to the white paper on challenges for agroforestry and* 73 *mixed farming systems in the Mediterranean region*

74 The current white paper aims to guide the investigation of agroforestry and mixed farming  
75 regulations at both regional and national levels in the five demonstration countries (Spain, Italy,  
76 Algeria, Egypt, France), incorporating input from local partners. Its purpose is to assess the existing  
77 regulatory framework and financial opportunities for these practices in the countries participating in  
78 the Transition Project.

79 Key aspects of agroforestry and mixed farming regulations were investigated at the regional and  
80 national levels in the five demonstration countries (Spain, Italy, Algeria, Egypt, France) by the partners  
81 representing the respective regions. To conduct the study on the policy and economic barriers, 138  
82 stakeholders from every studied region were brought together (Annex I). The participatory approach  
83 to obtain the information from these actors were divided in two methods: i) semi-structured  
84 interviews, ii) semi-structured meetings (Figure 2a) The actors involved in the participatory methods  
85 where chosen from different sectors (public research centres, public education, private sector, public  
86 administration, , farming, Figure 2b), and they present different profiles (technic, politician/decision  
87 maker, advisor, farmers, students, and researchers, Figure 2c). The involved stakeholders encompass

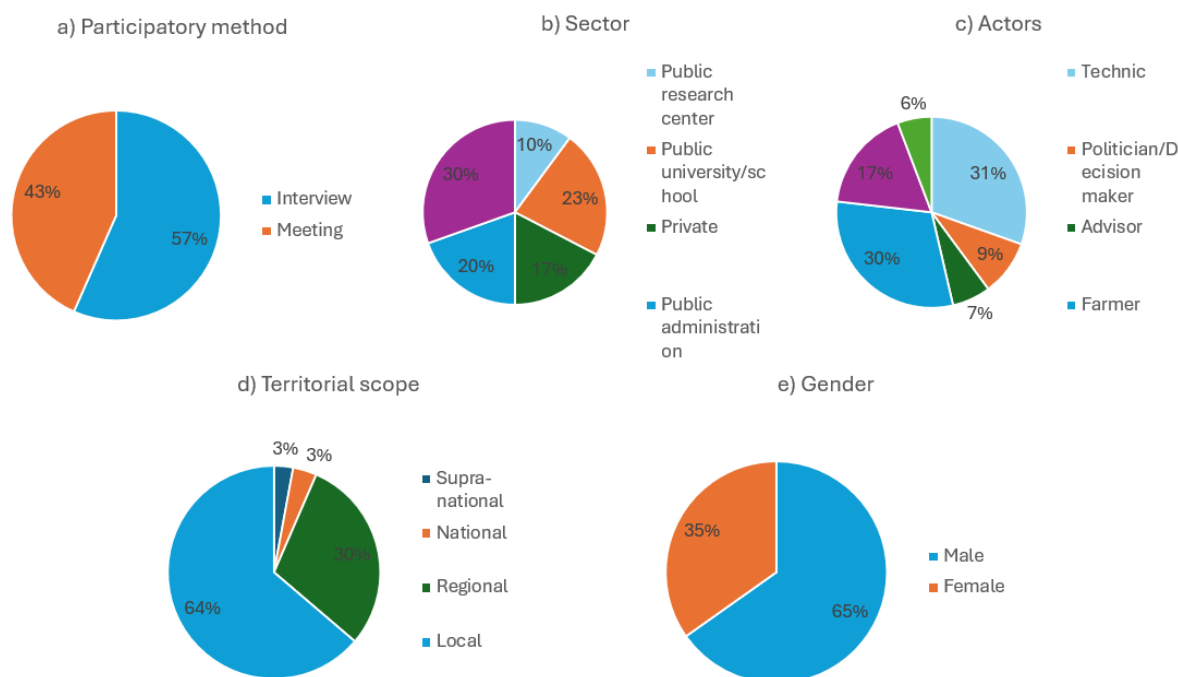


88 different territorial scopes (supra-national, national, regional, and local, Figure 2d) and gender balance  
89 was considered, although cultural, demographic, and socio-economic factors impacted it (Figure 2e).

90 Such information was synthesized to pinpoint the legal and regulatory impediments to extension of  
91 the systems. In addition, an analysis of potential policy or economic tools was carried out in each  
92 country. Some of these insights will be used to create a basin-wide roadmap to align agricultural policy  
93 with societal goals and climate resilience



94  
95 *Figure 1. Map of the studied regions in the TRANSITION project.*



98 *Figure 2. Summary of the participatory approach to the white paper on challenges for agroforestry and mixed farming*  
 99 *systems in the Mediterranean Rim. Proportion of a) participatory method, b) sector, c) actors, d) territorial scope, e) gender*  
 100 *is provided.*

103 **Chapter 2: DEFINITIONS, REGULATIONS, AND FINANCIAL**  
 104 **OPPORTUNITIES FOR AGROFORESTRY AND MIXED FARMING SYSTEMS**

106 **2.1. Definitions**

107 There are different definitions for agroforestry and mixed farming systems. However, many of them  
 108 include the arrangement of different plants, trees, and animal species.

109 FAO defines agroforestry as “a collective name for land-use systems and technologies where woody  
 110 perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management  
 111 units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence”  
 112 [32]. According to the European Agroforestry Association (EURAF) status, agroforestry is defined as  
 113 “All forms of association between trees and culture and/or animal production on an agricultural parcel  
 114 whether it is in the interior of the parcel or on its edges” [33]. The Algerian collective Torba defines  
 115 agroforestry such as “a system for managing agricultural land by integrating trees into any farming

116 operation, with maximum integration of cereal crops, market gardening, fruit growing, forestry and  
117 livestock, all of which can be combined on the same surface” [34].

118 Regarding mixed farming, FAO considers that mixed farming production systems as those in which  
119 “producers have some combination of perennial and annual crops, livestock, and/or fisheries” [35]. In  
120 addition, French national institute for research in agriculture and environment (INRAE) defines mixed  
121 farming systems as farming practices that “aim to maximise the diversity of the systems, emphasize  
122 soil fertility conservation and management, optimise the use of energy and the locally available  
123 resources, and be highly resilient. In short, they are based on three main principles: (a) diversification  
124 – by including crops, trees, and animal species – (b) integration –considering the dynamic exchange  
125 and recycling of energy and nutrients among the different components of each system – and (c) self-  
126 sufficiency –referring to the extent to which the system is able to satisfy its own needs without  
127 requiring considerable external inputs” [36].

128 As it is highlighted in this section, there are different definitions of the concept of agroforestry and  
129 mixed farming. It changes depending on the country and the specificities of local agriculture  
130 production which have been changing over time [37]. However, most definitions overlap and keep the  
131 essence of the diversity of these systems.

132 Overall, agroforestry and mixed farming systems can be classified in some general categories  
133 according to the elements that they integrate in the system:

- 134 • Agrosilvicultural or silvoarable systems are a combination of crops and trees, such as alley  
135 cropping.
- 136 • Silvopastoral systems combine forestry and grazing of domesticated animals on pastures,  
137 rangelands or on-farm. For example, tree crops with grazing pasture or fodder production.
- 138 • Agrosilvopastoral systems involve the three elements, trees, animals, and crops, integrated in  
139 one system. This case involves animals such as sheep grazing, beekeeping, etc., with woody  
140 crops or trees and crops on the same parcel.

141 In the Transition Project, several systems were identified through participatory methods with  
142 farmers and stakeholders (Annex II Table 12). Although forest silvopastoral systems represent an  
143 important type of agroforestry, it was not the purpose of the Transition project to study them  
144 thoroughly, e.g. they were not addressed.

## 2.2. Regulation and financial devices

The agricultural sector is determined through sets of legislation, practices, socio-economic barriers, and opportunities. The current study aims to clarify the regulation affecting agroforestry systems in the Mediterranean Rim. The analysis is divided into two groups: north Mediterranean countries under the European Common Agricultural Policy (CAP) framework combined with national laws and south Mediterranean countries, ruled by national laws.

### 2.2.1 *The context in the North Mediterranean countries*

The European Union and its member states put climate change at the top of its development agenda. In 2019, they presented European Green Deal aiming to become the first climate-neutral continent [38]. This agreement is part of the 2050 long-term strategy developed by the Union [39]. Henceforth, the agricultural field is a central part of this climate strategy. In 2023, the adopted text of the 2023-2027 CAP made a step further toward more action against climate change, making more efforts to promote agroforestry systems and mixed farming.

Actions are divided into two pillars. Pillar I concerns direct payments for farmers according to the size of their farms, with a set of statutory management requirements and basic standards for environment and climate Good Agricultural and Environmental Conditions (GAECs or jointly run farms), called 'conditionality'. This conditionality is based on nine GAECs, three of which especially relevant for agroforestry and mixed farming: GAEC 1 – permanent grassland, GAEC 8 – non-productive areas and features, GAEC 9 – ban on converting and ploughing permanent grasslands in Natura 2000 sites. Farmers receiving CAP income support must comply with these nine conditionalities. GAEC 8 is particularly designed to protect biodiversity through the maintenance of non-productive areas and landscape features. It ensures the retention of landscape features through a ban on cutting hedges and trees during the bird breeding and rearing season for instance. In other words, farmers receiving CAP subsidies must maintain the existing woody landscape of their land and are also encouraged to develop the woody vegetation present on their farm.

Besides GAECs (or jointly run farms), the 2023-2027 CAP has budgeted a new element within Pillar I: the Eco Schemes. It supports farmers who voluntarily adopt or maintain farming practices that contribute to EU environmental and climate goals. Through Eco Schemes, the EU rewards farmers for preserving natural resources and providing public goods that benefit society but are not necessarily reflected in market prices. Some Eco Schemes involve the maintenance and planting of the woody

vegetation on farms, thus encouraging farmers to develop agroforestry systems [40, 41]. Pillar II consists in supporting various types of measures aiming to rural development (e.g. Agri-environmental and Climate Measures; Invest measures) and is co-financed by the EU and national or regional funds. In order to allow flexibility to member states, the general CAP PLAN is set out at national level through the “National Strategic Plans 2023-2027”. The CAP strategic plan of each country describes: i) how the GAECs (or jointly run farms) are fine-tuned in the country (Pillar I), ii) which Eco schemes (Pillar I) are eligible on their territory, iii) which Pillar II measures are activated at national level, iv) in some countries the regions decide which Pillar II measures will ultimately be adopted in each particular region.

### **FRENCH CASE STUDY**

In France, the Ecoschemes that potentially support agroforestry systems are the “landscape features elements” pathway, which targets farmers who maintain or create agro-ecological infrastructure or set aside fallow land on their farms. In order to get financial retributions, farmers should demonstrate that at least 7% of their land is covered by agro-ecological infrastructure. In addition, within the Eco schemes, the “hedge bonus” rewards the presence and sustainable management of hedges; this bonus can be combined with the “practices” or “certification” pathways to improve the overall effect on biodiversity (combination of hedges and crop mosaic, or hedges and grasslands, or hedges and organic land management). The presence of hedges is linked to a requirement for sustainable management of these hedges verified by certification (e.g. the existing “Label Haie”). Another key measure to promote the development of agroforestry systems in the French Strategic Plan of the CAP 2023-2027 is the “IAE1: maintenances of agro-ecological infrastructures”. This measure supports farmers in the sustainable management of their on-farm woody vegetation. In addition to the CAP measures, in 2023 the French government adopted a “Hence pact” to finance the planting of 50 000 km of border fences from 2024 [42, 43,44].

### **ITALIAN CASE STUDY**

In Italy, the Eco schemes that potentially support agroforestry systems are Eco scheme 3 “Preservation of the olive tree of a particular landscape aspect” and Eco scheme 5 “Specific measures for the pollinating insects within the woody crops” [45]. Italy’s National Strategic Plan of the CAP 2023-2027 includes the measure SRD05, which provides some subsidies for investments in forestation/afforestation and agroforestry systems on agricultural land. Within this measure, the third

action (SRD05.3) is the most relevant, considering the establishment of agroforestry systems such as silvoarable and silvopastoral systems. In addition, action SRA28 supports the maintenance of forestation, afforestation, and agroforestry systems. At the regional level, the regions of Sicily, Piedmont, Umbria, Veneto, Puglia and Tuscany are willing to commit themselves to these measures [45].

## SPANISH CASE STUDY

In Spain, there are six Eco schemes that potentially support agroforestry systems. Eco Scheme 1: “Carbon farming and agroecology: extensive grazing, mowing and biodiversity in wet pastures”, Eco Scheme 2: “Carbon farming and agroecology: extensive grazing, mowing and biodiversity on Mediterranean pastures”, Eco Scheme 6: “Carbon farming: vegetative covers and inert covers in woody crops on flat lands”, Eco Scheme 7: “Carbon farming: Vegetative and inert covers in woody crops on medium slopes”, Eco Scheme 8: “Carbon farming: vegetative covers and inert covers in woody crops on steep slopes”, and Eco Scheme 9: “Agroecology: biodiversity areas on arable land and permanent crops”. In the Spanish Strategic Plan for the CAP 2023-2027, there are 13 measures that could promote agroforestry, some of which are specifically aimed at maintaining forestry and agroforestry systems. For example, INVEST 6881.1 in Catalonia, which supports non-productive forest investments in reforestation and agroforestry [46, 47]. In addition, in the Spanish region of Catalonia, the CAP measures are complemented by strong regional strategies such as Catalan Rural Agenda 2030 or the Bioeconomy Strategy of Catalonia 2030, among others.

In summary, the 2023-2027 CAP has taken a step forward in terms of environmental measures and protection. Today, agroforestry and mixed farming are recognized by European CAP stakeholders for their environmental benefits. The national CAP plans and the regional and local programmes derived from them are leading the way for the national development of agroforestry and mixed farming.

### *2.2.2. The context in the South Mediterranean countries*

In the Southern Mediterranean region, Algeria and Egypt were studied. In these countries, the Ministries of Agriculture remain the main interlocutor and financial supporter for the development of agroforestry and mixed farming, and regulation is also made at a national level.



In Algeria and Egypt, the term agroforestry is not established, while the term mixed farming is used. The main area of funding in Algeria and Egypt then focuses on mixed farming but supports measures focused on rural development and agricultural production and climate change resilience national objectives. In these areas, mixed farming – such as cereal production combined with livestock grazing – is currently seen as the best way to achieve these national objectives.

## **ALGERIAN CASE STUDY**

The Algerian government has drawn up a plan to develop a more sustainable agriculture. It has been published by the Ministry of Agriculture and Rural Development. The “Roadmap for the sustainable transformation of agricultural systems by 2030” presents a series of programmes and actions to be implemented by the Algerian Ministry of Agriculture to improve the agricultural production chain and the quality of food production in Algeria [48].

It is the same ministry that raises the National Rural Development Fund (FNDR) and the National of Regulation and Agricultural Development Fund (FNDR). These two funds mainly support country’s farmers by providing them with plants, trees, and livestock. They also support farmers with infrastructure investments, loans, the development of sustainable projects and specialised training. The Ministry of Agriculture also supports farmers and rural communities by subsidising milk production, fertilizer, cereals seeds, access to markets and facilitating access to a professional credit. The Algerian government is also partner with a national programme led by the United Nations Development Programme (UNDP) for Algeria 2023-2027. This programme dedicated to Alegria has 3 pillars, and one of these pillars is towards adaptation to climate change and sustainable development, which could potentially favour the adoption of agroforestry and mixed farming systems [49].

These policies are also combined with local programmes within specific regions to improve the living conditions of the rural population [50]. The main trend is a general fight against poverty in the rural areas. These programmes focus on access to water, to electricity, food security, and the government has specific programmes dedicated to the development rustic tress such as almond, the Atlas pistachio, walnut, etc. [51,52]. It is not a specific programme for agroforestry, but the idea is to help the rural population to diversify their production by implementing specific agricultural programmes, and agroforestry and mixed farming systems could be promoted by them.

In addition, the Algerian government has a specific reforestation programme, called the “National Reforestation Programme” [53]. The programme aims to plant 43 million of tress from 2019. This



programme is aimed at restoring forested areas, combating soil erosion. The programme also includes a part where they help private forest owners to plant some fruit trees on their private lands, under other conditions, developing productive agroforestry. In order to develop the emphasis on this priority, the national programme is also coordinated with part of the UNDP programme for Algeria 2023-2027 [54].

In Algeria, as in Egypt, the government also aims to develop agricultural research. It is dynamic in terms of national and international grants such as PRIMA.

