UNISECO

UNDERSTANDING & IMPROVING THE SUSTAINABILITY OF AGRO-ECOLOGICAL FARMING SYSTEMS IN THE EU

Deliverable Report 5.3 Participatory Analysis of Market and Policy Instruments for Agro-ecological Transition

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ACRONYMS

AE	Agro-ecological
AEFS	Agro-ecological Farming Systems
AEMs	Agri-environmental Measures
AKIS	Agricultural Knowledge and Innovation System
CAP	Common Agricultural Policy
CUMA	Coopérative d'utilisation de matériel agricole
EC	European Commission
GIEE	Groupements d'intérêt économique et environnemental
GS	Governance System
MAP	Multi-Actor Platform
MPI	Market and Policy Instrument
NGO	Non-Governmental Organisation
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
R&D	Research and Development
RBAPS	Results-based Payment Schemes
RDP	Rural Development Program
SES	Socio-Ecological Systems
SNA	Social Network Analysis
UNISECO	Understanding and Improving the Sustainability of Agro-ecological Farming Systems in the EU
WP	Work Package

EXECUTIVE SUMMARY

This Deliverable is part of the governance and policy assessment of the UNISECO project. The objective of this report is twofold: (i) **to create a database of existing market and policy instruments (MPIs) that support Agro-ecological Farming Systems (AEFS) in Europe; (ii) to summarise the analytical review of MPIs to identify and understand the key policy factors that enhance or limit agro-ecological transition in the 15 UNISECO case studies.** For that purpose, and building on the theoretical framework of the UNISECO project, the objectives are pursued through comparative case study research, based on a participatory approach.

A stepwise qualitative research design was developed to understand complex and context-specific issues associated with the agro-ecological transition in 15 case studies across Europe. These case studies cover key farming systems (arable, perennial, livestock, mixed), at different geographical levels (national, sub-national local) and the stage in the transition pathway (conventional, input substitution, redesign). In each case study, UNISECO partners carried out participatory activities with the stakeholders in the local Multi-Actor Platform (MAP), following common guidelines. The guidelines provided a common operationalisation of the research method while enabling flexibility to overcome difficulties found in local contexts of the case studies (Linares et al., 2019).

The data collection process led to the identification of 289 MPIs (policy, market and mixed instruments), covering 14 different types of instruments and implemented at the farming system, value chain and territorial levels. Most of the MPIs are policy instruments, but private initiatives also provide important market opportunities for agro-ecological products and networking and peer-to-peer learning for farmers, which are important for stimulating and promoting Agro-ecological Farming Systems.

The findings of the comparative case study analysis show that the instruments of CAP Pillar I policy have weaker links with the agro-ecological transition than Pillar II instruments. Among the latter, the instruments assessed by the case studies to be most effective were *Agro-environmental measures*, *Organic farming*, *Farm Modernization and Investment,* and *Advice, information and training*. The *EU regulations and directives* for farming practices were also assessed as having positive roles in the agro-ecological transition. Within Food Policies, the *public procurement of organic products* for public canteens, and the *National food strategies* scored highly for aiding the agro-ecological transition. Amongst market instruments, Certification Schemes were assessed positively overall, but opinions varied, and at times they were diverging.

A more detailed analysis of the key MPIs in each case study has enabled an understanding of the main positive and negative factors related to the success of instruments to support agro-ecological transitions. Research findings highlighted that the existing MPIs such as agri-environmental schemes and support for advisory services have positive effects on the decisions of farmers to adopt more ecological practices and motivate farmers to initiate or continue the transition. Key positive factors identified were: the provision of economic stability and technical and financial support to farmers willing to experiment with new sustainable practices; promotion of collective actions and understanding amongst local actors; production and spread of new knowledge; design od tools and activities that highlight the roles of agriculture in the environment.

There was general agreement about the positive aspects of most MPIs but room was identified for improvement. In particular, efforts are needed by policy makers and decision makers in agri-business to mitigate the negative factors of existing MPIs, which are preventing the adoption of agro-ecological among European farms. For example, CAP Pillar I is an important instrument for ensuring the viability of farming, which has sustained farming in the EU with a more ecological emphasis, by linking direct payments to the greening rules and via the cross-compliance. However, is insufficient to encourage the agro-ecological transition, involves a complex mix of different, and often conflicting, views and interests and may require structural change.

Additional efforts are needed to improve the delivery of the existing MPI framework, by designing revised instruments that are more effective in addressing contextual issues towards the agro-ecological transition. Strengthening the knowledge base of current farming practices and support of the Agricultural Knowledge and Innovation System are important steps in supporting the diffusion of Agro-ecological Farming Systems, contributing to reducing the risk aversion of farmers and empowering consumers.

Dedicated education campaigns, and certifications and labelling schemes are required to create a demand for agro-ecological produce. The inclusion of agro-ecological themes in the curriculum of formal education programmes (secondary and tertiary education) could aid the creation of a new generation of farmers paying greater attention to environmental and health implications of different farming methods. Such education and training could also improve the levels of awareness of information and communication technology tools, which is key to the agro-ecological transition in Europe.

Improved support for collective actions could make it easier for farmers to access to specific training, processing facilities and agricultural machinery, they could not afford otherwise. It also helps with communication between farmers and supports the creation of knowledge exchange amongst peers, which can reduce farmer aversion towards risk associated with the adoption of new agro-ecological practices. Networking contributes to the creation of synergies amongst local actors in the value chain which could enable a fairer distribution of added value, thereby supporting local rural development.

1. INTRODUCTION

This report is Deliverable D5.3 within Work Package 5 "Governance and policy assessment" of the EU Horizon 2020 project UNISECO (Understanding and improving the sustainability of agro-ecological farming systems in the EU). The overarching objective of Work Package 5 is to analyse market and policy incentives, with governance mechanisms, supporting Agro-ecological Farming Systems (AEFS). The report presents the results of Task 5.3 "Participatory analysis of MPIs for agro-ecological transition".

The analysis focuses on the governance (sub)system of the social-ecological system (SES) framework proposed by Ostrom (2009) which was adapted and applied in UNISECO, assessing the potential of existing market and policy instruments (MPI) to promote agro-ecological transitions. This was in line with the conceptual framework developed in Work Package 2 (Guisepelli *et al.*, 2018, D2.1; Prazan and Aalders, 2019, D2.2), and in cooperation with Task 3.1 (Description and assessment of the SES in the case studies) and Task 3.3 (Analysis of barriers and drivers of agro-ecological transitions). This deliverable presents the results of the assessment.
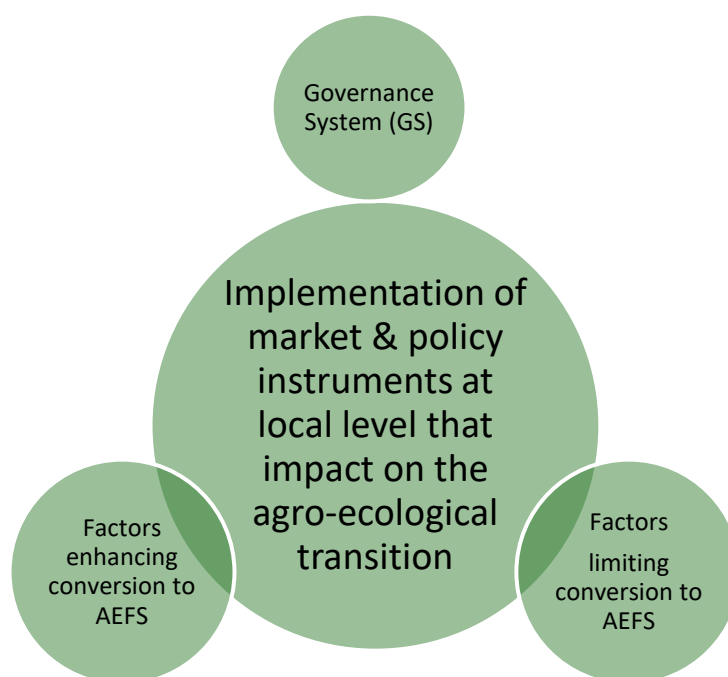
Figure 1. Assessment of MPIs (Task 5.3) within the analysis of Governance Systems (Work Package 5)

The overall objective of Task 5.3 is **to review and analyse the MPIs that are supporting Agro-ecological Farming Systems, to identify and understand policy factors that enhance or limit agro-ecological transition in the UNISECO case studies.**

MPIs refer to any initiative, mechanism, measure or incentive of the government (policy instrument), private sector (market instrument), or both (mixed instrument), with the aim of supporting, to some extent, the agro-ecological transition.