As a summary, although there is no clear strategy for agroforestry and mixed farming, the Algerian government is committed to developing its rural areas through the development of sustainable agriculture. The country is also actively working to restore its forests and is committed to a long-term development strategy with the UNDP.

## **EGYPTIAN CASE STUDY**

In Egypt, the main policy programmes for the development of agroforestry and mixed farming farming are the Egypt Sustainable Development Strategy to 2030 and Egypt Vision 2030 [55]. The general aim of these strategies is to reduce rural poverty by improving the business environment, attracting investment, implementing high-impact projects, supporting businesses, and promoting entrepreneurship to create decent jobs and reduce unemployment.

The Egypt Sustainable Development Strategy 2030 aims to modernise Egyptian agriculture by achieving food security and improving the livelihoods of rural communities through the efficient use of development resources and environmental benefits. It highlights six key actions to be developed in the country by 2030. Four of the six are directly aimed at a more diversified agriculture. These are the programmes “Agriculture Vertical Development”, “Egyptian Integrated Agricultural Guidance Programme for Agricultural Villages”, “Agriculture vertical development”, and “Smart Climate-Change Strategy” programmes. These national programmes outline the Egyptian government’s approach to sustainable development and the sustainability of national agriculture. The strategy outlines several key objectives, including promoting the sustainable use of natural agricultural resources and increasing land and water productivity. It also aims to improve food security for key commodities, enhance competitiveness in local and international markets, and encourage agricultural investment. This will improve the livelihoods of rural people and reduce rural poverty.

In parallel, the Egyptian government has adopted the Egypt Vision 2030, which outlines its development goals for the country by 2030. As part of this political programme, in 2022, the government launched the “Strategic Crop Cultivation Initiatives” programme which aims to increase productivity by 30% starting from 2024. The way to increase agricultural productivity is to develop sustainable agriculture and expand agricultural land over the desert to limit soil erosion. One of the ways to achieve this objective is to develop agricultural resilience by developing mixed farming on a larger scale. Egypt’s Vision 2030 aims to implement “flexible agricultural practices” and expand the combination of the production of “crops with high nutritional value such as wheat and corn, while improving productivity and adopting new varieties and technical recommendations” [55].

On the financial side, the Egyptian government has its own set of subsidies for rural and agricultural communities. Most of them are directly linked to Egypt’s Vision 2030. This political agenda also aims to open up the subsidies to a wider section of the population. Vision 2030 also insists on the establishment of an agro-logistics hub to streamline inefficiencies agricultural supply chain through a network of collection centres and centralised hubs. In addition, the « Agribusiness Development Strategy » itself includes investment opportunities such as the creation of collection points and storage facilities, the promotion of investments in aquaculture, the development of agro-industrial parks, tomato processing and olive oil production. Both programmes aim to improve access to the national and international markets and to produce better quality products that will generate significant income for rural communities.

In addition, the Egyptian government is not only focused on direct income for farmers, but also on developing agricultural research. It is receptive to national and international grants such as PRIMA.

In summary, the government’s priority in Egypt is based on poverty reduction, resilience to water scarcity and climate change, and the development of a whole supply chain for better agriculture. To achieve this goal, the government has developed its own strategy for mixed farming. However, there are still territorial inequalities in terms of public support for rural and agricultural development due to the prioritization of some regions.

## Chapter 3: TECHNICAL, SOCIAL, ECONOMIC, AND POLITICAL CHALLENGES FOR MEDITERRANEAN AGROFORESTRY AND MIXED FARMING SYSTEMS ADOPTION

The adoption and development of agroforestry and mixed farming systems implies profound changes in the rural communities. Despite the benefits and of the increasingly favourable regulatory context (chapters 1 and 2), the adoption of agroforestry and mixed farming systems faces very relevant challenges, which are analysed in this chapter. In order to obtain valuable information for this analysis, 138 semi-structured interviews or meetings were conducted at regional, national and supranational levels in the five countries studied. The information was obtained through private meetings conducted by the different partners of the TRANSITION project. Each meeting was structured by the same questionnaire, jointly developed by the consortium. As a result, the main technical and social challenges in terms of access to knowledge and technical advice, culture, time scale, lack of agroforestry model systems, and seedling supply are analysed in this chapter. In addition, economic challenges such as the high cost of investment and the uncertainty of funding over time, the difficulty of understanding the legal framework and the complexity of bureaucratic processes, access to the market and price fluctuations, the difficulty of knowing and accessing existing financial subsidies, and access to land tenure are also addressed together with the political challenges including the timing of political agenda, lack of knowledge and recognition, involvement of the private sector, and the challenge of bureaucracy.

### 3.1. Technical and social challenges

#### *3.1.1. The access to knowledge and access to quality technical advice challenge*

Difficulties in accessing technical advice on mixed farming and agroforestry were identified in all the countries studied for the TRANSITION project. Public institutions involved in agriculture usually lack advisors specialised in mixed farming and agroforestry. In many cases, farmers have to seek information themselves or through local associations.

In Algeria, for example, there is no specific training and knowledge programme dedicated to agroforestry or mixed farming. However, there is a programme initiated by the Ministry of Agriculture for farmers and managers of agricultural administrations and young investors to improve and update their knowledge in agriculture, this programme is called PRCHAT (human capacity building and technical support programme) [56]. In addition to this programme, other technical or research

institutes, as well as the Chamber of Agriculture, also organise technical or demonstration days in the field for farmers, focusing on different areas of expertise. Unfortunately, the concept of agroforestry is not yet widely disseminated within the farming community. The aim of the training is to raise awareness and to teach farmers to follow the appropriate technical route to improve their yields and the profitability of their farms.

In the case of Egypt, a major challenge facing the Egyptian agricultural ecosystem is its reliance on traditional knowledge and practices. Due to the difficulties in accessing technical knowledge on agroforestry and mixed farming systems, farmers often prioritise their own experience and economic constraints over adopting new or different techniques. This can slow down the adoption of more sustainable and efficient farming practices. In addition, the information on the definition of agroforestry is scarce. Through TRANSITION addressing the knowledge and technical advice gap and knowledge transfer on agroforestry and mixed farming in Egypt by building trust with farmers through the creation of a network of "trusted links" from research institutions and universities to farmers through the specific thematic networks such as the Landfiles platform, as proposed, is a promising strategy. This network can act as a beacon of knowledge, providing clear and accessible information on practices such as agroforestry and mixed farming, which are currently unfamiliar to many Egyptian farmers. By demonstrating the benefits of these approaches in a culturally sensitive way, the network can encourage farmers' adoption and improve the long-term sustainability of the agricultural ecosystem.

In the northern Mediterranean region, France is becoming increasingly active in this field with many independent technicians and active local associations in the area, such as the AFAC Agroforestry Network, which has developed a network of 400 local associations in most of the department working on agroecology and agroforestry projects [57]. Nevertheless, the analysis shows that more efforts are needed to develop links and a general network of every structure working on agroforestry and mixed farming. Many local associations or independent structures do not work together, which makes it difficult for many farmers to get a proper answer to their questions about moving towards such a system, because they have difficulties to reach the right interlocutor. In addition, the French actors interviewed for this study confirm that there are, not enough technical advisors specialised in agroforestry in France to help farmers who are willing to move towards to agroforestry on their farms. In order to address this issue, the French Agroforestry Association (AFAF) has set up a training school for agroforestry technical advisors (EFA). The EFA aims to link agroforestry work within the territories by exchanging data and practices [58]. AFAF has also led the creation of a network of independent

technicians working in agroforestry. Officially launched on 7 April 2024, it is a national network of people working technically in agroforestry in every corner of France. This network also aims to make Agroforestry more visible to public authorities. In most public programmes, the budget for technical support is always very low, while support for supplies is high. This public decision also hampers the development of local structures working on agroforestry and mixed farming. This limits the agronomic impact of the implementation of agroforestry and mixed farming programs.

In Italy, there is a considerable gap between the northern and southern regions. In Sicily, the region involved in the TRANSITION project, knowledge of agroforestry systems was found to be limited, and the public sector did not seem to be aware of them. In the north, on the other hand, these systems are more widespread, with many productive farms and even more support from local extension services and institutions. An important role is played by the Italian Agroforestry Association (AIAF), which aims to provide guidelines and general information for the assessment, design and management of agroforestry systems [59]. In December 2023, the association organised the 1<sup>st</sup> National Agroforestry Forum with the aim of bringing together farmers, researchers and associations involved in agroforestry.

Over the years, Spanish actors experience have experienced difficulties in accessing detailed knowledge for a successful plantation management over the years. In the Spanish case, there are some measures under the CAP for technical assistance and assessment of climate change adaptation and mitigation in some sectors (such as fruit and vegetables or wine), but not specifically for agroforestry training. Some measures for knowledge transfer (not specific to agroforestry), and for investment in machinery. However, these measures do not address the feeling of many farmers that they are alone in making the ecological transition on their farm. In Spain, there is no public institution dedicated to technical advice or training on agroforestry systems. However, there are some vocational agricultural schools that offer training courses in agroforestry systems, and various research and transfer institutions involved in agroforestry projects that seek to promote the knowledge exchange in this sector [60]. In addition, the TRANSITION project has created a thematic social network group that promotes the networking of agroforestry farmers in the Iberian Peninsula. This group is called “Community of Agroforestry Systems and Mixed Farming” (Comunidad de Sistemas Agroforestales y Cultivos Mixtos) and it has been created on the Landfiles platform. Access is open and free. The platform allows the members to post, react, comment, and share information, questions and challenges about their land and farms, including research, studies, images, reports, and experiments. The group has 142 members (17/06/2024) including a wide variety of geographical areas and

agroforestry system configurations. In addition to functioning as a thematic social media, this platform organises a quarterly webinar with all the members. Since May 2024, it has been the representative member of Spain in the European Agroforestry Federation.

In conclusion, the problem of technical advice to help farmers to implement new sustainable agricultural practices is felt in every studied country. Only two of the five countries have a national agroforestry association (France and Italy). This will be a key issue to address in order to develop agroforestry and mixed farming on a larger scale.

In the near future, it will be essential to develop specialised training for technicians. It will then be essential to develop the networking between existing technical units in order to apply the practices on a larger scale and also to reduce territorial access inequalities within the same country. Furthermore, it seems necessary to integrate technical advice into public programmes that already support agroforestry practices and to provide concrete examples and approved information from policy makers and legitimate stakeholders to promote a massive change.

### *3.1.2 Cultural challenges*

One of the main challenges identified in the five countries studied relates to the cultural environment of the rural communities. Changing farming practices to a new model is seen as a risk by many farmers. Changing from monoculture or low-diversity systems to mixed farming or agroforestry means adopting a new model that contrasts with prevailing agricultural practices, which can lead to incomprehension from neighbouring farmers. Conversely, there is also a cultural judgment from society towards many farmers who are aware that their practices could be improved and are willing to change, but are still marginalised because of their intensive agricultural practices.

For example, in the region of Catalonia (Spain), literature and field work confirm the growing interest in agroforestry systems but reveal that such systems are not well known by local farmers, which partly explains why their development is not yet mature at regional level [61] [62]. As another example, in France, pilot farms have been set up in many areas to pioneer agroforestry, but farmers are not aware of their existence.

In summary, the cultural environment poses significant challenges to the adoption of new agricultural practices mainly due to cultural judgement and limited knowledge of agroforestry and mixed farming systems. Limited knowledge sharing seems to be at the heart of this challenge.



Several options and proposals can be considered to address this challenge. First, raising awareness and education about the benefits and practices of agroforestry and mixed farming is crucial. This can be achieved through targeted information campaigns, farmer workshops, and demonstration projects that showcase successful transitions. Establishing farmer-to-farmer networks can also facilitate the exchange of experiences and best practices, helping to reduce the perceived risks associated with new farming models. Second, fostering community support and understanding is essential. Encouraging dialogue within rural communities about the long-term benefits of sustainable practices can help mitigate cultural resistance. Local governments and agricultural organisations can play a key role in facilitating these conversations and providing platforms for community engagement.

### *3.1.3. Time scale challenges*

Time also represents a major challenge in all the five countries studied. The introduction of mixed farming and agroforestry systems takes several years to produce its first positive effects, while trees and soils mature. Nevertheless, farmers and most sectors involved in the food supply chain are dealing with short-term urgencies.

For example, most people interviewed in Egypt said that the main concerns of farmers were short-term perspective and related to the unpredictability of incomes and the effects of climate change. These immediate challenges have hindered their ability to take a longer-term perspective. The short-term needs of Egyptian rural communities have forced them to resort to using mineral fertilisers and biostimulants for their crops, rather than being able to embrace a more sustainable approach to farming. When assessing the impact of climate change on agriculture, it's essential to consider the additional challenges faced by Egyptian rural communities. These challenges include a lack of government-provided information, coordination with farmers, and guidance on adapting to climate change, among other factors. These limitations reduce their adaptive capacity and have implications for the agricultural sector and its workforce [63].

This short-term focus and related challenges are not unique to Egypt but are prevalent in the other countries studied. Farmers in different regions face similar pressures and constraints, suggesting that the issue is more related to the immediate needs and economic pressures faced by farmers than to specific national contexts.

Providing short-term financial incentives can help farmers cope with the initial costs and risks associated with switching to sustainable practices. In addition, strengthening government and



institutional support by providing reliable information, coordination, and guidance on climate adaptation and sustainable practices is also essential to promote long-term sustainability.

#### *3.1.4. Lack of agroforestry and mixed farming model systems*

The development and dissemination of agroforestry model systems face significant challenges. While progress has been made in implementing these sustainable practices, lack of visibility and awareness remains a major barrier. Many farmers are unaware of the existence and benefits of agroforestry, limiting its widespread adoption. This challenge has been identified in Algeria, France, Italy and Spain

In France, for example, pilot farms have been set up in many areas to pioneer agroforestry. This pioneer country started to implement agroforestry systems 20-25 years ago and today they could have reached a high level of maturity in their agroforest practices. However, they are few and do not receive much publicity from public institutions. Many farmers living nearby are not even aware of the existence of different agricultural models near their farm.

Many actors from the research sectors are involved in producing accessible knowledge, and easy-to-understand technical guides including the economic aspects of agroforestry and mixed farming model systems. An example is the “Adaptation measures to climate change in the middle mountain Mediterranean: a practical guide” published by the MIDMACC LIFE project and aimed directly at farmers. This guide develops a clear set of adaptation measures for farmers in order to mitigate climate change. It goes from a medium- term climate forecast to an economic analysis with direct expected results of implementing new agro-ecological practices [64]. French Agroforestry Association is also committed to popularizing agroforestry knowledge. To this end, it regularly publishes technical publications aimed directly at farmers. The latest one, published in May 2024, is about “agroforestry poultry routes”. It presents a complete analysis and concrete examples of farms that have already made the transition to agroforestry, with concrete results in terms of productivity, biodiversity and animal welfare [65].

In conclusion, the successful development and implementation of agroforestry model systems depends on overcoming challenges related to visibility and awareness. While progress has been made, much work remains to be done to make these sustainable practices widely known and understood.

Increasing visibility and providing accessible knowledge through research and technical guides can encourage more farmers to switch to these efficient and sustainable farming systems. Efforts to popularise agroforestry practices and demonstrate their economic and environmental benefits are essential to encourage wider adoption and implementation.

### *3.1.5. The seedling supply challenge*

Another challenge faced for the development of agroforestry and mixed farming systems is the tension in the seedling supply market. Access to quality and affordable seedlings is not always easy and limits many farmers from taking action.

In Algeria, France and Italy the study shows that the development of mixed farming and agroforestry systems is partly limited by the shortage of plants produced by nurseries. The demand for plants for agroforestry systems is not met at local level in Algeria, France and Italy.

In France, farmers even buy plants from other countries while the number of nurseries is still decreasing over the years. The reason for this situation is a 22% decrease in the production of the forest plants between 2017 and 2021 [66].

For its part, Algeria has launched a national forest plantation programme and a programme for the development of fruit trees aiming to reach 350.000 ha of indigenous fruit trees (pistachio, almond, apricot, plum, cherry, pomegranate, and fig) by 2024 with the planting of 515.000 rustic trees. At the same time, however, members of the Algerian Chamber of Agriculture and Agricultural Services testify to the lack of plants available to farmers.

The situation in Italy is also varied. There are some tensions in the supply market for forest trees, but the demand for fruit trees is always met. This is explained by the fact that the region of Sicily has a long history of fruit tree nursery production and is able to meet the demand in the country.

The Egyptian case is not specifically about the supply of seedlings, but more generally about global fluctuations in market prices for agricultural commodities due to water scarcity. The main causes of market price volatility in Egypt include environmental and climate changes, especially poor water

quality and scarcity, seawater intrusion, salinity of irrigation water, soil salinity, and rising groundwater levels, as well as improper management of sustainable fertilisation. Crop production is significantly affected by water scarcity and poor water quality. Egypt receives an annual average of 20 to 200 millimetres of rainfall along its short Mediterranean coast. However, the average drops to almost zero millimetres in the central and southern parts of Egypt south of Cairo [63, 67]. In the Egyptian study area, coastal agricultural soils are at risk from salinisation due to sea-level rise. Compared to upland agriculture, coastal farming practices are less resilient because they have to cope with more frequent fluctuations in groundwater salinity, irregular sea flooding, water stress, and waterlogging [68]. Nearly 35% of the Egyptian cropland is salinized due to the combined effects of low rainfall, poor drainage, high evaporation, and irrigation with saline using saline water [69]. In addition, farmers see the use of high-nitrogen fertilisers as a short-term solution to increase crop productivity to counter the effects of climate change. Many crops are already severely affected by climate change through increased root infections. Nitrogen fertilisers can increase the incidence of plant diseases in a number of cases, including downy mildew, powdery mildew, leaf rust, Phytophthora, nematodes, stem rot, and rice blast [70,71,72,73].

In summary, plants, the seedling supply, and price market, and access to irrigation equipment are issues that need to be addressed in four of five regions studied in order to develop mixed farming and agroforestry systems on a larger scale.

To ensure the quality and quantity of seedlings, the supply market may need to adapt rapidly to meet the growing demand. Farmers and agricultural stakeholders need to work together with nurseries to match supply with growing demand. In addition, self-propagation of plants could be encouraged to avoid extreme dependence on suppliers.

*Table 1. Technical and social challenges for the adoption of agroforestry and mixed farming systems in the Mediterranean. Coloured cells indicate that the country has identified the challenge as relevant for its context.*

TECHNICAL AND SOCIAL CHALLENGES	COUNTRY				
	Algeria	Egypt	France	Italy	Spain
Difficulty in accessing to a technical knowledge and support to implement agroforestry and mixed farming systems					
Cultural acceptance of new practices					
Time scale					

Lack of agroforestry and mixed farming model systems to farmers and lack of demonstration and experimental plots					
Not enough plants produced to meet the demand					

## 3.2. Economic challenges

### 3.2.1. High cost of investment and uncertainty of the financial opportunities toward times

Implementing an agroforestry or a mixed farming system on a farm always requires an initial investment by farmers. This is one of the main economic challenges faced by farmers in all the five countries. There are different costs considered by the participants in the current study: the cost of planting trees (seeds or plants, protection, mulching), the cost of maintain the trees (weeding, pruning), the cost of technical support and sometimes the cost of various machines to prepare the soil or the farm environment and to manage two or more different productions, in addition to the cost of time or labour.

In France, for example, a study carried out by the National Chambers of Agriculture shows that the cost of a tree in an agroforestry project cost between €14 and €40, including technical support. Knowing that the average number of trees planted in an agroforestry project in France varies between 400 and 700 trees per farm (considering that the tree density is normally 70-150 trees/ha), this means that an agroforestry investment costs farmers several thousand euros [74]. This is a high initial investment compared to traditional monoculture systems. As another example, in Algeria, the high cost of seeds was highlighted as a challenge to overcome in the adoption of agroforestry and mixed farming systems.

In summary, the high investment costs and financial uncertainties associated with implementing agroforestry or mixed cropping systems pose significant challenges for farmers worldwide. These systems require initial investment in tree planting, maintenance, technical support, and sometimes specialised machinery, as well as considerable labour. The financial burden is exacerbated by uncertainties about returns to investment over time. This problem is widespread across various countries and highlights the need for targeted strategies to reduce costs and improve financial viability for farmers exploring sustainable agricultural practices.

To address this challenge, governments and agricultural institutions should provide financial incentives, such as subsidies, grants, and low-interest loans, specifically tailored to the

implementation of sustainable agricultural practices. These incentives can help offset initial costs and reduce financial risks for farmers. In addition, promoting cooperative initiatives and farmer networks can facilitate resource sharing, bulk purchasing of materials such as seeds and machinery, and collective bargaining for technical support services, thereby reducing individual financial burdens.

### *3.2.2. Difficulty in understand the legal framework and complexity of bureaucratic processes*

Legal frameworks tend to mix general concepts and views with technical approaches and specific concepts, making them difficult to understand for many farmers and civil society in general. In addition, legal frameworks and economic opportunities are managed by different levels of public authorities from local, regional, national, and supranational perspectives, adding to their complexity. This challenge was identified in all the countries studied.

Stakeholders interviewed in France, Italy, and Spain, underline that the understanding of the CAP financial instrument hinders the development of mixed farming and agroforestry practices. The national strategic plans for the CAP 2023-2027 are estimated to be at least 700 pages long. It is understandable that within such a large programme there are many modalities to get financial support for farmers who want to implement mixed farming and agroforestry, both in Pillar I and Pillar II. Meanwhile, it is also understandable that many farmers get lost in such a large programme. To respond to these fears, AFAF has published a detailed brochure which makes a synthetization of the CAP 2023-2027 opportunities and explains how a farmer can add value from the ligneous of his farm while doing his CAP annual declaration in May [75]. In the same way, a joint study of the Spanish Agroforestry Policy working group, in which the TRANSITION project participated, published the “Agroforestry systems in the Spanish CAP Strategic Plan: analysis and reflections”, which explains in detail the situation of agroforestry systems in the Spanish CAP Strategic Plan [76].

In addition, the excessive and slow bureaucratic procedures for obtaining the CAP funding were highlighted as one of the main barriers to agroforestry and mixed farming systems. In Italy for example, the delay in obtaining a public subsidy to invest in the agroforestry programme can take months or years, discouraging some farmers from starting to develop their project. In Spain, the study shows that in the CAP programme, even some of the staff applying it have doubts about how to apply it, as some measures could be contradictory (e.g., support for maintaining or installing hedges could lead to reduced eligibility).

The complexity of the public legal frameworks in the European countries and the difficulties associated with the bureaucratic systems are barriers for farmers to develop agroforestry and mixed farming systems. Nevertheless, there are many existing financial opportunities in these countries and the challenge will be to make them known and to make it easier to apply for funding.

In Algeria, there are support schemes for agriculture in general through several support programmes under the FNRDA (National Fund for Agricultural Regulation and Development). In this case, it supports some crops that are considered strategic (cereals, milk, apples, hardy trees, etc.). However, the bureaucratic apparatus and the archaic banking system are the main obstacles for farmers. In addition, the distance of farmers living in rural areas from the cities (headquarters of administrative structures) is a concrete obstacle for Algerian rural communities to be aware of the government's national programme and to have access to technical information and knowledge. The isolation of the Algerian farming community and the weak cooperation between public agricultural structures and the farming community is the main problem to be addressed in this country.

The Egyptian agricultural system has always faced challenges in navigating the complex legal framework and identifying relevant economic opportunities. Legal documents and regulations often combine general concepts with technical terminology, making them difficult for the average farmer to understand. Such opacity needs to be clarified. Interviews with a wide range of stakeholders revealed a worrying gap between the existing legal framework and the real challenges faced by farmers and the agricultural ecosystem. The focus is primarily on credit schemes and access to water, neglecting crucial areas such as sustainable practices, market access and technological advances.

In summary, the complexity of the regulatory frameworks and bureaucratic processes poses significant challenges to farmers worldwide and hinders the development of agroforestry and mixed farming systems. Regulatory frameworks often mix general concepts with technical intricacies, making them difficult for farmers to understand and navigate effectively. Furthermore, these regulations and economic opportunities are managed at different levels of government, from local to international, further complicating the landscape.

The proposed TRANSITION initiative offers a potential solution by connecting farmers with agri-tech and ecosystem management start-ups, environmental policy developers, and research institutions. This 'helix of engagement' promotes collaboration and knowledge sharing, potentially leading to more practical solutions for farmers. By facilitating this collaboration and promoting a more transparent

regulatory framework, TRANSITION could empower farmers to navigate the complexities of the system and capitalise on economic opportunities.

### *3.2.3. Market access and price fluctuations*

Access to the market and price fluctuations create a medium-term uncertainty that does not encourage some doubting farmers to change their practices, because the change would require several years of adaptation to become as productive or more productive than the conventional system. This challenge was directly identified in Algeria, Egypt, France, and Spain.

This can be seen in Egypt and Algeria where farmers do not have the guarantees by the CAP programme and are directly dependent on a globalised market supply chain. In Egypt, the main problem is the uncertainty of market prices. They suffer from a large price fluctuation, also linked to the global market for crops destined for export. Climate change and variations in the rainy season also affect productivity, so that supply does not always match demand, leading to price fluctuations and speculation. In Spain, the study shows that the short-termism of markets and large food distributors are identified as obstacles to the development of this type of agriculture. Short-termism and the uncertainty of prices in the long term can prevent some actors from entering into mixed farming and agroforestry practices, which require a medium-to-long-term perspective before becoming productive.

Furthermore, agroforestry and mixed farming systems are still perceived within farming communities as unrentable, unprofitable for farmers. This view is shared by many of the stakeholders interviewed, especially in Spain and France. This stereotype is shared as much by stakeholders as much as by farmers themselves. This stereotype hampers the image of agroforestry and mixed farming as suitable agroecological systems for agriculture. Nevertheless, the stereotype is declining thanks to many studies showing that mixed farming and agroforestry systems are more profitable systems in many respects and in terms of productivity [77,78,79].

In summary, a key issue to motivate farmers to make deeper changes is the access to and guarantee of good stable market prices. It is also important to make it easy for farmers to understand that mixed farming and agroforestry can be as productive as conventional systems. The challenge for public and private actors is to make this knowledge accessible.

To address these challenges, the establishment of market stabilisation mechanisms or price insurance programmes can provide farmers with more predictable and stable incomes, reducing uncertainty and



incentivizing transitions to sustainable practices. Governments and agricultural organisations should work together to develop policies that mitigate the impact of global market fluctuations on local agricultural economies. Investing in research to quantify and communicate the environmental and economic benefits of these systems, as well as promoting food supply could help to differentiate products from agroforestry and mixed farming systems and attract higher end prices.

#### *3.2.4. Difficulty to know and get access to existing financial subsidies*

In the context of agricultural policies and funding frameworks, the availability and allocation of financial resources for agroforestry projects emerge as a critical issue in different regions. Within the European Union, variability due to territorial scope can lead to uncertainties in public support for agroforestry initiatives over time, as budgets may be reallocated based on changing priorities. Similarly, in Algeria and Egypt, stakeholders note a lack of public and private funding opportunities for agroforestry, leaving farmers dependent on loans, which often exclude smaller farms and perpetuate financial dependency.

For the European countries, the CAP 2023-2027 has opened budget lines for productive and nonproductive investments through the EAFRD (European Agricultural Fund for Rural Development). Nevertheless, the approval of financial instruments remains at the discrepancy of national and regional decision-makers. Moreover, this regional decision on the eligibility of European funds also makes public support for investment dependent on the political decision-maker. For example, a regional authority may open a budget for programmes supporting agroforestry, but in the following government period this may disappear. Overall, the long-term perspective and public support from European funds are not guaranteed within the European territories.

As another example, Algerian and Egyptian stakeholders interviewed confirm that public and private funds to support farmers in agroforestry systems are almost non-existent. The only way for the farmers to invest is to obtain a loan from public or private institutions. This method essentially limits the smallest farms with lower incomes and promotes financial dependency for the farmers.

In summary, the low level of incentives and development funds for agroforestry in the study areas is a key to understanding why these agricultural systems have difficulties in reaching actors on a larger scale. In addition, the short-term nature and uncertainty over the years of funding for agroforestry projects is also identified as a key to understanding the problem. It is more difficult to establish references and agroforestry models when the funding only covers few years of monitoring.

The challenge to be addressed is to integrate agroforestry practices into the set of public and private funding programmes that farmers use to develop their farms. In addition, these subsidies need to include several years of monitoring and include technical advice in order to develop quality projects and positive long-term impacts

### *3.2.5. Access to land tenure*

Access to land tenure is a major challenge for farmers exploring mixed farming and agroforestry. In Spain and Algeria, farmers face barriers related to land tenure and management. For those working on rented land, uncertainty about long-term benefits and the landlord's commitment to sustainable practices can deter investment in agroforestry systems. Meanwhile, acquiring new land to expand agricultural operations remains prohibitively expensive and controversial within local communities.

The Spanish study underlines that some farmers are limited in their ability to move forward because they are developing their activities on rented land. They are reluctant to invest time, money, and energy in an area that they may not benefit from in the medium term. There is also a conflict between the involvement of landowners in the management of their land and the leases on their land. If the landowners are not involved in the implementation of an agroforestry system, then the land should be leased for more than 7 years (the minimum duration of the contracts) in order for the land manager to be able to implement and benefit from it.

In another example, in Algeria, the study highlights that the high cost of accessing land is a major challenge for many farmers. In this region, the average size remains small (8 ha), with the persistence of familiar and traditional agriculture. In order to develop larger systems of mixed farming and agroforestry, the smallest farmers would have to increase the surface area of their land, which poses the problem of investment. In addition, in Algeria, there are some conflicts within communities over access to new land, as only 19% of agricultural land is used for agricultural production. In Algeria in particular, land tenure and access to land is a real challenge to be overcome in order to develop new agricultural models such as mixed farming systems and agroforestry [80].

The issue of land tenure and access is a challenge for the adoption of mixed farming and agroforestry systems in different regions. In Spain, farmers constrained by leased land face uncertainties about their ability to implement long-term sustainable practices, as the duration of leases influences investment decisions. Similarly, in Algeria, where agricultural land remains small and fragmented, the high cost of acquiring new land and community conflicts over land access further hinder the expansion of agroforestry and mixed farming initiatives. These challenges highlight the need for policies and

initiatives that facilitate secure land tenure, promote sustainable land management practices, and support farmers in accessing and effectively using land for innovative agricultural practices.

To address the challenges posed by limited access to land ownership and tenure, governments and stakeholders should prioritise policies that promote secure land tenure and encourage long-term leases conducive to sustainable agricultural practices. Incentives such as tax breaks or subsidies for landlords and tenants engaged in agroforestry and mixed farming could encourage greater participation and investment. In addition, promoting dialogue and mediation processes within communities can help resolve conflicts over access to ensure a fair and equitable distribution of agricultural resources. Promoting farmers’ access to abandoned land could also help to address this challenge.

*Table 1. Economic challenges for the uptake of agroforestry and mixed farming systems in the Mediterranean. Coloured cells indicate that the country has identified the challenge as relevant for its context.*

ECONOMIC CHALLENGES	COUNTRY				
	Algeria	Egypt	France	Italy	Spain
High investment costs					
Difficulty to understand the legal framework and complexity of bureaucracy					
Market access and price fluctuations					
Difficulty in understanding and accessing existing financial support					
Access to land ownership					

### 3.3. Political challenges

#### 3.3.1. The timing of the political agenda

The development of a new agricultural model requires a long-term vision and to be placed at the centre of the political agenda. This means facing short-term priorities that are sometimes contrary to the interests of adopting agroforestry and mixed farming systems. This is a challenge identified in the five countries studied. In many cases, public decision-makers do not take into account the long-term agenda that the implementation of mixed farming and agroforestry would require.

A clear example is the 2021 French programme “plantons des haies” (let’s plant some hedges) which aims to plant kilometres of hedges throughout the French territory. This programme will be complemented in 2024 by the “pacte de la haie” (Hedge Pact) which aims to plant 50.000 km of hedges

[43]. The idea is clearly a step forward for agroforestry. However, the specification does not require any technical monitoring. As a result, some farmers have been subsidised to plant some hedges, but are not obliged to monitor the planting. This situation has led to a high percentage of dead bushes after the summer heat of 2022. In addition, the payment of such subsidised has been also slowed down by administrative inertia, which has led to some fraud within the agricultural sector. The idea of a massive, subsidised plantation is a real step forward for the development of agroforestry in France, but the programme needs to be more specific and stricter in its requirements in order to be more efficient and to have a real impact, rather than showing some big numbers for communication purposes. One idea would be to determine the aid for a number of surviving trees a few years after planting.