The specific objectives of Deliverable D5.3 are:

1. To report on an in-depth participatory analysis of existing MPIs with relevance to agro-ecological transitions, identifying their strengths and weaknesses across the different contexts of the case studies.

2. To classify which existing instruments are supporting (positive link) or hindering (negative link) conversion to Agro-ecological Farming Systems, and rank them according to their (level of effectiveness or potential link to transition to Agro-ecological Farming Systems.

3. To summarise key policy factors that enhance or limit the effectiveness of MPIs to overcome barriers or boost drivers of agro-ecological transitions.

The results presented will inform the co-construction of innovative transition strategies in other UNISECO activities (Tasks 3.3). In particular, it will inform the multi-criteria assessment of innovations in MPIs during the co-construction phase (Task 5.4).

The structure of the deliverable is as follows: Section 2 reports on the research method used and data collection carried out in the 15 case studies; Section 3 provides a comparative analysis of the different MPIs, their potential link to agro-ecological (AE) transition, and the main factors that enhance or limit its effectiveness. The conclusions reached are presented in Section 4. The Annexes present the 15 summaries of the results obtained in all of the case studies and the MPIs Database (in a separate MS Excel file).

2. RESEARCH METHOD AND DATA

This section presents the research methodology to collect and analyse the information. It is divided into two subsections. The first subsection describes the research design, with the main steps that have been followed to collect the information. The second subsection explains the method for data collection and analysis that generated the results presented in the report.

2.1. Research design

The research process was developed to answer the research questions to be addressed in Task 5.3 and applied in the 15 UNISECO case studies. The research questions were translated into the context of the specific challenges and dilemmas addressed by each case study[1]. Table 1 shows an overview of the case studies with their agro-ecological transition stage.

Table 1. Overview of the 15 UNISECO case studies.

Country Code	Case Study	Geographical Scope	Farming System	Agro-Ecological Transition Stage
AT	Mitigation of climate change by humus formation in arable farming (Ökoregion Kaindorf, Austria)	Local	Arable; Livestock	Redesign
CH	Intensive animal farming (Lucerne Central Lakes Region, Switzerland)	Local	Livestock	Conventional
CZ	Arable land management on organic dairy farms (Vysočina Region, Czechia)	Subnational	Livestock	Input substitution
DE	Developing strategies for agro-ecological transition in arable farming systems (Nienburg	Local	Arable	Conventional

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[1] For an overview of the key dilemma addressed by the UNISECO case studies, please see Prazan and Aalders (2019) and on the website of the UNISECO project.

	County, Lower Saxony, Germany)			
ES	Agro-ecological farming systems (Basque Country and Navarra, Spain)	Subnational	Mixed	Redesign
FI	Planning a dairy sector driven bio-product plant (Nivala, Finland)	Local	Livestock	Redesign
FR	Connecting CUMAs to foster the adoption of agroecological practices for viticulture (Auvergne Rhône Alpes, France)	Subnational	Perennial	Input substitution
GR	Collective implementation of alternative plant protection practices in peach trees (Imathia, Greece)	Subnational	Perennial	Input substitution
HU	Soil conservation farming (Hungary)	National	Arable	Conventional
IT	Diversifying specialised winegrowing areas (Chianti Biodistrict, Italy)	Local	Perennial	Redesign
LT	Small scale dairy farmers and cheesemakers (Lithuania)	National	Livestock	Input substitution
LV	Organic dairy farming (Latvia)	National	Livestock	Input substitution
RO	Hotspot of biodiversity and healthy food (Transylvania, Romania)	Subnational	Mixed	Conventional
SE	More food from ruminant farms (Sweden)	National	Livestock	Input Substitution
UK	Mixed farming and general cropping (North-east Scotland, United Kingdom)	Subnational	Mixed	Input Substitution

To achieve the aims of Task 5.3 a predominantly qualitative methodology was used. Guidelines were prepared to ensure a homogeneous approach for the participatory data collection process, allowing flexibility based on contextual issues at the case study level. A qualitative research approach was required to understand how and why market and policy instruments were effective or ineffective in supporting agro-ecological transition. This methodology allowed the analysis of existing MPIs in greater depth, understanding the complexity of the issues involved. The format recommended for the data collection was to hold a 3-hour workshop with 8 to 12 local stakeholders.

Options were provided for the data collection with the Multi-Actor Platforms, as UNISECO case studies have different contexts and local circumstances. Partners chose between two qualitative research techniques: workshops (option A/B) or interviews (option C), depending on the availability of MAP members, the socio-cultural context of MAP engagement, and the experience of each partner with transdisciplinary and participatory research. Each case study could also adapt these techniques to local conditions, varying the duration of the workshop or interviews, and the number of people participating.

Most of the case studies held the workshop which was recommended, but not all were in a position to bring together more than 7 participants for a period of at least 3 hours. The collection methods of data collection used by partners finally for each case study for Tasks 3.3 and 5.3 are summarised in Table 2.

Table 2. Data collection method used in 15 UNISECO case studies.

Data Collection Method	Duration	Number of Participants	Case Studies
Workshop (Option A)	≥ 3 hours	8-10 people	CZ, ES, LT, SE
		5-7 people	DE, IT, UK
Workshop (Option B)	< 3 hours	8-10 people	HU
		5-7 people	AT, GR
Interviews (Option C)	≥ 1 hour each	8-10 people	RO
		5-7 people	CH, FI, FR, LV

The number of participants in the workshops ranged from 5 to 10, and covered 6 of the 7 main types of actors or stakeholders that were identified in the Social Network Analysis (SNA) of the governance networks in the case studies (Vanni *et al.,* 2019, D5.2): (1) farmers and farmer associations; (2) authorities and administrations; (3) agri-food value chain actors; (4) science, innovation, advisory and capacity building actors; (5) NGOs, civic society organisations, local community representatives; and (6) consumers.

Table 3. Profile and number of participants in each UNISECO case study workshop.

Types of actors	AT	CH	CZ	DE	ES	FI	FR	GR	HU	IT	LT	LV	UK	RO	SE	Total
Farmers & farmers associations	3	1	4	1	4	1		1	2	1	2	1	1		3	**25**
Science, innovation, advisory, capacity building		1	2	3		1	3	2	2	3		3		1	4	**25**
Authorities and administration	1	2	1	2	2	2	1	1	3	1	3	1	3	3		**26**
NGOs, civic society organisations and local community representatives	2	1		1	2	1	1			1	4		1	4		**18**
Consumers														1		**1**
Agri-food value chain			2		1	2		1	1					1	2	**10**
TOTAL	6	5	9	7	9	7	5	5	8	6	9	5	5	10	9	**105**

In total there were 105 participants in the case study workshops (Table3), 76% of whom were from public authorities, scientists or advisory experts, with a lower representation of the consumer sector. The range and balance of the types of actors participating in the workshops represented the main target groups and different perspectives sought to be involved in the analysis of the MPIs.

The workshops and interviews followed similar steps, both seeking to collect the same type of information from the stakeholders, in three parts:

i)   Part 1 - The objective was to identify key barriers and drivers of agro-ecological transition that can be addressed through co-construction of new transition strategies by the actors in the Multi-Actor Platforms, which will be reported in Deliverable D3.4

(Task 3.3)[2]. The moderator presented an initial list of the barriers and drivers to the agro-ecological transition as identified by actors in each case study (from Task 3.1). The participants reviewed the list of barriers and drivers, and reflected on which of them would be a priority to be addressed and can realistically be addressed by the actors involved in the MAP.

ii)   Part 2 - The objective was to identify the existing market and policy instruments (MPIs) implemented in the case study area that address the agro-ecological transition and, once identified, to characterize them. Based upon desk research the project partners prepared a preliminary list of MPIs relevant to the agro-ecological transition. In several case studies, the list was submitted to the local stakeholder champion for refinement and then emailed to workshop participants before the workshop. In other workshops the list was considered directly with the workshop participants.

iii)   Part 3 - The objective was to understand how and why the instruments are or are not, effective for overcoming key barriers or promoting key drivers of the agro-ecological transition. The output also identifies the strengths and weaknesses of the instruments. The process used was a dynamic barometer that provided an in-depth and collective analysis of some of the most relevant instruments identified in Part 2. In most case studies the stakeholders, guided by the moderator, selected the instruments to be analysed in depth using the barometer approach.

2.2. Analytical method

The MPIs have been classified into 9 categories, and sub-categories, which are summarised in Table 4. A complete explanation of the categories used is in Annex 2.

Table 4. Classification of case study MPIs which are documented in the MPI Database.

Categories	Subcategories
Class of instrument	Policy instruments
	Market instruments
	Mixed instruments
Type of instrument	Area-based payments
	Market measures
	Practice-based payments
	Result-based payments
	Payments for investments
	R&D/Advise/Training/Information
	Incentives for other gainful activities
	Regulatory restrictions addressed to farming practices
	Regulatory restrictions addressed to territories
	Certification schemes
	Food policies
	Regional policies
	Networking instruments

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[2] Task 5.3 was developed in close cooperation with Task 3.3 ("In-depth analysis of drivers and barriers in Agro-ecological Farming Systems and co-construction of innovative strategies"). To avoid stakeholder fatigue through too many project engagements for member of the Multi-Actor Platforms (Irvine et al. 2019, D7.2), elements of both Tasks were intergated into one workshop.

	Other instruments
Type of actions addressed by the instrument	Individual actions Cooperation actions
Role played by local actors in the design of the policy	Active Passive
Level of design	European National Regional Local
Level of implementation	European National Regional Local
Level of application	Farming system level Value chain level Territorial level
Implemented / not implemented	Existing and Implemented Existing but not implemented Already finished
Potential link to transition to Agro-ecological Farming Systems	Don't know High and negative Medium and negative Low and negative No effect Low and positive Medium and positive High and positive

One of the expected results or outputs from Task 5.3 was an assessment of the existing MPIs with respect to their potential to promote the transition to Agro-ecological Farming Systems in each case study. This assessment was measured in seven degrees of: high and negative, medium negative, low and negative, no effect, low and positive, medium positive, and high and positive. Each stakeholder completed a questionnaire about their assessment of the potential for each MPI to aid the transition to Agro-Ecological Farming Systems using the scale provided. This quantitative technique was used to obtain insight to the assessment of stakeholders of the instruments. The approach helped with the analysis of a large number of MPIs, in depth.

Each stakeholder response represented an individual vote. Subsequently, to obtain the final score for each instrument, the average score was calculated. In some case studies, the participants debated the instruments and came to a consensus score. Afterwards, each partner incorporated the final score of each MPI into the Database.

The collective discussion of the score was especially fruitful for those instruments about which there was a rage of opinions, enabling a single value to be agreed upon. These discussions also showed that, for some instruments, the potential or effectiveness of the MPIs is lower than their 'theoretical potential' (i.e. which could have been achieved if they were better designed or implemented).

The scoring procedures used to reach the final link between the potential of each MPI and the potential for it to aid the transition to Agro-ecological Farming Systems is shown in Table 5.

Table 5. Scoring procedures in 15 UNISECO case studies.

Scoring Procedure[3]	Case Studies
Only Average Score	AT, CH, ES, FI, GR, HU, LV, RO, SE
Also Consensus Score	CZ (8%), DE (33%), FR (16%), IT (86%), LT (25%), UK (46%)

The scores produced by most case studies were the same as those obtained from individual voting of the stakeholders, resulting in the final scores being those of the average score. In 6 case studies changes emerged during the discussion phase, producing a different result from those of the initial votes. The percentages in Table 5 represent the proportion of MPIs that underwent changes after discussion.

A second output from Task 5.3 was an improved understanding of the factors that limit or enhance the effectiveness of MPIs to overcome barriers or boost drivers of agro-ecological transitions. This information was obtained through the dynamic barometer, in which each case study facilitated a debate amongst the stakeholders. Each partner analysed the qualitative information (narrative analysis) obtained from the discussions and presented the results in their corresponding reports. The preparation of this report and the comparative analysis of these factors has been based on the case study reports and communications with each partner.

The results obtained from this analytical discussion help to inform the forthcoming tasks in the UNISECO project of the co-construction of future transition strategies. A better understanding of the potential of existing MPIs, and why these have failed or succeeded to promote agro-ecological transitions, provides valuable "lesson learned" and knowledge for policy innovations in future transition strategies.

3. COMPARATIVE ANALYSIS OF CASE STUDIES

This section describes the key elements of database of MPIs which was created, and reports on the findings of the participatory activities. Additional information is provided in Annexes 2 and 1, respectively. The section is structured into three subsections. The first subsection provides an overview of the database, and details its key elements through use of the main categories that enable the classifications of the different MPIs. The second subsection presents the potential link between the main MPIs to the agro-ecological transition in the contexts of the case studies, based upon a quantitative analysis. The third subsection identifies factors that hinder or enhance the effectiveness of the main MPIs in the transition process, given their current design and/or application (i.e. the weaknesses and strengths of the MPIs identified by stakeholders during discussions).

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[3] Scoring procedures used by the partners to get the AE potential link of the MPIs, were: "average score" from the questionnaire answers (individual votes) and "consensus score" from the subsequent discussion.