In spite of programmes that run until 2027 or 2030, there is a need to adopt and follow a long-term policy. For the large-scale adoption of mixed farming and agroforestry systems, decision-makers need to draw a line in the sand and stick to it despite changes in government and administration. For example, the farmers' demonstrations in the spring of 2024 led the French government to drop some legal measures originally adopted in the French CAP National Strategic Plan on-farm biodiversity. These strikes also underline that the agricultural sector could be reluctant to change in some cases, but a long-term vision led by public authorities could help to overcome this challenge.

The Spanish study also highlighted the need for funded projects with a long timeframe (more than one or two years) and more fundings for the monitoring these specific projects. However, there are some regionally funded projects with a long-term approach, such as the "Resilient Agroforestry Landscapes" in Catalonia, which aims to restore the mosaic of agroforestry landscapes that allow for environmental, social, and economic balance and resilience to global change. This objective involves promoting local natural resources and supporting a rural development model that integrates the needs of the territory. This programme is derived from some Catalan strategies that promote agroforestry systems and are long-term strategies (e.g., the Bioeconomy Strategy of Catalonia 2030, the Rural Agenda 2030, the Catalan Strategy of Adaptation to Climate Change 2030, etc.).

In Italy, the measures related to agroforestry in the previous CAP programmes were very complex and perhaps this is the reason why not many regions and farmers were interested. There is a need for a clearer policy agenda with a better framework of subsidies and a precise explanation of the meaning of agroforestry.

In Algeria, mixed cropping is practiced on most farms and more particularly in the Sétif region, which has historically been known as a cereal-producing area par excellence. In this particular region, there is no particular interest on the part of decision-makers to promote this agricultural practice, but in other regions of Alegria, there would be a need to develop these practices, which are common in the Sétif region but poorly developed in other parts of the country. Unfortunately, since independence, the country has found difficult to establish a general policy for the development of new agricultural practices. However, agroforestry is a new concept that is reaching farming communities. Projects such as TRANSITION are reaching new farmers and making them aware of this practice, especially in view of the climate crisis that will hit the region in 2020.

A major challenge in Egyptian agriculture is the tension between short-term political agendas and the need for a long-term vision. The current political agenda prioritises food security, particularly wheat production. This focus translates into policies and credit programmes that are heavily skewed towards wheat production. While wheat security is undoubtedly important, this focus creates a narrow vision and needs to include the potential of more sustainable and resilient farming systems. Agroforestry and mixed cropping systems, with their environmental benefits and potential to improve soil health and water management, should be included in national plans. The need for pathways and support structures for these practices hinders their adoption by farmers.

In summary, addressing the complexities of implementing agroforestry and mixed farming systems requires a shift from short-term political agendas to sustained, long-term commitments across countries. In some cases, the pressure to ensure immediate food security or prioritise traditional agricultural practices often overshadows the potential of more sustainable approaches such as agroforestry and mixed farming systems. This dichotomy is evident in the fluctuating support for agricultural diversification initiatives, which face hurdles ranging from bureaucratic inertia to inconsistent funding allocations. The need for robust, enduring policies is underlined by the tendency for shifting political agendas to affect strategic agricultural plans, potentially undermining long-term sustainability efforts.

To overcome this challenge, initiatives that advocate for the integration of agroforestry and mixed farming into national plans are essential. In addition, linking ongoing projects with policy makers for maximum impact can help balance the critical objectives of food security, water sustainability, and environmental resilience. Through consultation and planning efforts, different stakeholders can push for the inclusion of these sustainable practices in national agricultural strategies. This strategic

alignment of food security goals, water budgets, and environmental considerations can pave the way for a more balanced and long-term vision for agriculture, demonstrating the compatibility of food security and sustainable practices.

### *3.3.2. Limited knowledge and recognition of agroforestry and mixed farming*

Despite a recent and growing development, in some cases mixed farming and agroforestry are not recognised by policy makers as an agricultural concept, a proper field of study that requires specific attention, as many others in agriculture can. This challenge has been identified in Algeria and France.

This situation has two main consequences. The first is the lack of expertise in this field within agricultural institutions, from local to European level. In France, for example, there are 14 regional chambers of agriculture. Some of them have only one or two technicians with an agroforestry expertise. This is the smallest specialist staff, hardstand it will be the most difficult to develop such practices on a larger scale. The second consequence of the lack of organised and recognized agroforestry sector, is that policy makers do not have access to a dedicated interlocutor for agroforestry and mixed policies. As a result, the public debate is always between the government and the same historical syndicate or interest group, sometimes not trained to deal with the challenges of agroforestry and mixed farming. Some of these historical interlocutors still show no interest in moving towards more agroecological practices for economic and knowledge reasons.

Despite recent progress, the recognition of mixed farming and agroforestry as distinct agricultural concepts requiring specific attention remains insufficient in many policy circles, as observed in France and Algeria. This failure has two consequences. Firstly, agricultural institutions at local and regional levels, and even wider European levels, lack the necessary expertise and capacity to support the development of these practices. Secondly, the lack of dedicated focal points for agroforestry and mixed farming within policy-making bodies hinders effective policy development. As a result, initiatives involving tree planting often fall under forestry programmes rather than being integrated into agricultural strategies, perpetuating a disconnect between agricultural and environmental policies.

In order to get more recognition, the agroforestry sector needs to develop its own organisation in the same way as other entities in the agricultural sector. From now on, public decision-makers will have

the right people to talk to. This can help spread the idea that developing actions with trees should not only concern afforestation programmes, but also agroforestry programmes.

### *3.3.3. Involving the private sector*

A society is always made up of actors from the public and private sectors. The current study underlines that while public policy makers take the decisions, the action on the ground is mainly done by the private sector, from transformation to distribution. The challenge of involving the private sector in the adoption of agroforestry and mixed farming systems was identified in three countries, France, Italy, and Spain.

An important part of the agricultural sector is now partly dominated by the private sector, involving companies, industries, seed suppliers, production cooperatives, etc. It is important to orient all actors towards the introduction of agroforestry and mixed farming systems. Developing coordination and finding synergies could accelerate the ongoing process involving individual farmers, the agro-industry and finally the markets. The agro-industry is a large chain of production from the raw material, then industrial transformation and finally the distribution channel. For the private sector too, a commitment to transforming production through a more sustainable agriculture can create a win-win situation.

Some private sector actors interviewed in France, Italy, and Spain explain the need to develop the carbon market, carbon farming, and the biodiversity market. Some actors in France regret that there are few private companies offering their help to finance agroforestry models and projects. Developing these new markets can be a way to encourage the private sector to participate in changes in the agricultural practices. Within the French territory, AFAF has been leading several development projects with some important agribusiness companies in the last five years. These companies ask AFAF for help and expertise to develop agroforestry models on their suppliers' farms. The aim is to develop a broad model and to expand this model with other actors in the agro-industry. Since 2020, AFAF has also developed the AFTER fund, a fund dedicated to financing agroforestry projects within farms on French territory, financed by private companies and foundations. Despite their numerous activities, these models remain minor in the panorama of subsidies for French agriculture.

In summary, the study shows that public institutions need to work with the private sector to promote the adoption of mixed farming and agroforestry. Fortunately, many of the actors interviewed for this study show their interest in getting involved to help farming communities change their practices.



There is a need to create links between the private and public sectors to encourage private companies to become more involved and to finance on-farm change.

#### *3.3.4. The bureaucracy challenge: a need for administrative simplification*

The slowness of bureaucracy is a difficulty identified in each of the five countries surveyed. This challenge was more pronounced in the European countries (France, Italy, Spain) than in Algeria and Egypt. Despite the few integrative policies in the five countries studied, farmers and technical structures have difficulties in obtaining support from public bodies involved working in agriculture in terms of the administrative process.

For European farmers, most of the public subsidies are the CAP measures, which require several administrative procedures. In addition, many funds for the introduction of agroforestry are administered by local and national public structures, which adds complexity and difficulty to the administrative process. In order to receive public subsidies, farmers have to go through a series of administrative procedures that can take a lot of time and effort, and in addition, the reimbursement of payments can take several months. The accumulation of measures and the complexity of all these changing laws were the starting point for the European farmers' strike in 2024.

Stakeholders interviewed in France, Italy, and Spain have explained that many farmers are confused by all the possibilities they can or could apply for, but each subsidy has its own eligibility rules and its own rhythm of administrative and financial support. This complexity discourages many of them from applying for a support programme.

Interviews made with Algerian and Egyptian actors, on the other hand, tend to complain about the lack of support that farmers can receive from public institutions. In addition, bureaucratic processes are complex for the farmers to understand and to follow in the long term with public support.

As a suggestion, public support programmes for agroforestry and mixed farming need to be more efficient and reach more farmers and more public technicians working to help farmers with these complex administrative procedures could be crucial to achieving this goal. This difficulty to access to public programs has been clearly expressed clearly by northern countries actors (France, Italy and Spain). As a proposal, public support programs for agroforestry and mixed farming needs to be more efficient and reach more farmers and more public technicians working to help farmers with these complex administrative procedures could be crucial to reach this goal. In addition, simplification and

digitization of administrative procedures could be an area of improvement if public programmes are to reach farmers on a larger scale.

*Table 2. Political challenges for the uptake of agroforestry and mixed farming systems in the Mediterranean. Coloured cells indicate that the country has identified the challenge as relevant for its context.*

POLITICAL CHALLENGES	COUNTRY				
	Algeria	Egypt	France	Italy	Spain
The timing of political agenda					
Lack of knowledge and awareness					
Private sector involvement					
The challenge of bureaucracy					

## Chapter 4: INITIATIVES AND STRATEGIES TO PROMOTE AGROFORESTRY AND MIXED FARMING IN THE MEDITERRANEAN RIM

Interest in agroforestry and mixed farming has increased in recent years in the five areas studied. Each year, new initiatives and public and private support efforts are undertaken to promote these systems. This chapter outlines the initiatives and policies that promote agroforestry systems, based on a comprehensive literature review and interviews conducted in each of the countries participating in the Transition project.

Table 4 highlights key policy frameworks and existing initiatives in different regions to promote agroforestry and mixed farming systems. Each region uses specific strategies to promote sustainable agriculture, ranging from educational programmes and financial incentives to legislative measures and community-based projects.

The number of initiatives reported varies from region to region, including those under the CAP umbrella. In the northern Mediterranean regions surveyed, opportunities, and initiatives are reported at the regional, national, and supranational levels. In the southern regions, on the other hand, only national policies and initiatives were reported. Algeria did not report any initiatives currently in place to highlight the need for action by policy makers.

Table 3. Main opportunities (policies) and existing potential initiatives to support the agroforestry and mixed farming systems adoption at each of the five study regions.

Country (region)	Main opportunities (policies)	Main existing initiatives with potential to support the agroforestry and mixed farming system adoption
Algeria (Sétif region)	FNDA (National Fund for Agricultural Development) FNDR (National Fund for Rural Development)	n/d*
Egypt (Beheira and Kafr El Sheikh Governorates)	The Egypt Strategy 2030 National Irrigation Management Plan Ministry of Agriculture development loans National Strategy for Agriculture Waste Management Smart Farmer Card	Smart Farmer Card 1 million palm tree initiative in new developed communities The Climate Smart Agriculture Presidential initiative with startups
France (PACA Occitanie)	FEADER MEASURE 4.4 FEADER MEASURE 8.2 Hence Pact for PACA Region Hence Pact for Occitanie Region Hunting Federation Occitanie and PACA for hence financing AFTER fund from AFAF TREE FUND (fond pour l'arbre) from AFAC SAFER PACA fund	French School of Agroforestry (EFA) Verdon Regional national Parc activities toward agroforestry ALEVEOLES pilot Farm in Drôme Association CIVAM PACA activities Association AD MED activities
Italy (Sicily)	Regional law 21/2021 for provisions on agroecology, protection of biodiversity and Sicilian agricultural products Rural development programme (CAP) for Sicily, action SRA28	Italian Agroforestry association (AIAF) actions on the territories University of Padova activated a course of study in "Agroforestry systems" April 2024 birth of label "Programme for the Endorsement of Forest Certification (PEFC)" Farming for Future Foundation, Action 8 – Agroforestry
Spain (Catalonia)	Food Strategy of Catalonia 2016-2026 Bioeconomy Strategy of Catalonia 2030 Sustainable Agricultural Production Strategic Plan of Extensive Livestock of Catalonia National Plan for the Implementation of 2030 Agenda in Catalonia	Network of Agricultural Test Spaces (national level) Herds of Fire** Registration of disused agricultural and livestock plots (promoting the leasing of disused agricultural and livestock plots for agricultural/livestock activity)

	<p>Rural Agenda of Catalonia 2030 Strategy for the Sustainable Development of Catalonia Catalan Strategy for the adaptation to climate change General Plan of Forestry Policy Strategy to promote the energy utilization of forest and agricultural biomass Natural Heritage And Biodiversity Strategy Of Catalonia 2030</p>	
--	--	--

\*n/d: No existing initiatives reported.

\*\* This refers to forest pastoralism. This type of system is not studied in the project.



## Chapter 5: POLICY PRIORITIES PROMOTING AGROFORESTRY SYSTEMS AND MIXED FARMING

This chapter focuses on proposing and detailing priorities for the promotion of agroforestry systems. Table 5 summarises in a list of 21 ideas the proposals made by every actor interviewed and the research carried out by all the partners of the project. Most of them (n° 18) are shared between the northern and southern study regions. Only two of them were selected by the northern countries and one by the southern region. They cover aspects such as knowledge dissemination, economic viability, technical support, networking, financing, market development, land management, and research. The proposals emphasise collaboration between different stakeholders, including farmers, technical advisors, public agencies, and the private sector, to promote sustainable agricultural practices.

Proposals can be grouped according to the topic they address. Most of the proposals fall into two groups: specific initiatives or recommendations to achieve the overall objective of promoting mixed farming and agroforestry systems, and financing and financial support. In the first groups, each proposal is an actionable step that aims to address different aspects of this promotion, such as improving market access, ensuring economic sustainability, disseminating knowledge, providing technical support, and encouraging collaboration. Funding programmes, subsidies, bureaucratic simplification and access to credit are the main topics of interest for the participants in this study.

There is another group of suggestions on networking and collaboration, emphasising stakeholder relations, publicising the innovation, and looking for local and technical consultants. The private sector and market development through the involvement of the private sector was also highlighted. Research programmes, including local and territorial projects, and facilitating access to land were also topics of interest.

*Table 4. Strategies and initiatives to support agroforestry and mixed farming Adoption Across Different Regions and at different levels (regional, national, supranational). Colored cells indicate that the proposal was identified as relevant for both (north and south), only for northern or only for southern studied regions of the Mediterranean basin.*

N°	Proposal	Territorial scope	supporting region
1	Promote mixed farming and agroforestry systems through existing public institutions that already have links with many farmers	Regional	N-S
		National	N-S
		Supra-national	N-S
2	Popularise models showing that mixed farming and agroforestry systems are economically sustainable	Regional	N-S
		National	N-S
		Supra-national	N-S
3	Guarantee direct market access and price stability for production	Regional	Nd*
		National	N-S
		Supra-national	N-S
4	Publish and disseminate knowledge on mixed farming and agroforestry models on a larger scale, promoting synergies between local actors, farmers, and technical advisors	Regional	N-S
		National	N-S
		Supra-national	N-S
5	Develop technical advice and professional training for the farmers in mixed farming and agroforestry	Regional	N-S
		National	N-S
		Supra-national	N-S
6	Promote networking and synergies between and among technical advisors, and farming communities	Regional	Nd
		National	N-S
		Supra-national	N-S
7	Improve relations between technical actors in agroforestry and mixed farming and public bodies/policy makers	Regional	Nd
		National	N-S
		Supra-national	N-S
8	Publicise existing pilot farms and innovative agroforestry and mixed farming sites	Regional	N-S
		National	N-S
		Supra-national	N-S
9	Create and promote public funding programmes, adapted to the local context, to support farmers' transition to mixed farming and agroforestry	Regional	N-S
		National	N-S
		Supra-national	N-S
10	Create and develop public and private subsidies in addition to CAP programmes	Regional	Nd
		National	N
		Supra-national	N
11	Establish a GAEC dedicated to agroforestry systems within the future CAP	Regional	Nd
		National	N
		Supra-national	N
12	Open subsidies for fertilisers, water irrigation systems or water feeding systems	Regional	N-S
		National	N-S
		Supra-national	Nd
13	Integrate long-term technical support into subsidy programmes	Regional	N-S
		National	N-S
		Supra-national	Nd
14	Reduce bureaucracy for the subsidies and public programs	Regional	Nd
		National	N-S
		Supra-national	Nd
15	Open public loans and self-financing through banks other than the national banking system	Regional	S
		National	S

		Supra-national	Nd
16	Involve the private sector by encouraging them to develop agroforestry and mixed farming among their suppliers/producers	Regional	Nd
		National	N-S
		Supra-national	N-S
17	Improve the supply of seedings and homogenise the nursery supply market in all areas	Regional	N-S
		National	N-S
		Supra-national	Nd
18	Improve access to land ownership and/or land expansion for small farms	Regional	N-S
		National	N-S
		Supra-national	Nd
19	Develop territorial projects involving municipalities, farmers, rural actors and local citizens	Regional	N-S
		National	N-S
		Supra-national	Nd
20	Continue to developing international and national research programmes around the Mediterranean	Regional	Nd
		National	N-S
		Supra-national	N-S
21	Development of carbon farming and carbon market	Regional	Nd
		National	N-S
		Supra-national	N-S

\*not determined

## Chapter 6: CONCLUSIONS

The aim of this study was to analyse the current situation and the complete panorama of agroforestry and mixed farming practices in five territories of the Mediterranean basin.