3.1. OVERVIEW OF THE MPIs DATABASE

The process of data collection produced a total of 289 MPIs (Annex 1). Across the case studies there is a high variation in the number of identified MPIs, ranging from 4 in GR to 30 or more instruments in ES, RO and UK. This variation is likely to be due to the specific circumstances of the case studies, and their different stages of the transition to Agro-ecological Farming Systems (Figure 2). The majority of the MPIs are in the category of "policy" instruments with only a few "market" instruments identified in case studies, with the exception of ES in which 14 were identified. "Mixed" instruments, which combine elements of public and private initiatives, were identified in most of the case studies.
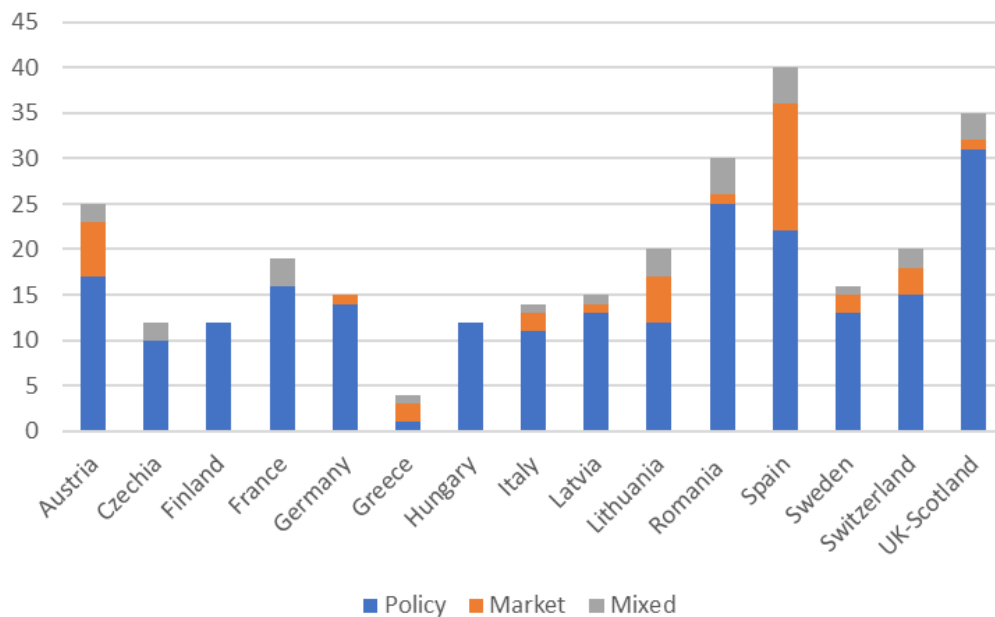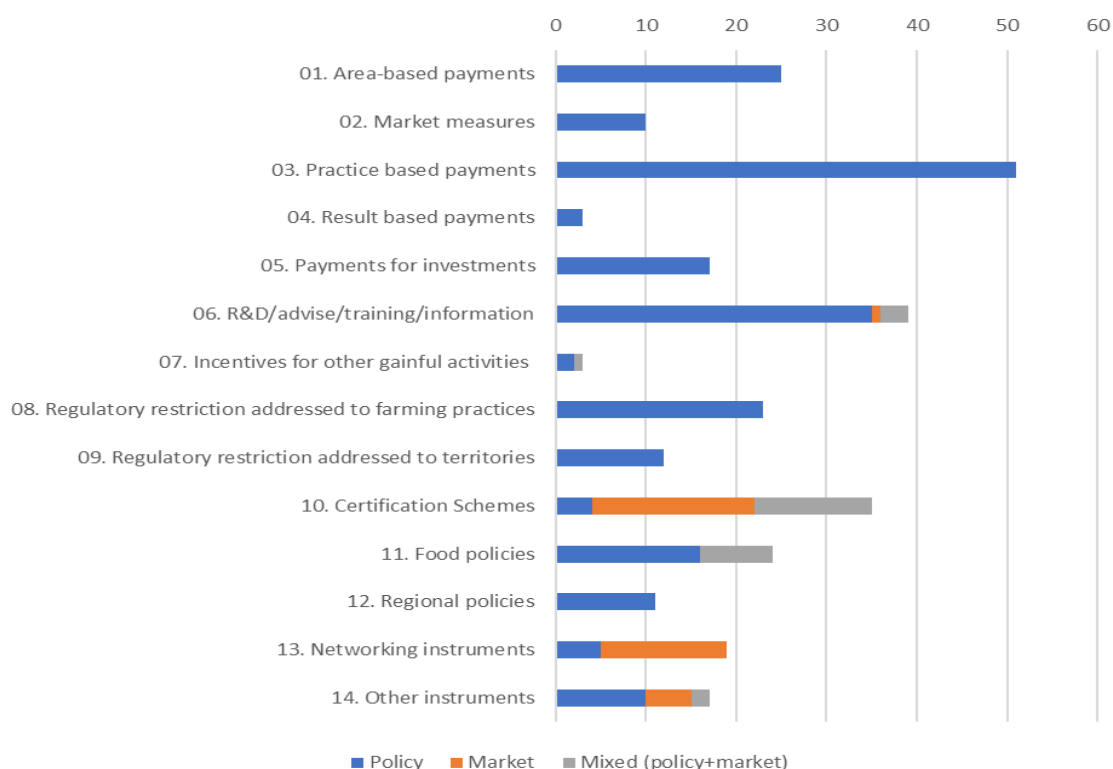

Figure 2. Number and categories of MPIs per case study.

Policy instruments include all 14 types of instrument, while market and mixed instruments are mapped onto 5 types of instruments according to the specific role that a private initiative can have in those types of instrument (Figure 3).

Figure 3. Number and categories of MPIs per type of instrument.

Practice-based payments form a quarter of the policy instruments identified. Most of these involve payments for the adoption of agri-environment measures or support for organic farming. R&D/advice/training/information provision is the second most frequent type of instrument identified. These largely cover measures of Rural Development Programmes of the CAP for supporting knowledge transfer to farmers in the form of financial support for advisory services and vocational training. Two more types of instruments are well represented in the database. These are area-based payments as part of the CAP Pillar 1 measures, and regulatory restrictions of farming practices and territories mostly due to environmental policies and land use planning. The former includes direct payments to farmers via the basic payment or single area payment schemes with a specific reference to greening and cross compliance rules. The latter covers mandatory rules for protecting the environment and the landscape which are, in most cases, implemented at farm level through the cross-compliance mechanism.

There are 4 types of market instrument: R&D/advice/training/information provision, certification schemes, networking instruments, and other instruments. Of these instruments, certification schemes are most frequently cited (mainly organic certifications). Networking instruments are more varied, ranging from producer organisations to purchasing groups. The market instrument included in R&D/advice/training/information provision refers to private companies offering free-of charge advisory service in Switzerland. Other instruments include private initiatives led by retailers or producer groups for promoting food from agro-ecological farming.

Only few MPIs were identified in the mixed category. Food policy and R&D/advice/training/information are relevant for agro-ecological transitions for two different reasons. The former includes MPIs that are largely devoted to the promotion and creation of short food chains on a local basis. The latter includes MPIs that enable the collaboration between public and private sectors.

Different instruments are designed to be implemented at different scales, from the farming system to the territorial level. In the database this is highlighted by the level of application of the MPIs (Figure 4).
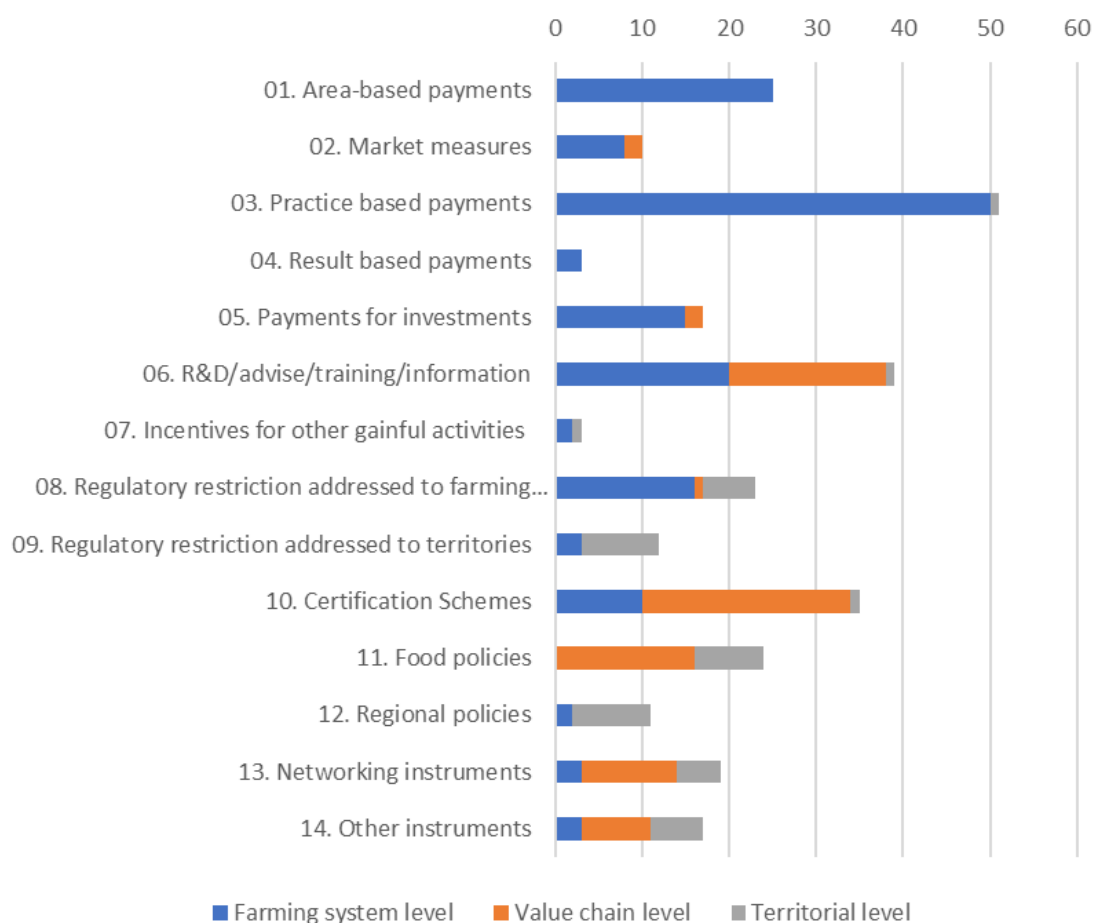

Figure 4. Number of MPIs by type of instrument and level of application.

Except for food policies, all of the types of instruments are applied at the farming system level. They largely aim at changing farmer behaviour by supporting the adoption of management practices that improve the delivery of ecosystem services (e.g. based on conservation agriculture or organic farming), encouraging agricultural and income diversification (e.g. structural change) and improving and advancing the knowledge base (e.g. vocational education and training).

At the value chain level, the MPIs identified mainly cover the adoption of certification and labelling schemes, food policies, R&D/advice/training/information provision and networking instruments. Certification is key to reducing information asymmetry between businesses and consumers, by providing trusted information about production processes or product characteristics, thereby enabling comparability of products through their labelling. Food policies aim at enabling more equitable distribution of benefits throughout value chain actors, and at supporting the health-environment nexus. The purposes of the networking instruments identified are also related to those of the food policies, with one aim being to strengthen links between supply chain actors, e.g. by creating demand for locally grown food. R&D/advice/training/information provision includes instruments that cut across farming system, value chain and territorial levels, education, vocational training, knowledge development and transfer. These instruments are designed to raise awareness about the linked interests of different types of stakeholder, and drive demand for food

from farming systems in agro-ecological transition. Support for the creation of Operational Groups under the European Innovation Partnership "Agricultural Productivity and Sustainability" is an example of MPI at the value chain level. At the territorial level, the MPIs identified include regional policies, food policies and regulatory restrictions.

In addition to the level of application, MPIs were categorised according whether they were individual or cooperation actions (Figure 5).

Figure 5. Number of MPIs by level of application and type of action.
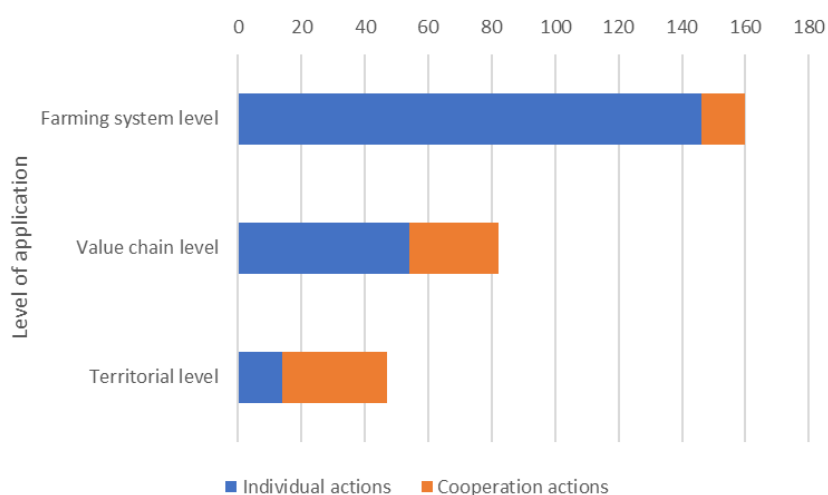
Figure 6. Number of MPIs by level of application and type of action.

Amongst the MPIs addressing individual actions, the key instrument applied at the value chain level is certification schemes. These schemes involve the certification of the compliance with production rules covering the origin and environmental and/or cultural aspects of food production. For example, in AT, the "Ökoregion Kaindorf" certification, and the related label, ensures that producers adopt humus building practices, in addition to indicating the geographic area of production. Relevant MPIs addressing individual actions at the territorial level involve the enforcement of spatial planning or landscape level rules at the national or subnational level, including ecological requirements for farms operating within given geographical areas due to, for example, the EU Habitat and Bird Directives.

Of the MPIs that address cooperation actions most instruments applied at the farming system level are aimed at boosting the Agricultural Knowledge and Innovation System (AKIS) in the case studies. The purpose is to improve knowledge transfer and to create synergies between producers, as well as to create links with other important actors for the Agro-ecological transition, especially consumers. The Scottish Government Strategic Research Programme is an example for this kind of instrument.

Another important group of MPIs includes measures the aims of which are to provide financial support to farmer cooperatives, especially for the creation of machinery rings and peer-to-peer exchanges to encourage the adoption of agro-ecological practices independent of farm scale. In the database of MPIs, examples are those identified in the French case study and involve the support to the Agricultural Machinery Utilization Cooperatives and the Environmental, Economic and Environmental Interest Group.

3.2. POTENTIAL OF MPIs TO PROMOTE AGRO-ECOLOGICAL TRANSITIONS

In this section the results reported are of a comparative analysis of how stakeholders across the case studies assess the potential link of the MPIs to promote agro-ecological transitions, based on the quantitative information obtained from the questionnaire. The comparative analysis provided an indication of the different types of MPIs evaluated across the case studies and which types of instruments received the highest and lowest scores[4].

Eighty-one percent of the MPIs in the 15 UNISECO case studies[5], were assessed as having a positive score. Most of the measures scored as having between a "low and positive" (32%) and "medium and positive" potential (39%). However, 32 MPIs (11%) were rated as "not effective" and 23 MPIs (8%) as having a "negative effect". This result implies there are instruments which are hindering agro-ecological transitions and that there is still room for improvement. Thirty MPIs (10%) were assessed as having a very "high positive" potential.