The regulatory framework affecting agroforestry and mixed farming in the northern Mediterranean Rim is governed by the CAP 2023-2027, which is different from the southern regions. The CAP 2023-2027 makes a step forward into the recognition and support of these types of systems, including GAECs (or jointly run farms), and different eco-schemes and rural development measures depending on the National Strategic Plan of the CAP. In the southern countries, agroforestry and, most commonly, mixed farming, are regulated at national level by Ministries of Agriculture. In general, governments are committed to the development of rural areas through the development of sustainable agriculture, poverty reduction or resilience to water scarcity, which is aligned with the adoption of agroforestry and mixed farming.

The technical and social challenges identified are mainly related to the exchange of knowledge between the different actors involved in the sector (farmers, technicians, extension agents,



researchers, public administration, etc.), to cultural judgement, and to the difference between the long-term period required for the implementation of agroforestry and mixed farming systems and the short-term perspective of markets. The lack of models of such systems was also identified as a major challenge, as was the limited supply of seedlings. Networking, education on the benefits of agroforestry and mixed farming, and the provision of reliable information and training in long-term sustainability techniques, could help to address these challenges.

The economic challenges were related to the high investment costs of implementing the system, the excessive complexity of administrative procedures related to public subsidies, access to the market and price fluctuations, or access to land tenure. The promotion of cooperatives or the “helix of engagement” proposed by the TRANSITON project to empower farmers to navigate the complexities of the system and capitalise on economic opportunities are some of the proposals to overcome these challenges.

The timing of the policy agenda, the limited knowledge and recognition of agroforestry and mixed farming sector and the involvement of the private sector in the process of change from conventional to more sustainable agricultural practices, including agroforestry and mixed farming, and the complexity of guiding and helping farmers with the administrative procedures were identified as the main policy challenges. In order to address these challenges, self-organisation of the sector, promotion of the synergies between the private and public sectors, or simplification and digitalisation of administrative procedures are suggested as some strategies.

Several opportunities and initiatives to promote agroforestry and mixed farming were identified. In the northern Mediterranean regions studied, they exist at the regional, national, and supranational levels. In the southern regions, on the other hand, only national policies and initiatives were reported. Algeria did not report any initiatives currently in place to highlight the need for action by policy makers.

Most proposals for policy priorities to promote agroforestry and mixed farming were shared by both northern and southern Mediterranean countries. These include proposals related to dissemination, knowledge sharing, training, and pilot farms, the creation and promotion of public funding programmes and simplification of administrative procedures, and to the promotion of research programmes on agroforestry and mixed farming in the Mediterranean Rim.

As a conclusion of our study, agroforestry and mixed farming practices are increasingly developing due to their multiple benefits, and interest is growing among farmers, agricultural technicians, public institutions, and policy makers. Mixed farming and agroforestry are in line with major global and Mediterranean initiatives to adapt to and mitigate climate change by protecting family farming, soil, water and biodiversity. Nevertheless, the slow development of all these virtuous practices needs a push from decisions-makers to obtain new financial instruments including long-term technical support for farmers thus paving the way for economic results and a sustainable perspective. It will be inevitable to create local and international dynamics around the Mediterranean Rim for a sustainable agriculture, adapted to the evolution of climate change and to the challenges than t Mediterranean agriculture will face in the coming years. There is an urgent need to consider the woody vegetation as an ally of mediterranean agriculture.



## Chapter 7. BIBLIOGRAPHY

- [1] Hervieu, Abis, 2006. Les dynamiques agricoles en Méditerranée. *Confluences Méditerranée* n°58, pp169-186.
- [2] Chevalier, 1939. Les origines et l'évolution de l'agriculture méditerranéenne. *Journal d'agriculture traditionnelle et de botanique appliquée*. pp. 613-662.
- [3] Rosati, Mantovani, 2015. System Report: Intercropping of Olive Orchards in Italy. AGFORWARD project. 8p.
- [4] Pagella, Kmoch, Leudeling, Mulia, Sinclair, 2014. Agroforestry from Mediterranean Partner Countries: Report on possible technology transfer from Mediterranean Partner countries to European countries. AGFORWARD project. 35p.
- [5] Ahmed, O., Abdel-Salam, S. and Rungsuriyawiboon, S., 2020. Measuring the economic performance of mixed crop-livestock farming systems in Egypt: A non-parametric DEA approach. *New Medit*, 19(2), pp.133-145.
- [6] Moreno, Cáceres, 2015. System report: Iberian Dehesas, Spain. 60p.
- [7] Guillerme, 2010. Les paysages d'arbres hors forêt multi-valorisation dans le cadre d'un développement local durable en Europe du sud. CNRS-GEODE. 283p.
- [8] Den Herde, 2017. Current extent and stratification of agroforestry in the European Union. *Agric Ecosyst Environ* 241: pp121–132.
- [9] Casagrande et al., 2017. Enhancing planned and associated biodiversity in French farming systems. *Agron Sustain Dev* 37: p57.
- [10] Paris et al., 2019. What is the future for agroforestry in Italy? *Agroforest Syst* 93: pp2243–2256.
- [11] Smith, 2010. The history of temperate Agroforestry. The Organic Research Centre ed., Newbury. 17p.
- [12] Pantera et al. 2008, in Andreas Papadopoulos, Anastasia Pantera, Konstantinos Mantzanas, Vassilios Papanastasis, George Fotiadis and Konstantinos Papaspyropoulos, 2016. System Report: Valonia Oak Silvopastoral Systems in Greece. AGFORWARD Project.
- [13] Katsoulis, Kimbaris, Anastasaki, Damalas, Kyriazopoulos, 2022. Chamomile and anise cultivation in olive agroforestry systems. *Forests* 13, p128.
- [14] Cresti, Gucci, Zorini, Polidori, Vieri, 2004. Modellitecnici ed economici per la riduzione dei costi di produzione nelle realtà olivicole della toscana. *Bollettino Ufficiale della Regione Toscana*. 68p.
- [15] Coulon, Dupraz, Liagre, Pointereau, 2000. Etudes des pratiques agroforestières associant des arbres fruitiers de haute tige à des cultures ou des pâtures. *Rapport d'études*. 203p.
- [16] Piccirillo, De Luca, Ciarmiello, 2013. Possibilità di rilancio della coltura del noce nella zona di origine della Costiera Sorrentina. *Frutticoltura*, pp49-54.
- [17] Ministère de l'Agriculture, de l'Agroalimentaire et de la Forêt, 2015. Plan de développement de l'agroforesterie. Pour le développement et la gestion durable de tous les systèmes agroforestiers. 36p.
- [18] Pellerin, Bamière, Angers, Béline, Benoît, Butault, Chenu, Colnenne-David, De Cara, Delame, Doreau, Dupraz, Faverdin, 2013. Quelle contribution de l'agriculture française à la réduction des

émissions de gaz à effet de serre? Potentiel d'atténuation et coût de dix actions techniques. Synthèse du rapport d'étude. 92p.

- [19] Dupraz, Liagre, 2013. Agroforesterie, des arbres et des cultures. 400p.
- [20] Terasaki Hart, Yeo, Almara, Beillouin, Cardinael, et al., 2023. Priority science can accelerate agroforestry as a natural climate solution. *Nature Climate Change*.
- [21] Mosquera-Losada, Santiago-Freijanes, Rois-Díaz, Moreno, den Herder, Aldrey-Vázquez, Ferreiro-Domínguez, Pantera, Pisanelli, Rigueiro-Rodríguez, 2018. Agroforestry in Europe: a land management policy tool to combat climate change. *Land Use Policy* 78: pp603–613.
- [22] European Commission, Directorate-General for Agriculture and Rural Development (2021). List of potential agricultural practices that eco-schemes could support. January 2021.
- [23] Eichhorn, Paris, Herzog, Incoll, Liagre, Mantzanas, Mayus, Moreno, Papanastasis, Pilbeam, Pisanelli, Dupraz, 2006. Silvoarable systems in Europe – past, present and future prospects. *Agroforestry systems*. pp29-50.
- [24] MedECC, 2020. Climate and environmental change in the mediterranean basin. Current situation and risks for the future. First Mediterranean Assessment Report. Summary for policymakers. p15, 34p.
- [25] Schilling, Freier, Hertig, Scheffran, 2012. Climate change, vulnerability and adaptation in North Africa with focus on Morocco. *Agriculture, Ecosystems and Environment* 156: pp12-26.
- [26] Tanasijevic, Todorovic, Pereira, Pizzigalli, Lionello, 2014. Impacts of climate change on olive crop evapotranspiration and irrigation requirements in the Mediterranean region. *Agricultural Water Management* 144: pp54-68.
- [27] Catalan project *Ramat de foc* presentation: <https://www.ramatsdefoc.org/en/project/>.
- [28] Association Française d'Agroforesterie: *Pour arrêter les feux revenir à la source*: <https://www.agroforesterie.fr/actualite/pour-arreter-les-feux-revenir-a-la-source/>.
- [29] Eichhorn, M.P., Paris, P., Herzog, F. et al. Silvoarable Systems in Europe – Past, Present and Future Prospects. *Agroforest Syst* 67, 29–50 (2006).  
<https://doi.org/10.1007/s10457-005-1111-7>.
- [30] Eichhorn, M.P., Paris, P., Herzog, F. et al. Silvoarable Systems in Europe – Past, Present and Future Prospects. *Agroforest Syst* 67, 29–50 (2006).
- [31] Bessaoud, 2004. L'agriculture et la paysannerie en Algérie. Les grands handicaps. *Symposium Etat des savoirs en sciences sociales et humaines*. 22p.
- [32] Food and agriculture Organisation of the united nations: Agroforestry. <https://www.fao.org/forestry-fao/agroforestry/80338/en/>.
- [33] Euraf Status: [https://euraf.isa.utl.pt/files/pub/docs/statutes\\_euraf.pdf](https://euraf.isa.utl.pt/files/pub/docs/statutes_euraf.pdf).
- [34] Algerian collective for the development of agroecology in Algeria TORBA: <https://torba.dz/lagroforesterie-pour-adapter-notre-agriculture-au-rechauffement-climatique/>

- [35] Food and agriculture Organisation of the united nations: Mixed farming systems: potentials and barriers for climate change adaptation in food systems <https://www.fao.org/family-farming/detail/en/c/1656782/>.
- [36] Fernando Funes-Monzote, Santiago Lopez Ridaura, Pablo Tittone. Diversity and efficiency: the elements of ecologically intensive agriculture. LEISA, 2009, 25 (1), pp.9-10. fhal-01460877.
- [37] Torquebiau (2000) A renewed perspective on agroforestry concepts and classification. CR Acad Sci Paris, Sciences de la vie / Life Sciencê sciences/Éditions scientifiques et médicales Elsevier SAS 323(2000):1009–1017
- [38] European Commission: The European Green Deal: [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en).
- [39] European Commission: the 2050 long-term strategy: [https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy\\_en](https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2050-long-term-strategy_en).
- [40] European Union: Approved 28 CAP strategic Plan <https://agriculture.ec.europa.eu/system/files/2023-06/approved-28-cap-strategic-plans-2023-27.pdf>.
- [41] EU CAP Report: Analytical work: supporting the establishment of agroforestry systems: An analysis of different approaches in selected EU Member States. September 2023.
- [42] Approved French National Strategic plan: <https://agriculture.gouv.fr/telecharger/135906>.
- [43] French Hence Pact <https://agriculture.gouv.fr/pacte-en-faveur-de-la-haie>.
- [44] Ministère de l’Agriculture, de l’Agroalimentaire et de la Forêt, 2015. Plan de développement de l’agroforesterie. Pour le développement et la gestion durable de tous les systems agroforestiers. 36p.
- [45] Approved Italian National Strategic plan [https://www.reterurale.it/downloads/Piano\\_Strategico\\_della\\_PAC\\_23-27\\_v.2.1.pdf](https://www.reterurale.it/downloads/Piano_Strategico_della_PAC_23-27_v.2.1.pdf).
- [46] Agroforestry systems in the Spanish CAP Strategic Plan: analysis and reflection, April 2024: <https://zenodo.org/records/10903406>.
- [47] Approved Spanish National Strategic plan: <https://www.mapa.gob.es/es/pac/pac-2023-2027/>.
- [48] Feuille de route portant sur la transformation durable des systèmes alimentaires en Algérie horizon 2030 <https://summitdialogues.org/wp-content/uploads/2022/07/Feuille-de-route-sur-le-transformation-des-SA-en-Algerie.pdf>.
- [49] UNDP Algeria 2023-2027 <https://www.undp.org/fr/algeria/publications/initiatives-et-projets-en-algerie-pour-la-periode-2023-2027>.
- [50] The strategy of rural development in Algeria in the framework of renewal and participatory approach, december 2014 <http://www.webreview.dz/IMG/pdf/aerd0117fr.pdf>.
- [51] The rehabilitation of the Atlas Pistachio tree, article December 2020 <https://lematinalgerie.com/la-rehabilitation-du-pistaccio-tree-de-latlas-un-projet-en-cours-a-djelfa/>.
- [52] Guerine, L., Hadjadj, K. (2019). Ecodendrometric Characterization of Atlas pistachio (Pistacia atlantica Desf) Stands in the Ain Ben Khelil Region (Southwestern Algeria), Indian Forester, 145 (11): 1053-1061.

[53] National program of reforestation: <https://portail.cder.dz/2019/10/02/programme-national-de-reboisement-plantation-de-43-millions-darbres/>.

[54] United Nation Development Program: UNDP's commitment to support Algeria's forest rehabilitation <https://www.undp.org/fr/algeria/actualites/undps-commitment-support-algerias-forest-rehabilitation>.

[55] Egypt vision 2030: [https://arabdevelopmentportal.com/sites/default/files/publication/sds\\_egypt\\_vision\\_2030.pdf](https://arabdevelopmentportal.com/sites/default/files/publication/sds_egypt_vision_2030.pdf).

[56] presentation of the PRCHAT Program: [https://www.reseau-far.com/fileadmin/user\\_upload/infospays/Algerie/DOC\\_PRCHAT.pdf](https://www.reseau-far.com/fileadmin/user_upload/infospays/Algerie/DOC_PRCHAT.pdf).

[57] AFAC-Agroforesteries: <https://afac-agroforesteries.fr/afac-en-regions/>.

[58] French School of Agroforestry: <https://efa.agroforesterie.fr/efa>.

[59] Italian Agroforestry association (AIAF): <https://www.agroforestry.it/>

[60] Mansera Agrarian School <https://agora.xtec.cat/ecamanresa/>

[61] Els sistemes agroforestals tenen cabuda a catalunya?, February 2020 [https://ruralcat.gencat.cat/article-tecnic/-/journal\\_content/2002/20181/7448062/els-sistemes-agroforestals-tenen-cabuda-a-catalunya-](https://ruralcat.gencat.cat/article-tecnic/-/journal_content/2002/20181/7448062/els-sistemes-agroforestals-tenen-cabuda-a-catalunya-).