Although most of the analysed MPIs have a positive potential to support the agro-ecological transition, a range of negative aspects or weaknesses were identified during the barometer dynamic. These are discussed in section 3.3 with the results of the qualitative comparative analysis.

The scores obtained by the MPIs have been grouped into the 14 types of instrument. Common patterns have been interpreted across the case studies which have been used to identify those which are rated most positively and negatively. Figure 6 shows the distribution of scores by each type of instrument.

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[4] For results of the scoring exercise carried out in the case studies, see the summaries in Annex 1 and Annex 2 (sheets 7 and 8).
[5] See Section 2.2 to know how the final scores were obtained in each case study.

Legend:
- Low and positive
- Medium and positive
- High and positive
- No effect
- Low and negative
- Medium and negative
- High and negative

Instruments:
01. Area-based payments
02. Market measures
03. Practice based payments
04. Result based payments
05. Payments for investments
06. R&D/advise/training/information
07. Incentives for other gainful activities
08. Regulatory restriction addressed to farming…
09. Regulatory restriction addressed to territories
10. Certification Schemes
11. Food policies
12. Regional policies
13. Networking instruments
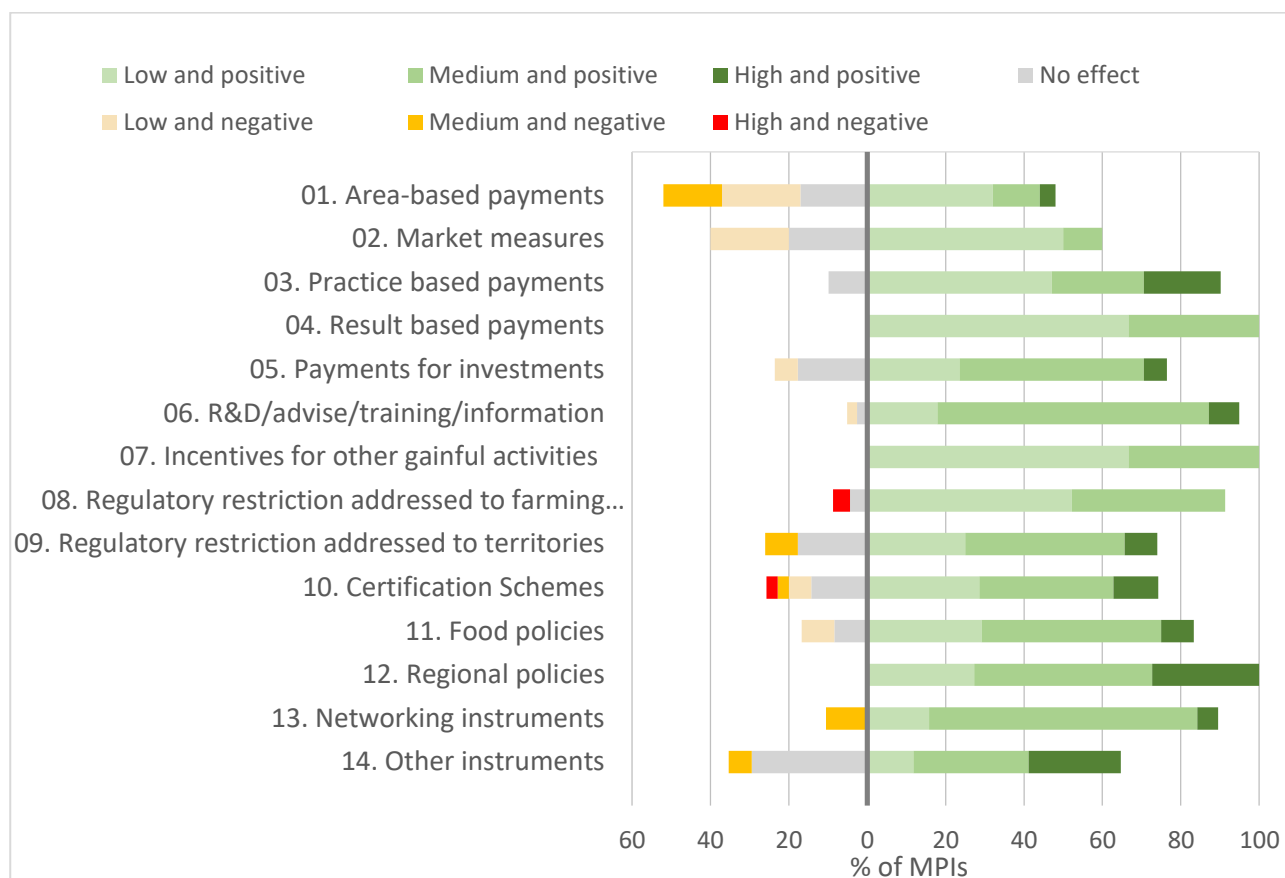14. Other instruments

% of MPIs

Figure 6. Potential of MPIs to promote agro-ecological transitions assessed in each case study, according to the type of instrument.

The results show that the lowest scoring category was the CAP PILLAR I – Direct Payments (within the Area-based payment), which was ranked between "medium and negative" and "no effect"[6] by 8 case studies (AT, DE, FR, ES, HU, LV, RO, SE). The other Area-based payments measures (including those of CAP PILLAR I) scored higher. In particular, Greening and Cross Compliance received 6 positive scores (low or medium), 2 "no effect" scores and 2 negative scores (low) by 10 case studies (AT, CZ, DE, ES, FR, HU, LT, LV, RO, SE).

Feedback from the case study workshops was that the impact or effectiveness of policy measures and instruments in supporting agro-ecological transitions is lower than it could be in theory. The potential for positive contributions towards an agro-ecological transition could be greater if they were designed to target support accordingly.

Three case studies (DE, HU and LV) reported that CAP PILLAR II – Non-productive investments (a Practice-based payments measure) was ineffective. However, this instrument scored positive in case studies IT and RO due to its purpose aligning with solutions to their key UNISECO dilemmas.

The results show the instruments with which there is the greatest variety of opinion are the *Certification Schemes.* No association was found between the ratings and the type of certification

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[6] Only in the case study of Czech Republic, Direct Payments achieved a positive score (low and positive). However, in the case study summaries in Annex 1, it can be seen that it was the worst rated instrument, with two negative votes from its stakeholders.

(i.e. public, market or mixed; European, national, regional or local). This suggests that certification is a flexible instrument, the effects of which vary depending upon their specific characteristics.

There are numerous certification schemes (e.g. labels of origin, protected areas, integrated production, organic production schemes), which are public, private or mixed initiatives, which received positive assessments in 11 case studies (AT, CZ, DE, ES, FR, GR, IT, LT, LV, RO, CH). All of these meet, to some degree, agro-ecological requirements in the specifications of their labels, or have demonstrated a positive impact on the environment. In particular, all the certifications for organic farming (e.g. the EU Certification) were assessed as positive, with scores between "low and positive" and "high and positive" (case studies in AT, CZ, ES, IT, LV, RO, CH).

Nine certifications or labels, in 6 case studies (AT, ES, IT, LT, LV, CH), were assessed as negative. A common feature of both the lowest and highest assessed labels is that they are designations of origin or national quality schemes, which do not seek to reward environmentally friendly practices. Therefore, the results indicate that certifications are effective tools if they are linked to sustainable practices or production, otherwise they seem to represent marketing tools designed for the benefit of large agricultural companies.

Some instruments and measures that common to several case studies have an assessment of low positive. These include, within *Payments for investments*, measures in *CAP II PILLAR* such as *Farm Modernization and Investment* which scores "no effect" and "medium and positive" in case studies in CZ, DE, FR, HU, IT, LT, LV and RO. The other investment measures within this category were also assessed as slightly positive.

EU regulations and directives such as the Nitrate Directive, the Pesticides Directive and the Habitat and Bird Directives (within Regulatory restriction addressed to farming practices), are measures present in several case studies (specifically in AT, CZ, FI, FR, HU, IT, RO) which received similar scores of between "low and positive" and "medium and positive". Other national or regional regulations (e.g. water and soil protection) were also positively evaluated in their respective case study[7]. Within Food Policies, the promotion of public or "green" procurement of organic and local products for public canteens such as school canteens instrument is applied in 6 case studies (ES, IT, LT, LV, RO, SE), assessed between "low and positive" and "medium and positive".

The national food strategies in 3 case studies (CZ, SE, UK) were positively ranked between "low and positive" and "medium and positive". In the RO case study it is assessed as ineffective because it is considered as a formal commitment towards European institutions without a real impact.

The instruments evaluated highest by the case studies (in addition to being the most numerous) were those grouped into Practice-based payments and R&D/advice/training/information provision.

In particular, high positive scores were given to CAP PILLAR II - Agro-environmental measures (in particular, Organic farming), scoring between "low and positive" and "high and positive" in most case studies (AT, CZ, DE, ES, FI, FR, GR, HU, IT, LT, LV, RO, SE). In general, stakeholders assessed the potential of measures of CAP PILLAR II higher than those of CAP PILLAR I.

In 10 case studies (AT, CZ, DE, ES, FR, HU, IT, RO, UK), stakeholders assessed the policy instruments that seek to develop training, information and/or advisory services such as CAP PILLAR II – Advice,

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[7] It highlights the European measure "CMO, Planting permits" in the Italian case study (rated with high and positive), which it seems one of the most important instruments to address its key dilemma.

information and training, as one of the key instruments for agro-ecological transitions, scoring it between low, (mostly) medium and highly positive.

Within this group of measures and instruments, only one advisory initiative was badly rated as "low and negative", which was in the CH case study. This is the only measure of the cluster which is a market instrument, a free service offered by up- and downstream industries which is, according to the case study assessment, aligned with their market interests.

The research programmes and innovative or experimental initiatives and funds (e.g. CAP PILLAR II – Innovation partnership), were positively rated in 6 case studies (AT, CZ, ES, FR, HU, UK), with scores between "low and positive" and (mostly) "medium and positive". Only one instrument, in the LV case study, received a lower score, of not effective.

3.3. FACTORS THAT ENHANCE OR LIMIT THE EFFECTIVENESS OF THE KEY MPIs

Overall, the results of the assessment of existing MPIs in the 15 case studies suggest positive links to agro-ecological transitions. However, most of the instruments analysed were not considered sufficiently effective to overcome the case study dilemmas. Consideration of only the quantitative results could lead to overly optimistic conclusions about the role of the existing MPIs in promoting agro-ecological transition in Europe. However, the qualitative information obtained from the case study workshops enable a more detailed analysis on a case-by-case and instrument-by-instrument basis, and thus identification of specific weaknesses.

Some general observations about the results are:

i) The simplification of the assessment of an MPI into a single value does not enable the representation of disagreement amongst stakeholders which may be significant for understanding factors that impact on the effectiveness of MPIs in supporting agro-ecological transitions. Detailed comments by participants included specific criticisms of MPIs. Information on the evaluations of the MPI in each case study is reported in Annex 1.

ii) There was a tendency to positively evaluate MPIs, influenced by their theoretical potential rather than by the level of influence or effectiveness they had had within case studies. Market and policy instruments could be better defined and designed to support agro-ecological transitions (leading to their higher future potential), but need to overcome barriers to be more effective in supporting the transition.

iii) The questionnaires used evaluated the effectiveness of existing MPIs, but not problems relating to the governance system such as a lack of policies in specific areas, a lack of coherence between policies, and counterproductive effects of the existence of policies that support conventional and intensive practices.

iv) The results from the analysis provide an overview of the best and worst instruments in their support of an agro-ecological transition, from a common approach applied across all the case studies[8].

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[8] There may have been differences between case studies when evaluating whether an instrument is low or medium in its negative or positive effectiveness. In general all the case studies agreed if the instrument is negative or positive, and if it is one of the worst or best of the existing MPIs. A higher or lower score could be due to the different influences of sociocultural conditions in each case study idiosyncrasies of the country or group, level of skepticism, group atmosphere, or freedom to criticize or support.

v) Stakeholders identified instruments which have the potential of becoming very positive in future if these were redesigned or improved.

The following subsections identify key policy factors that enhance or limit agro-ecological transition in the 15 UNISECO case studies. These factors explain why instruments may be failing or succeeding in supporting the agro-ecological transition in the case studies. The strengths (positive factors) and weaknesses (negative factors) identified by participants in the case study workshops in the dynamic barometer. Given the high number of instruments analysed across all the case studies, the following tables focus on the instruments identified as being most relevant across the case studies.

Table 6 lists the MPIs analysed in the following subsections, based on the results of the dynamic barometer, and the case studies in which they were debated (third column).

Table 6. MPIs analysed in depth in UNISECO case studies.

Type of MPIs	MPIs Analysed	Case Studies
Area-based payments	CAP PILLAR I - Direct payment; CAP PILLAR I - Greening and Cross-compliance	AT, DE, ES, HU, LV, RO, SE, UK
Practice-based payments	CAP PILLAR II - Agri-environmental measures; CAP PILLAR II - Organic farming	AT, CZ, DE, FI, GR, HU, LT, LV, SE
R&D/advice/ training/ information provision	Advisory services by companies; Advisory service to enhance the sustainability of agriculture (M2); Advisory activities, training and experimentation (INTIA); Technical advices and information; CAP II PILLAR - Advice, information and training; Farm Advisory Service; Knowledge Transfer & Innovation Fund; Rural Innovation Support Scheme	CH, DE, ES, FR, HU, IT, LV, UK
Certification Schemes	EU Organic Farming Certification Scheme; High Environmental Value (HEV) certification scheme; (National) Quality Schemes / Labels of origin; Quality standards (e.g. Agro2); GlobalGap standards; Green Spoon/Bordeaux Spoon	CZ, FR, GR, IT, LT, LV, RO
Food Value Initiatives	Collective Centre "Ekoalde"; CUMAs; Rural Development Programme cooperation measures: Promotion of short supply chains and local markets on local level; Support for investments in processing/ marketing of agricultural products and for horizontal and vertical cooperation of actors along the supply chain; Establishment of agricultural producer groups Local clusters and networks for food processing and value chain improvements; CAP PILLAR II - Support for Investments in Processing; CAP PILLAR II - Farm modernization and investment; CAP II PILLAR - LEADER	ES, FR, LT, LV, SE, RO
Food Policy	Public Tender or Procurement; Milk and Fruit for Schools Scheme;	ES, LV, SE

	Plant-based food in public kitchens	
Regulatory restriction addressed to farming practices	Nutrient balance; Cantonal phosphorus regulation; Fertiliser ordination; Nitrates Directive; Environmental permit for agricultural activities that entail a potential environmental hazard; Environmental permit for bioproduct plant	CH, DE, FI

3.3.1. Factors relating to area-based payments

As indicated in Section 3.2, *CAP PILLAR I - Direct payment* scored lowest of the instruments of those analysed across all case studies. There was a consensus that these payments are very important because they help ensure the viability of many farmers. In particular, the direct payment is an essential source of income for family farms, with many small farms going out of production without direct payments. Enabling the survival of small farms longer than they might otherwise could slow structural change in agriculture. Without this payment, the number of large farms would increase which, in turn, would be likely to increase the sizes of parcels, and reduce boundary areas and landscape elements that have a positive impact on biodiversity.