[62] Els sistemes agroforestals combinats: produir més i millor en temps d'incertesa ; august 2022 [https://ruralcat.gencat.cat/article-tecnic/-/journal\\_content/2002/20181/10062923/els-sistemes-agroforestals-combinats-produir-mes-i-millor-en-temps-d-incertesa](https://ruralcat.gencat.cat/article-tecnic/-/journal_content/2002/20181/10062923/els-sistemes-agroforestals-combinats-produir-mes-i-millor-en-temps-d-incertesa).

[63] Hafez, M.R., 2020. Impacts of Climate Change on Agriculture, Livelihoods, and Women in Nile Delta, Egypt. *Handbook of Climate Change Resilience, Springer Nature, Switzerland*, pp.765-784. [https://link.springer.com/referenceworkentry/10.1007/978-3-319-93336-8\\_53](https://link.springer.com/referenceworkentry/10.1007/978-3-319-93336-8_53).

[64] MIDMACC Project, Mesures d'adaptació al canvi climàtic a la muntanya mitjana mediterrània: una guia pràctica, 2023 [https://life-midmacc.eu/wpcontent/uploads/2023/12/MIDMACC\\_Guia\\_Web\\_CAT.pdf](https://life-midmacc.eu/wpcontent/uploads/2023/12/MIDMACC_Guia_Web_CAT.pdf).

[65] French Agroforestry Association, Agroforest Fowl Routes, 2024 <https://www.agroforesterie.fr/wp-content/uploads/2024/05/exemples-de-parcours-volailles-agroforestiers.pdf>.

[66] Economical portrait of the vegetation channel production 2021-2022: <https://www.valhor.fr/actualites/portrait-economique-de-la-filiere-du-vegetal-en-2021-2022>.

[67] "[Cairo Airport Normals 1991–2020](#)". *World Meteorological Organization Climatological Standard Normals (1991–2020)*. National Oceanic and Atmospheric Administration. Archived from [the original](#) on 2 October 2023. Retrieved 2 October 2023.

[68] Mazhar, S., Pellegrini, E., Contin, M., Bravo, C. and De Nobili, M., 2022. Impacts of salinization caused by sea level rise on the biological processes of coastal soils-A review. *Frontiers in Environmental Science*, 10, p.909415.

[69] Mansour, E., Moustafa, E.S., Abdul-Hamid, M.I., Ash-shormillesy, S.M., Merwad, A.R.M., Wafa, H.A. and Igartua, E., 2021. Field responses of barley genotypes across a salinity gradient in an arid Mediterranean environment. *Agricultural Water Management*, 258, p. 107206.



- [70] Sun, Y., Wang, M., Mur, L.A.J., Shen, Q. and Guo, S., 2020. Unravelling the roles of nitrogen nutrition in plant disease defences. *International journal of molecular sciences*, 21(2), p.572. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7014335/#B25-ijms-21-00572>.
- [71] Huang H., Nguyen Thi Thu T., He X., Gravot A., Bernillon S., Ballini E., Morel J.B. Increase of Fungal Pathogenicity and Role of Plant Glutamine in Nitrogen-Induced Susceptibility (NIS) To Rice Blast. *Front. Plant Sci.* 2017;8:265. doi: 10.3389/fpls.2017.00265.
- [72] Devadas R., Simpfendorfer S., Backhouse D., Lamb D.W. Effect of stripe rust on the yield response of wheat to nitrogen. *Crop J.* 2014;2:201–206. doi: 10.1016/j.cj.2014.05.002.
- [73] Ballini E., Nguyen T.T., Morel J.B. Diversity and genetics of nitrogen-induced susceptibility to the blast fungus in rice and wheat. *Rice.* 2013;6:32. doi: 10.1186/1939-8433-6-32.
- [74] Technical sheet number 5: agroforestry [https://chambres-agriculture.fr/fileadmin/user\\_upload/National/002\\_inst-site-chambres/pages/agri\\_pol/fiche5\\_Agroforesterie\\_fiche\\_pedagogique\\_Kit-climat\\_APCA.pdf](https://chambres-agriculture.fr/fileadmin/user_upload/National/002_inst-site-chambres/pages/agri_pol/fiche5_Agroforesterie_fiche_pedagogique_Kit-climat_APCA.pdf).
- [75] French Agroforestry Association, trees and fences within the CAP <https://www.agroforesterie.fr/wp-content/uploads/2022/07/plaquette-arbres-haies-et-bandes-vegetalisees-dans-la-pac-2015-2023.pdf>
- [76] Agroforestry systems in the Spanish CAP Strategic Plan: analysis and reflection, April 2024 : <https://zenodo.org/records/10903406>
- [77] Polyforming Project, CREAM, Manual for the design and implementation of a regenerative agri-food model: the Polyfarming system, [https://polyfarming.eu/wp-content/uploads/2021/11/Manual\\_Polyfarming\\_Web.pdf](https://polyfarming.eu/wp-content/uploads/2021/11/Manual_Polyfarming_Web.pdf).
- [78] Beillouin, D., Ben-Ari, T., Malezieux, E., Seufert, V. and Makowski, D., 2021. Positive but variable effects of crop diversification on biodiversity and ecosystem services. *Global Change Biology*.
- [79] Bolinder, M. A., Crotty, F., Elsen, A., Frac, M., Kismányoky, T., Lipiec, J., Tits, M., Tóth, Z., & Kätterer, T. (2020). The effect of crop residues, cover crops, manures and nitrogen fertilization on soil organic carbon changes in agroecosystems: A synthesis of reviews. *Mitigation and Adaptation Strategies for Global Change*, 25(6), 929–952.
- [80] Article from Algerian-eco, December 2021 <https://www.algerie-eco.com/2021/12/21/sur-4398-millions-dhectares-de-surface-agricole-globale-seulement-859-millions-sont-exploites/>



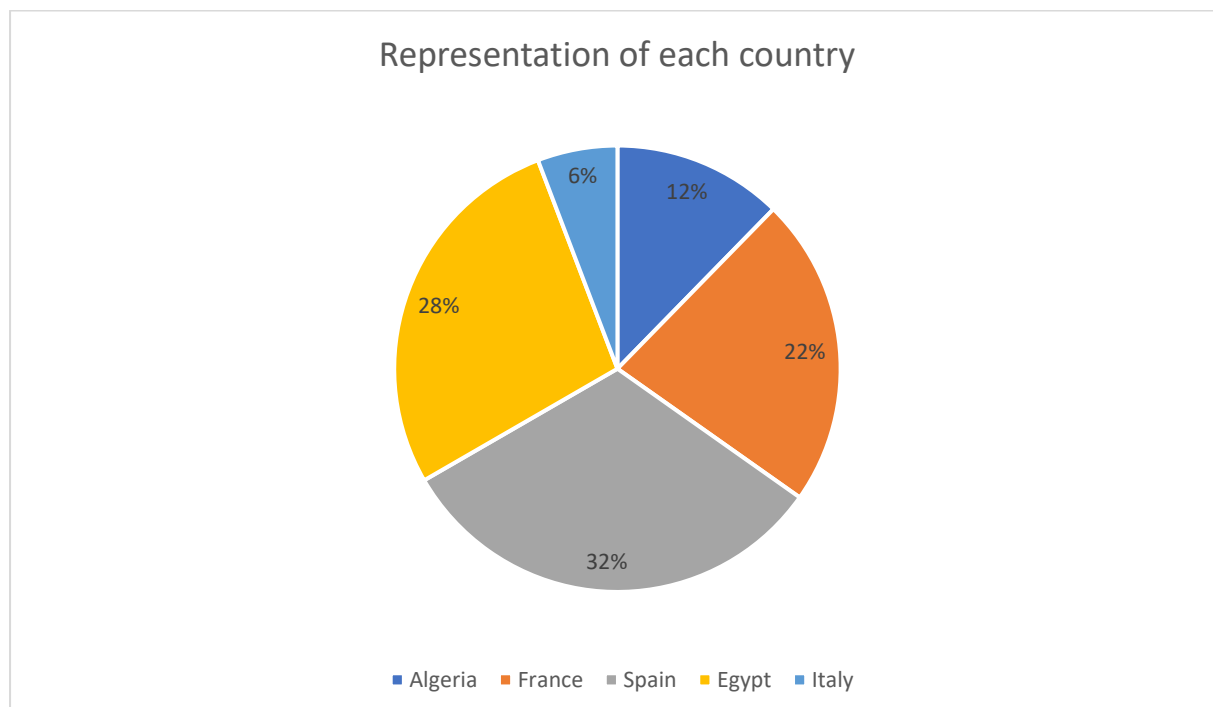
## Chapter 8. ANNEX INFORMATION

### ANNEX I: Actors involved in the study of political and economic challenges for the introduction of agroforestry and mixed farming systems

#### *Annex 1.1. Distribution and origin of the actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems*

First, a graphical distribution of the actors involved is shown (Figure A1). Then, a database of actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems in the Mediterranean. To facilitate the data consult, the whole database is shown by country (Tables A1, A2, A3, A4, and A5). The database was generated through participative activities (meetings or interviews) linked to different work packages of the project.

*Figure A 1. Percentage of actors involved in the study of policy and economic challenges for the adoption of agroforestry and mixed farming systems by country.*



## Algeria

Table A 1. Actors involved in the study of policy and economic challenges for the introduction of agroforestry and mixed farming systems in Algeria (INRAA).

Participation type (WP)*	Actor type	Gender **	Institution	Position	Level	Work area	Sector	Actors number
Meeting (1)	Farmer	M	Farmers association	Leader	Local	North Sétif	Farming	2
Meeting (1)	Technician	F	ITMAS training institute	Teacher	Local	Central Sétif	Public education	1
Meeting (1)	Advisor	M	ITMAS training institute	Training assistant	Local	Sétif	Private	1
Meeting (1)	Technician	M	ITGC technical institute	Director	Local	Sétif	Private	1
Meeting (1)	Technician	M	ITGC technical institute	Technician	Local	Sétif	Private	1
Meeting (1)	Technician	M	CNCC technical institute	Director	Local	Sétif	Private	1
Meeting (1)	Researcher	F	INRAA research institute	Engineer	Local	Sétif	Public research center	2
Meeting (1)	Researcher	M	INRAA research institute	Researcher	Local	Sétif	Public research center	2
Meeting (1)	Technician	M	University Ferhat abbas (Sétif)	Teacher	Local	Sétif	Public education	2
Interview (4)	Politician/ decision maker	M	Directorate of agricultural services	Head of production regulation and technical support service	Regional	Sétif	Public administration	1
Interview (4)	Politician/ decision maker	M	Directorate of agricultural services	Head of rural development service	Regional	Sétif	Public administration	1
Interview (4)	Politician/ decision maker	M	Forest conservation	Head of management of resources, programs and studies service	Regional	Sétif	Public administration	1
Interview (4)	Politician/ decision maker	M	Chambre of agriculture	Head	Regional	Sétif	Public administration	1

\*WP: Work package

\*\*M: male; F: female

## Egypt

Table A 2. Actors involved in the study of policy and economic challenges for the introduction of agroforestry and mixed farming systems in Egypt (SRTA-City).

Participation type (WP)*	Actor type	Gender **	Institution	Position	Level	Work area	Sector	Actors number
Meeting (1)	Student	F	Alexandria University	Student in soil and water science dep, faculty of agriculture	Local	Mutubas, Kafr El-Shikh	Public education	15
Meeting (1)	Student	M	Alexandria University	Student in soil and water science dep, faculty of agriculture	Local	Mutubas, Kafr El-Shikh	Public education	9
Meeting (1)	Researcher	M	SRTA-City research farm	Executive director	Local	Mutubas, Kafr El-Shikh	Public administration	1
Meeting (1)	Researcher	M	Alexandria University	Chairman of soil and water science department, faculty of agriculture	Local	Mutubas, Kafr El-Shikh	Public administration	1
Meeting (1)	Advisor	M	Egyptian Khalej company for land reclamation	Chair of the board	Local	Mutubas, Kafr El-Shikh	Private	1
Meeting (1)	Politician/ decision maker	M	Mutubas agricultural cooperation	Coordinator	Local	Mutubas, Kafr El-Shikh	Public administration	1
Meeting (1)	Politician/ decision maker	M	El-Bangar agricultural cooperation	Coordinator	Local	Mutubas, Kafr El-Shikh	Public administration	1
Meeting (4)	Technician	M	Agriculture research center	Governmental consultant	Regional	Nile delta and valley, northwestern coast	Public research center	1
Meeting (4)	Technician	F	Soil and water science dep., faculty of agriculture, Alexandria University	Professor	Regional	North and northwestern coast	Public research center	1
Meeting (4)	Technician	F	Food architect	Researcher	Regional	North and northwestern coast	Public research center	1
Meeting (4)	Technician	F	Bioprocess	Dean	Regional	National	Public research center	1

Participation type (WP)*	Actor type	Gender **	Institution	Position	Level	Work area	Sector	Actors number
Meeting (4)	Technician	F	Environmental management	Dean	Regional	National	Public research center	1
Meeting (4)	Technician	M	Research farm of SRTA-City	Executive director	Regional	Northwestern coast	Public research center	1
Meeting (4)	Technician	M	Mutubas agri. Cooperation	Executive director	Regional	North delta	Public research center	1
Meeting (4)	Technician	M	El-Bangar agri. Cooperation	Executive director	Regional	West delta	Public research center	1
Meeting (4)	Technician	M	Egyptian Khalej compny for land reclamination	Director	Regional	Western delta Frienge	Private	1

\*WP: Work package

\*\*M: male; F: female

## France

Table A 3. Actors involved in the study of policy and economic challenges for the introduction of agroforestry and mixed farming systems in France (INRAE and AFAF).

Participation type (WP)*	Actor type	Gender **	Institution	Position	Level	Work Area	Sector	Actors number
Interview (1)	Farmer	M	N/a	Farmer	Local	Provence-Alpes-Côte d'Azur	Farming	12
Interview (1)	Farmer	F	N/a	Farmer	Local	Provence-Alpes-Côte d'Azur	Farming	6

Meeting (1)	Technician	M	Public administration	Project manager	Regional	Provence-Alpes-Côte d'Azur	Public administration	1
Meeting (1)	Advisor	M	Chamber of agriculture	Adviser	Regional	Provence-Alpes-Côte d'Azur	Public administration	1
Meeting (1)	Technician	F	Association	Project manager agriculture specialized in organic agriculture and agroforestry	Regional	Provence-Alpes-Côte d'Azur	Private	1
Meeting (1)	Technician	M	Regional natural park	Project manager in agriculture	Regional	Provence-Alpes-Côte d'Azur	Public administration	1
Interview (4)	Technician	M	PNR Sainte-Baume	Project manager	Regional	PACA	Public administration	1
Interview (4)	Politician/decision maker	M	DDT Gers	Chief officer	Regional	Occitanie	Public administration	1
Interview (4)	Technician	F	DDT Gers	Executive	Regional	Occitanie	Public administration	1
Interview (4)	Technician	M	DRAAF PACA	Executive for the "plantons des haies" program	Regional	PACA	Public administration	1
Interview (4)	Technician	M	Agricultural Chamber (33)	Project manager	Regional	PACA	Public administration	1
Interview (4)	Researcher	F	Independant	Doctorate student	Regional	PACA	Public education	1
Interview (4)	Technician	M	Livelihood	Project manager	Regional	PACA	Private	1
Interview (4)	Technician	M	Independant	Historian	Regional	PACA	Public education	1
Interview (4)	Technician	M	Alveoles association	Director	Regional	PACA	Private	1

\*WP: Work package

\*\*M: male; F: female



## Italy

Table A 4. Actors involved in the study of policy and economic challenges for the introduction of agroforestry and mixed farming systems in Italy (UNICT).

Participation type (WP)*	Actor type	Gender **	Institution	Position	Level	Work area	Sector	Actors number
Interview (1)	Farmer	F	N/a	Farmer	Local	Sicily	Farming	3
Interview (1)	Farmer	M	N/a	Farmer	Local	Sicily	Farming	2
Interview (4)	Technician	M	CREA - research center for policies and bioeconomy	Researcher	Regional	Sicily	Public research center	1
Interview (4)	Advisor	M	Canaccord Genuity	Agtech analyst	Supra-national	Europe	Private	1
Interview (4)	Advisor	M	TEP renewable energy Ltd.	Agronomist	Supra-national	Sicily	Private	1

\*WP: Work package

\*\*M: male; F: female

## Spain

Table A 5. Actors involved in the study of policy and economic challenges for the introduction of agroforestry and mixed farming systems in Spain (CTFC and Uvic-UCC).

Participation type (WP)*	Actor type	Gender **	Institution	Position	Level	Work area	Sector	Actors number
Interview (4)	Politician/ decision maker	F	Catalan dep. Of climate action, food, and rural agenda	Vice-director of rural planning	Regional	Catalonia	Public administration	1
Interview (4)	Technician	F	FEDEHESA (Spanish federation of dehesa) + livestock manager	President	National	Spain	Private	1
Interview (4)	Politician/ decision maker	M	Catalan dep. Of environment and sustainability	General director of environmental policies	Regional	Catalonia	Public administration	1

Interview (4)	Technician	F	Bosquerols SCCL (co-operative)	Partner	Regional	Catalonia	Private	1
Interview (4)	Politician/ decision maker	F	Catalan dep. Of climate action, food and rural agenda	Director general of forest ecosystems and environmental management	Regional	Catalonia	Public administration	1
Interview (4)	Technician	F	WWF-Spain	Head of food programme of WWF Spain	National, supra-national	Spain and EU	Private	1
Interview (4)	Advisor	M	N/a	Self-employed	Regional	Central Catalonia	Private	1
Interview (4)	Advisor	M	Espigall (consulting company)	Coordinator	Regional	Catalonia	Private	1
Interview (4)	Technician	M	FIRE foundation	President	National	Spain	Private	1
Interview (4)	Technician	F	FIRE foundation	Technician	National	Spain	Private	1
Interview (4)	Advisor	M	Sorbus Bosques Multifuncionales SL	CEO	National	Spain	Private	1
Interview (1)	Farmer	M	N/a	Farmer	Local	Catalonia	Farming	15
Interview (1)	Farmer	F	N/a	Farmer	Local	Catalonia	Farming	2
Meeting (1)	Technician	F	N/a	Farmer	Local	Catalonia	Public education	1
Meeting (1)	Advisor	M	N/a	Farmer	Local	Catalonia	Private	1
Meeting (1)	Technician	M	N/a	Farmer	Local	Catalonia	Private	2
Meeting (1)	Technician	M	N/a	Farmer	Local	Catalonia	Public administration	1
Meeting (1)	Researcher	F	N/a	Farmer	Local	Catalonia	Public research center	1
Interview (4)	Technician	M	Association of rural initiatives of Catalonia	Director	Regional	Catalonia	Private	1
Interview (4)	Technician	F	Farmers' school	Director	Regional	Catalonia	Public education	1



Interview (4)	Politician/ decision maker	F	Regional government (general director of agriculture and livestock of Catalonia government)	Director	Regional	Catalonia	Public administration	1
Interview (4)	Politician/ decision maker	M	Regional council of Osona	President	Regional	Osona	Public administration	1
Interview (4)	Technician	M	Technical gabinet of regional government (Catalonia government)	Head	Regional	Catalonia	Public administration	1
Interview (4)	Technician	M	Technical gabinet of regional government (Catalonia government)	Worker	Regional	Catalonia	Public administration	1
Interview (4)	Technician	F	Subsidies management and rural development section (dep. Of climate action, food and rural agenda, territorial services in central Catalonia)	Head	Regional	Central Catalonia	Public administration	1
Interview (4)	Technician	M	Forests and forest resources section (dep. of climate action, food and rural agenda, territorial services in central Catalonia)	Head	Regional	Central Catalonia	Public administration	1
Interview (4)	Politician/ decision maker	M	EU Commission	Deputy head of unit of rural development and agricultural policy perspectives	Supra- national	Europe	Public administration	1

\*WP: Work package

\*\*M: male; F: female

*Annex 1.2. Details of actors involved in the study of policy and economic challenges for agroforestry and mixed farming systems adoption by country.*

The distribution of different characteristics of the actors interviewed was considered in order to balance representation of each type of participants including gender, sector, actors, and territorial scope. This distribution is presented for each country in Tables A6-A11.

*Algeria*

*Table A 6. Distribution (%) of the actors' characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Algeria (17 interviews).*

Characteristic	Type	Interviews (number)	Distribution (%)
<b>Gender</b>	Male	14	82,4
	Female	3	17,6
<b>Sector</b>	Public research center	4	23,5
	Public university/ school	3	17,7
	Private	4	23,5
	Public administration	4	23,5
	Farming	2	11,8
<b>Actors</b>	Technic	6	35,3
	Politician/ decision maker	4	23,5
	Advisor	1	5,9
	Farmer	2	11,8
	Student	0	0,0
	Researcher	4	23,5
<b>Territorial scope</b>	Supra-national	0	0,0
	National	0	0,0
	Regional	4	23,5
	Local	13	76,5

*Egypt*

*Table A 7. Distribution (%) of the actors' characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Egypt (38 interviews).*

Characteristic	Type	Interviews (number)	Distribution (%)
<b>Gender</b>	Male	19	50,0
	Female	19	50,0
<b>Sector</b>	Public research center	8	21,1
	Public university/ school	24	63,2
	Private	2	5,3
	Public administration	4	10,5
	Farming	0	0,0
<b>Actors</b>	Technic	9	23,7
	Politician/ decision maker	2	5,3
	Advisor	1	2,6

	Farmer	0	0,0
	Student	24	63,2
	Researcher	2	5,3
<b>Territorial scope</b>	Supra-national	0	0,0
	National	0	0,0
	Regional	9	23,7
	Local	29	76,32

## France

Table A 8. Distribution (%) of the actors' characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in France (31 interviews).

Characteristic	Type	Interviews (number)	Distribution (%)
<b>Gender</b>	Male	22	71,0
	Female	9	29,0
<b>Sector</b>	Public research center	0	0,0
	Public university/school	2	6,5
	Private	3	9,7
	Public administration	8	25,8
	Farming	18	58,1
<b>Actors</b>	Technic	10	32,3
	Politician/Decision maker	1	3,2
	Advisor	1	3,2
	Farmer	18	58,1
	Student	0	0,0
	Researcher	1	3,2
<b>Territorial scope</b>	Supra-national	0	0,0
	National	0	0,0
	Regional	13	41,9
	Local	18	58,1

## Italy

Table A 9. Distribution (%) of the actors' characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Italy (8 interviews).

Characteristic	Type	Interviews (number)	Distribution (%)
<b>Gender</b>	Male	5	62,5
	Female	3	37,5
<b>Sector</b>	Public research center	1	12,5
	Public university/school	0	0,0
	Private	2	25,0
	Public administration	0	0,0
	Farming	5	62,5
<b>Actors</b>	Technic	1	12,5
	Politician/Decision maker	0	0,0
	Advisor	2	25,0
	Farmer	5	62,5
	Student	0	0,0

	Researcher	0	0,0
<b>Territorial scope</b>	Supra-national	2	25,0
	National	0	0,0
	Regional	1	12,5
	Local	5	62,50

### Spain

Table A 10. Distribution (%) of the actors' characteristics in the study of policy and economic challenges for agroforestry and mixed farming systems adoption in Spain (44 interviews).

Characteristic	Type	Interviews (number)	Distribution (%)
<b>Gender</b>	Male	30	68,2
	Female	14	31,8
<b>Sector</b>	Public research center	1	2,3
	Public university/school	2	4,6
	Private	13	29,6
	Public administration	11	25,0
	Farming	17	38,6
<b>Actors</b>	Technic	16	36,4
	Politician/Decision maker	6	13,6
	Advisor	4	9,1
	Farmer	17	38,6
	Student	0	0,0
	Researcher	1	2,3
<b>Territorial scope</b>	Supra-national	2	4,6
	National	5	11,4
	Regional	14	31,8
	Local	23	52,3

## ANNEX II: Systems identified through participatory methods with farmers and stakeholders

Table A 11. List of the different agroforestry and mixed farming systems studied in the TRANSITION project.

Municipality	Province or Department	Country	Type of system	Trees	Crops	Animals
Mezloug	Sétif	Algeria	Agrosilvopastoral	Poplar, ash trees	Meadows, cereal, forage crops	Cattle
Bir haddada	Sétif	Algeria	Agrosilvopastoral	Olive, almond, apple, plum	Barley, oats, triticale, durum wheat	Sheep, bees
Ain arnet	Sétif	Algeria	Agrosilvopastoral	Ash trees, aleppo pine, cypress	Durum wheat, bread wheat, barley, oat, field peas, lentil, chickpeas	Cattle
El eulma	Sétif	Algeria	Agrosilvopastoral	Olive trees, forest trees: aleppo pine, cypress	Durum wheat, bread wheat, barley, oat, triticale, alfa-alfa, lentil, olive tree, natural grassl,	Cattle, broiler
Beni fouda	Sétif	Algeria	Agrosilvopastoral	Olive trees, forest trees: aleppo pine, cypress	Durum wheat, bread wheat, barley, green barley, oat, lentil, chickpeas, triticale, vetch-oat, maize, sorghum	Cattle, sheep, broiler
Ain roua	Sétif	Algeria	Agrosilvopastoral	Olive trees, almond trees, apricot, apple, pear, peach, walnut, vine,	Durum wheat, bread wheat, barley, green barley, oat, lentil, chickpeas, triticale, vetch-oat, vetch-triticale, alfa-alfa	Cattle, sheep, broiler
El oudja	Sétif	Algeria	Agrosilvopastoral	Olive trees	Barley, oat, lentil,	Sheep
Sétif	Sétif	Algeria	Agrosilvopastoral	Poplar, eucalyptus	Durum wheat, association (triticale-oat, vetch-field peas), alfa-alfa, maize (silage)	Cattle
Avignon	Vaucluse	France	Mixed horticultural systems	Apple tree, plum tree, pear tree, cherry tree, peach tree, apricot tree, persimmon, mandarin, nectarine tree	Diversified vegetables*	Ducks
Vezenobre	Gard	France	Mixed horticultural systems	Peach tree, persimmon, apple tree, pear tree, plum tree, cherry tree, apricot tree	Diversified vegetables*	Ducks

Municipality	Province or Department	Country	Type of system	Trees	Crops	Animals
Pernes les fontaines	Vaucluse	France	Mixed horticultural systems	Apple tree, fig tree, olive tree, plum tree, hazel, cherry tree, walnut, peach tree, truffle oak, persimmon trees, others	Diversified vegetables*	Ewes
Le val	Var	France	Mixed horticultural systems	Apple tree, peach tree, apricot tree, fig tree, plum tree, pistachio, mulberry	Diversified vegetables*	Chickens
Le thor	Vaucluse	France	Mixed horticultural systems	Apple tree, hazel, pear tree, fig tree, plum tree, apricot tree, cherry tree, fig tree, plum tree, persimmon, olive trees, cold-resistant citrus, American papaw, sorb tree, saskatoon berry, quince trees, jujube tree	Diversified vegetables*	N/A**
Peyrolles en provence	Bouches du Rhône	France	Mixed horticultural systems	Apricot tree, cherry tree, fig tree, plum tree, apple tree, pear tree, persimmon, olive trees, cold-resistant citrus, American papaw, sorb tree, saskatoon berry, quince trees, jujube tree	Diversified vegetables*	N/A
La treille	Bouches du Rhône	France	Mixed horticultural systems	Plum tree, apricot tree, fig tree, olive tree, persimmon, hazel, cherry trees, feijoa, almond, jujube tree, nashis, peach tree	Diversified vegetables*	Chickens
Mirmande	Drôme	France	Mixed horticultural systems	Medlar tree, peach tree, quince tree, apple tree, pear tree, cherry tree, hazel tree, apricot tree, plum tree, date plum tree, walnut, almond tree, nectarine tree, fig tree	Diversified vegetables*	Chickens and horses
Die	Drôme	France	Mixed horticultural systems	Plum tree, apple tree, goumi, eleagnus, walnut, catalpa, yuzu, schichuan pepper, quince tree, elder, tea tree, fig tree, hawthorn, nashi, timut pepper, citrus	Diversified vegetables*	N/A
Tourves	Var	France	Mixed horticultural systems	Honey locust, elm tree, eleagnus, plum tree, molinia	Diversified vegetables*	Chickens
Ansouis	Vaucluse	France	Mixed horticultural systems	Walnuts, hackberry, sorb tree, bohemian olive tree	Diversified vegetables*	Chickens



Municipality	Province or Department	Country	Type of system	Trees	Crops	Animals
Pernes les fontaines	Vaucluse	France	Mixed horticultural systems	Apricot tree, peach tree, plum tree, apple tree	Diversified vegetables*	Chickens
Correns	Var	France	Mixed horticultural systems	Pear tree, olive tree, apple tree, peach tree, almond tree, plum tree, pomegranate tree, cherry tree, hawthorn, arbutus, pistachio tree, mulberry tree	Diversified vegetables*	Chickens and quails
Marseille	Bouches du Rhône	France	Mixed horticultural systems	Cherry tree, plum tree, apricot tree, fig tree, apple tree, pear tree, arbutus, elder, hazel tree, naschi, peach tree, olive tree, pepper, feijoa	Diversified vegetables*	Chickens
Forqualquier	Alpes de haute provence	France	Mixed horticultural systems	Apple tree, cherry tree, hazel tree, shadbush, plum tree, peach tree, fig tree, olive tree, pepper, eleagnus, quince tree, walnut	Diversified vegetables*	N/A
Mallemort	Bouches du Rhône	France	Mixed horticultural systems	Cherry tree, Plum tree, apricot tree, peach tree, fig tree	Diversified vegetables*	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed woody crops	Citrus species, mangos	N/A	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed herbaceous crops	N/A	Wheat, alfalfa	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed woody crops and vegetable	Guava	Tomato	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed woody and herbaceous crops	Citrus	Alfalfa	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed woody and herbaceous crops	Citrus	Wheat	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed vegetables	N/A	Cabbage, tomatoes	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed woody crops and vegetable	Citrus	Tomatoes	N/A
Mutubas	Kafr El-Sheikh	Egypt	Mixed woody and herbaceous crops	Guava	Alfalfa	N/A



Municipality	Province or Department	Country	Type of system	Trees	Crops	Animals
Borg el-arab	Alexandria	Egypt	Mixed woody, herbaceous crops and vegetables	Jatropha, berries, figs, olives	Wheat, tomatoes, alfalfa, eggplants, potatoes	N/A
Nicolosi	Catania	Italy	Silvoarable	Olive trees	Wheat, rye, fava bean, vetch	N/A
Argençola	Barcelona	Spain	Silvoarable	Olive trees	Sanfoins ( <i>Onobrychis bicifolia</i> ) between the rows	N/A
Bràfim	Tarragona	Spain	Silvoarable	Olive trees (>50 years old)	Winter cereals	N/A
Riner	Lleida	Spain	Silvoarable	Vineyards	Winter cereal, cover crop	N/A
Sant Quintí de Mediona	Barcelona	Spain	Silvoarable	Olives, vineyards	Cover crop composed of natural vegetation	Sheep grazing (2 months in winter. In the aisles between vineyards)

\*Diversified vegetables: artichoke, arugula, basil, beet, pepper, black radish, broccoli, brussels sprout, cabbage, carrot, cauliflower, cherry tomatoes, chili pepper, chives, collard, coriander, cucumber, eggplant, fava bean, fennel, garlic, kale, leek, lettuce, new potato, onion, oregano, pea, pumpkin, potato, radish, spinach, squash, sweet potato, thyme, tomatoes, turnip, zucchini

\*\*N/A: Not apply for that system type



## ANNEX III: Regulations and financial opportunities for agroforestry systems and mixed farming by region

The information is split into two tables for each country. On the one hand, relevant a summary table regarding laws, regulations, policies, and strategies affecting the promotion of agroforestry and mixed farming systems is shown (Tables A12, A14, A16, A18, A20). On the other hand, then financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies to enhance the development of agroforestry and mixed farming systems are shown (Tables A13, A15, A17, A19, A21). Information provided by the research done by each participant country at three levels supra-national, national, and regional.

### Algeria

Table A 12. Relevant laws, regulations, policies, and strategies which may affect the propagation of the agroforestry and mixed farming systems can be found on multiple levels in the Sétif region at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional
<ul style="list-style-type: none"> <li>• Protection of the three wetlands (sebkhet melloul, sebkhet el-fraïne, chott el beïda) ( Ramsar)</li> </ul>	<ul style="list-style-type: none"> <li>• National fund for rural development (FNDR):               <ul style="list-style-type: none"> <li>- Opening and development of rural ways,</li> <li>- Supplying in fruit trees and olive trees,</li> <li>- Supplying of beehives for farmers,</li> <li>- Supplying of goats for farmers (10 females and 2 males)</li> <li>- Hardy fruit trees program</li> <li>- Forest plantation program</li> <li>- The national reforestation program):</li> <li>- Fight against soil erosion</li> <li>- The restoration of the forest area</li> <li>- The expansion of fruit trees on private land</li> </ul> </li> <li>• The national strategy for sustainable rural development (SNDRD):               <ul style="list-style-type: none"> <li>- Food security of rural households</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Local initiative program:               <ul style="list-style-type: none"> <li>- For rustic trees (almonds, pistachio, walnut)</li> <li>- Renewable energies development:</li> <li>- Exploitation and pumping of water in rural areas</li> <li>- Electrification of rural dwellings in scattered areas</li> <li>- Electrification of 12 units with solar energy</li> <li>- Improvement of the living conditions of the rural population</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- Improvement of the living conditions of rural populations</li> <li>- Improvement and diversification of economic activities</li> <li>• Rural renewal policy (PRR)</li> <li>• Strengthening the complementarity between urban and rural areas</li> <li>• Reinforcement of decentralization operations which in no way penalize the most vulnerable, especially in the most isolated rural areas</li> <li>• Strengthening equity and equality for access to resources (information, financing, natural resources).</li> <li>• Protection of the national babors park</li> <li>• Protection of forest heritage and conservation of eroded land</li> </ul>	
----- <b>Mixed farming</b> -----		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• National fund for agricultural development (FNDA) (subsidies for individual or collective):             <ul style="list-style-type: none"> <li>- support to development of irrigation areas,</li> <li>- support for production of seeds</li> <li>- support for milk production</li> <li>- support for fertilisers,</li> <li>- support for the storage of consumer goods,</li> <li>- vat exoneration for livestock feeds</li> <li>- interest-free bank loans for investment and production (ettahaddi and rfig)</li> <li>- payment of the differential for cereal seeds</li> </ul> </li> </ul>		

Table A 13. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies in the Sétif region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional
<ul style="list-style-type: none"> <li>• Protection of the three wetlands (sebkhet melloul, sebkhet el-fraïne, chott el beïda) (ramsar)</li> </ul>	<ul style="list-style-type: none"> <li>• National fund for rural development (FNDR):               <ul style="list-style-type: none"> <li>- Opening and development of rural ways,</li> <li>- Supplying in fruit trees and olive trees,</li> <li>- Supplying of beehives for farmers,</li> <li>- Supplying of goats for farmers (10 females and 2 males)</li> <li>- Hardy fruit trees program</li> <li>- Forest plantation program</li> <li>- The national reforestation program):</li> <li>- Fight against soil erosion</li> <li>- The restoration of the forest area</li> <li>- The expansion of fruit trees on private land</li> </ul> </li> <li>• The national strategy for sustainable rural development (SNDRD):               <ul style="list-style-type: none"> <li>- Food security of rural households</li> <li>- Improvement of the living conditions of rural populations</li> <li>- Improvement and diversification of economic activities</li> </ul> </li> <li>• Rural renewal policy (PRR)</li> <li>• Strengthening the complementarity between urban and rural areas</li> <li>• Reinforcement of decentralization operations which in no way penalize the most vulnerable, especially in the most isolated rural areas</li> </ul>	<ul style="list-style-type: none"> <li>• Local initiative program:               <ul style="list-style-type: none"> <li>- For rustic trees (almonds, pistachio, walnut)</li> <li>- Renewable energies development:</li> <li>- Exploitation and pumping of water in rural areas</li> <li>- Electrification of rural dwellings in scattered areas</li> <li>- Electrification of 12 units with solar energy</li> <li>- Improvement of the living conditions of the rural population</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Strengthening equity and equality for access to resources (information, financing, natural resources).</li> <li>• Protection of the national labours park</li> <li>• Protection of forest heritage and conservation of eroded land</li> </ul>	
----- <b>Mixed farming</b> -----		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• National fund for agricultural development (fnda) (subsidies for individual or collective):             <ul style="list-style-type: none"> <li>- support to development of irrigation areas</li> <li>- support for production of seeds</li> <li>- support for milk production</li> <li>- support for fertilisers</li> <li>- support for the storage of consumer goods</li> <li>- vat exoneration for livestock feeds</li> <li>- interest-free bank loans for investment and production (ettahaddi and rfig)</li> <li>- payment of the differential for cereal seeds</li> </ul> </li> </ul>		

## Egypt

Table A 14. Relevant laws, regulations, policies, and strategies which may affect the propagation of the agroforestry and mixed farming systems can be found on multiple levels in the Mutabas Kafr El-Sheikh region at supra-national, national, and regional levels.

----- <b>Agroforestry</b> -----		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
n/a*	n/a	n/a
----- <b>Mixed farming</b> -----		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>



<ul style="list-style-type: none"> <li>• Egypt vision 2030</li> <li>- Agriculture vertical development</li> <li>- Egyptian integrated agricultural guidance program for agricultural villages</li> <li>- Improving the efficiency of field irrigation in the Nile delta and Nile valley</li> <li>- Smart-climate agriculture strategy</li> <li>- Biodiversity protection program</li> <li>- Lakes restoration program</li> </ul>	<ul style="list-style-type: none"> <li>• Egypt's strategy 2030</li> </ul>	<ul style="list-style-type: none"> <li>• General plan for irrigation and drainage canals development</li> <li>• Law to stop planting riberas and high water consuming crops</li> <li>• Policies of some crops like cotton and the surrounding crops cultivation</li> <li>• Sea level rise protection plan</li> </ul>
--	---	--

n/a\* not applicable

Table A 15. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies in the Mutubas Kafr El-Sheikh region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional
n/a*	n/a	n/a
----- Mixed farming -----		
Supra-national	National	Regional
<ul style="list-style-type: none"> <li>• Egypt vision 2030</li> <li>- Agriculture vertical development</li> <li>- Egyptian integrated agricultural guidance program for agricultural villages</li> <li>- Improving the efficiency of field irrigation in the Nile delta and Nile valley</li> <li>- Smart-climate agriculture strategy</li> <li>- Biodiversity protection program</li> <li>- Lakes restoration program</li> </ul>	<ul style="list-style-type: none"> <li>• Egypt's strategy 2030</li> </ul>	<ul style="list-style-type: none"> <li>• General plan for irrigation and drainage canals development</li> <li>• Law to stop planting riberas and high water consuming crops</li> <li>• Policies of some crops like cotton and the surrounding crops cultivation</li> <li>• Sea level rise protection plan</li> </ul>

n/a\* not applicable



## France

Table A 16. Relevant laws, regulations, policies, and strategies which may affect the propagation of the systems can be found on multiple levels in the Languedoc-Roussillon (Occitanie) and Provence Alpes Côte d’Azur region at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional
<b>POLICIES:</b> <ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Green Deal</li> <li>• Farm to Fork Strategy</li> <li>• Biodiversity Strategy for 2030 of the EU</li> </ul>	<b>POLICIES:</b> <ul style="list-style-type: none"> <li>• CAP Strategic Plan of France</li> <li>• French agroforestry development plan</li> </ul> <b>REGULATIONS:</b> <ul style="list-style-type: none"> <li>• Law on water protection, biodiversity protection and forest protection</li> </ul>	<b>POLICIES:</b> <ul style="list-style-type: none"> <li>• CAP Strategic Plan of France adapted to PACA and Occitanie (regional specific policy)</li> <li>• France climate plan to handle forest fire</li> <li>• DRAAF plan for agriculture and forest</li> </ul>
----- Mixed farming -----		
Supra-national	National	Regional
n/a*	n/a	<b>POLICIES:</b> <ul style="list-style-type: none"> <li>• CAP Strategic Plan of France adapted to PACA and Occitanie</li> <li>• DRAAF plan for agriculture and forest</li> </ul>

n/a\* not applicable

Table A 17. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies Languedoc-Roussillon (Occitanie) and Provence Alpes Côte d’Azur region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional





<ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Horizon Europe grants</li> <li>• PRIMA grants</li> </ul>	<ul style="list-style-type: none"> <li>• CAP Strategic Plan of France</li> <li>• French agroforestry development plan</li> <li>• Subsidies program “plantons des haies” and Water agencies program, and private program AFTER</li> <li>• Association fundings such as “Des enfants et des arbres”. Planting trees with children</li> <li>• Private funds such as Livelihood/ A Tree for You</li> </ul>	<ul style="list-style-type: none"> <li>• Subsidies program “plantons des haies” and Water agencies program, and private program -AFTER</li> <li>• Regional specific application of the CAP Strategic Plan of France</li> <li>• Local subsidies for planting hences (municipalities or department)</li> </ul>
----- <b>Mixed farming</b> -----		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Horizon Europe grants</li> <li>• PRIMA grants</li> </ul>	<ul style="list-style-type: none"> <li>• CAP Strategic Plan of France</li> <li>• Private funds such as Livelihood</li> </ul>	<ul style="list-style-type: none"> <li>• Regional specific application of the CAP Strategic Plan of France</li> </ul>

### Italy

Table A 18. Relevant laws, regulations, policies, and strategies which may affect the propagation of the systems can be found on multiple levels in the Sicily region at supra-national, national and regional levels.

----- <b>Agroforestry</b> -----		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• CAP 2023 – 2027</li> <li>• European Green Deal</li> <li>• Farm to Fork Strategy</li> <li>• EU Biodiversity Strategy and Global Biodiversity Framework</li> </ul>	<ul style="list-style-type: none"> <li>• CAP strategic plan – Italy</li> <li>• National Strategy for “Inner Areas” SNAI</li> </ul>	<ul style="list-style-type: none"> <li>• Rural development programme (CAP) for Sicily. It is important to note that in the previous CAP (2014-2020) the measure 8.2 related to agroforestry systems was not involving Sicily.</li> <li>• Regional law 21/2021, Provisions on agroecology, protection of biodiversity and Sicilian agricultural products and technological innovation in agriculture.</li> </ul>
----- <b>Mixed farming</b> -----		



<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• CAP 2023 – 2027</li> <li>• European Green Deal</li> <li>• Farm to Fork Strategy</li> <li>• EU Biodiversity Strategy and Global Biodiversity Framework</li> </ul>	<ul style="list-style-type: none"> <li>• CAP strategic plan – Italy</li> <li>• National Strategy for “Inner Areas” SNAI</li> </ul>	<ul style="list-style-type: none"> <li>• Rural development programme (CAP) for Sicily. It is important to note that in the previous CAP (2014-2020) the measure 8.2 related to agroforestry systems was not involving Sicily.</li> <li>• Regional law 21/2021, Provisions on agroecology, protection of biodiversity and Sicilian agricultural products and technological innovation in agriculture.</li> </ul>

Table A 19. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies Sicily region to enhance the development of agroforestry and mixed farming systems at supra-national, national, and regional levels.

<b>----- Agroforestry -----</b>		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• CAP 2023 – 2027</li> <li>• Horizon Europe grants</li> <li>• PRIMA grants</li> </ul>	<ul style="list-style-type: none"> <li>• CAP Strategic Plan - Italy</li> </ul>	<ul style="list-style-type: none"> <li>• Rural development programme (CAP) for Sicily</li> </ul>
<b>----- Mixed farming -----</b>		
<b>Supra-national</b>	<b>National</b>	<b>Regional</b>
<ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Horizon Europe grants</li> <li>• PRIMA grants</li> </ul>	<ul style="list-style-type: none"> <li>• CAP Strategic Plan - Italy</li> </ul>	<ul style="list-style-type: none"> <li>• Rural development programme (CAP) for Sicily.</li> </ul>



*Spain*

Table A 20. Relevant laws, regulations, policies and strategies which may affect the propagation of the systems can be found on multiple levels in the Catalonia region at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional
<p><b>POLICIES:</b></p> <ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Green Deal</li> <li>• Farm to Fork Strategy</li> <li>• Biodiversity Strategy for 2030 of the EU</li> </ul>	<p><b>POLICIES:</b></p> <ul style="list-style-type: none"> <li>• CAP Strategic Plan of Spain</li> </ul> <p><b>REGULATIONS:</b></p> <ul style="list-style-type: none"> <li>• Law on water protection against diffuse pollution produced by nitrates from agricultural sources</li> <li>• Relationship of activities potentially contaminating the soil</li> <li>• Mountains law</li> <li>• Rustic leases law</li> </ul>	<p><b>POLICIES:</b></p> <ul style="list-style-type: none"> <li>• Regional specific policies on the CAP Strategic Plan of Spain</li> <li>• Sustainable Agriculture Production</li> <li>• Rural Agenda of Catalonia 2030</li> <li>• Bioeconomy Strategy of Catalonia 2030</li> <li>• Strategy for the sustainable development of Catalonia</li> <li>• Catalan strategy for the adaptation to climate change</li> <li>• General Plan of Forestry Policy</li> <li>• Technical plans of forest management</li> <li>• Strategic Plan of Extensive Livestock</li> <li>• Strategic food plan of Catalonia 2021-2026</li> <li>• Strategy to promote the energy utilization of forest and agricultural biomass</li> <li>• Test spaces of agroforestry systems</li> </ul> <p><b>REGULATIONS:</b></p> <ul style="list-style-type: none"> <li>• Management of soil fertilization and livestock manure</li> <li>• Relationship of activities potentially contaminating the soil</li> <li>• Forests law</li> <li>• Law on media producers and operators of phytosanitary defense of Catalonia</li> <li>• Rustic leases law</li> </ul>



----- Mixed farming -----		
Supra-national	National	Regional
<p><b>POLICIES:</b></p> <ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Green Deal</li> <li>• Farm to Fork Strategy</li> <li>• Biodiversity Strategy for 2030 of the EU</li> </ul> <p><b>REGULATIONS:</b></p> <ul style="list-style-type: none"> <li>• Animal protection during transport</li> </ul>	<p><b>POLICIES:</b></p> <ul style="list-style-type: none"> <li>• CAP Strategic Plan of Spain</li> </ul> <p><b>REGULATIONS:</b></p> <ul style="list-style-type: none"> <li>• Management of livestock farms</li> <li>• Protection of animals in livestock farms</li> <li>• Framework of action for a sustainable use of antibiotics in species of livestock interest</li> </ul>	<p><b>POLICIES:</b></p> <ul style="list-style-type: none"> <li>• Regional specific policies on the CAP Strategic Plan of Spain</li> <li>• Sustainable Agriculture Production</li> <li>• Rural Agenda of Catalonia 2030</li> <li>• Bioeconomy Strategy of Catalonia 2030</li> <li>• Strategy for the sustainable development of Catalonia</li> <li>• Catalan strategy for the adaptation to climate change</li> <li>• General Plan of Forestry Policy</li> <li>• Technical plans of forest management</li> <li>• Strategic Plan of Extensive Livestock</li> <li>• Strategic food plan of Catalonia 2021-2026</li> <li>• Strategy to promote the energy utilization of forest and agricultural biomass</li> <li>• Test spaces of agroforestry systems</li> </ul> <p><b>REGULATIONS:</b></p> <ul style="list-style-type: none"> <li>• Management of livestock farms</li> <li>• Framework of action for a sustainable use of antibiotics in species of livestock interest</li> </ul>

Table A 2122. Financial incentive systems, favourable strategies, economic ideas/strategies, and political ideas/strategies Catalonia region to enhance the development of agroforestry and mixed farming systems at supra-national, national and regional levels.

----- Agroforestry -----		
Supra-national	National	Regional
<ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Horizon Europe grants</li> <li>• PRIMA grants</li> </ul>	<ul style="list-style-type: none"> <li>• CAP Strategic Plan of Spain</li> </ul>	<ul style="list-style-type: none"> <li>• Regional specific application of the CAP Strategic Plan of Spain</li> </ul>

----- Mixed farming -----



Supra-national	National	Regional
<ul style="list-style-type: none"> <li>• CAP 2023-2027</li> <li>• Horizon Europe grants</li> <li>• PRIMA grants</li> </ul>	<ul style="list-style-type: none"> <li>• CAP Strategic Plan of Spain</li> </ul>	<ul style="list-style-type: none"> <li>• Regional specific application of the CAP Strategic Plan of Spain</li> </ul>