However, the direct payment scheme does not promote the transition to more sustainable agricultural systems because such payments were not designed to promote sustainable and environmentally friendly agriculture. The MPI consists of area-based payments that are distributed in a non-performance-oriented manner, that is, without any environmental objective other than fulfilling cross compliance. The payment is provided regardless of how the land is managed, and whether or not agro-ecological principles are followed.

Due to the current design of the payment scheme, this instrument has some adverse effects for the agro-ecological transition: (1) the main recipients of direct subsidies are a small number of large-scale operators (legal entities); (2) mainly, payments are allocated to conventional or intensive production systems; (3) hindering farmers from developing the necessary market skills to promote the added values of more sustainable production systems. Efforts by farmers to diversify their farm are not rewarded; (4) payments have resulted in farmers becoming dependent on public aid by limiting the empowerment of the sector.

Stakeholders in the DE and UK case study pointed out that the rules are too complex and bureaucratic, creating difficulties for farmers to understand all the nuances of the requirements, and with heavy penalties for making mistakes. As a consequence, many farmers depend on their advisers for assistance, which is financially expensive and can be frustrating. Furthermore, the operation of the support mechanism does not provide an opportunity for dialogue between the authorities and individual farmers, and thus it does not utilise the benefits of local knowledge of the circumstances that prevail in a given year.

This instrument has contributed to preserving the status quo (conventional agricultural practices) and is a policy related barrier to agro-ecological transition. The high proportion of the budget for direct payments means funds can't be used to support environmentally friendly practices ("public money only for public goods"). Agro-ecological transitions would benefit from the re-design of the direct payment system. Some participants proposed that instead of receiving financial aid, it would be better to penalize agricultural practices that harm the environment.

Regarding CAP PILLAR I Greening and Cross-compliance, participants recognized that greening ensures a certain base level of biodiversity and water protection in all areas of agricultural production. They reported "greening" as encouraging farmers to think about and adjust land management in an environmentally friendly way. As noted in the HU case study, with greater knowledge of farmers, there is potential to diffuse the implementation of existing agricultural practices, such as those regarding soil conservation.

Stakeholders in several case studies noted that greening has limited effect, and is rather an alibi measure. It is seen as 'one-dimensional', and unable to deliver all of the intended benefits. Despite addressing the full scope of agricultural production areas, greening measures only marginally contribute to a general transition to Agro-ecological Farming Systems, with limited contributions made to the improvement of biodiversity and water quality. A few cases reported a need for knowledge transfer to improve the level of awareness of the potential contributions that greening can make to agro-ecological transitions.

The following proposals were examples of those suggested to increase the effectiveness of greening: (i) to combine the requirements or the amount of the premium with biodiversity measures; (ii) to target measures to key environmental challenges such as reducing the risk of soil erosion (e.g. agricultural land on slopes); (iii) and to ring-fence funding for such measures at the national level.

Table 7. Main factors that limit or enhance the effectiveness of area-based payment related instruments.

CAP I PILLAR – Direct Payments	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Stability of income for small farms	Do not promote sustainable farming systems
A farm structure dominated by small farm sizes (e.g. in the RO case study) slows down structural changes and maintains farming systems with high provisions of **public good**s	The principal recipients are a small number of large-scale operators which are dedicated to conventional or intensive production
	Dependency of farmers on public funds
	Does not enable the use and benefits of local knowledge
	Requirements for applying for support are complex
	The high proportion of the budget for direct payments means funds can't be used to support environmentally friendly practices
CAP I PILLAR – Greening and Cross-compliance	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Ensures a certain protection of biodiversity and waters	Measure with limited effect. Only a low contribution to an agro-ecological transition
Shift in producer approach: to think and act in an environmentally friendly way	More information and knowledge transfer is needed

3.3.2. Factors relating to practice-based payments

In general, agri-environmental measures corresponding to CAP PILLAR II are highly valued for their positive effects in addressing agro-ecological transitions. In particular, support payments to organic agriculture have been seen as the main driver of agro-ecological practices to date. The stability of the income this MPI gives organic farmers (especially during the conversion period) is

valued, compensating for the public goods provided (i.e. it compensates for lost income and additional costs). Without payment for organic agriculture, many organic farms (mostly small) could not survive. Support for organic agriculture motivates other farmers to start the conversion to organic agriculture. Payments for agri-environmental measures make it easier for farmers to manage land in an environmentally friendly way. Even if the farmer believed in organic farming, this might not be feasible without receiving economic compensation.

Some agri-environmental measures target aspects of biodiversity to provide solutions at the local level. Specific practices with known and validated biodiversity benefits or biodiversity outcomes are eligible for payment. Some of these measures are also effective for soil protection through the use of nitrogen and pesticides. Therefore, the perception of stakeholders of agri-environmental measures in all the case studies is positive regarding their contribution to the transition to Agro-ecological Farming Systems. However, there is scope for improvement regarding the ecological design of this MPI. Despite its positive potential, the current form of implementation reduces its effectiveness and some of its initial objectives not being met.

The main problems identified with agri-environmental measures are:

i) farmers perceive the measure as a subsidy and are not really concerned about the justification of the requested management prescriptions. Therefore, they often lack the knowledge to properly implement the practices;

ii) administrative burdens associated with participating in agri-environment measures are too high;

iii) payments for organic agriculture are higher than for conventional agriculture, but the financial support provided does not always sufficiently compensate for the loss of income due to higher production cost;

iv) a lack of precision regard the farm eligibility criteria at the application stage;

v) the lack of differentiation of payments according to the diversity of organic farming systems (i.e. the application of the same payment rate for all geographic areas without taking into account the different agricultural conditions and the costs of conversion), the low degree of flexibility in the implementation of measures (prescriptions on compliance with all conditions), and the high penalties for making mistakes negatively affects the willingness of farmers to implement other agro-ecological practices;

vi) the range of schemes is not sufficiently broad to give organic farmers more options and flexibility to adopt agri-environmental measures;

vii) in some cases they benefit land managers who farm the land to maximize subsidy income;

viii) if there were no payments to implement agri-environmental measures, farmers would not consider continuing the associated farming practices.

In conclusion, agri-environmental measures do not fully utilise the potential of this instrument, with improvements needed in their design and implementation. Suggestions identified for improving the effectiveness of agri-environmental measures in supporting agro-ecological transitions were: i) agri-environmental measures need to be well-defined, targeted, and effectively implemented; ii) standardization and consolidation of control mechanisms; iii) support for organic farming should offer a premium to those farms that also carry out processing activities.

Table 8. Main factors that limit or enhance the effectiveness of practice-based payments related instruments.

Agro-environmental Measures (Including Organic Farming)	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Agri-environmental measures encourage farmers to think and act in an environmentally friendly way	Some farmers do not implement the requested agricultural practices properly
Agri-environmental measures can target specific aaspects of biodiversity	Farmer willingness to implement agri-environmental measures decreases due to a lack of flexibility and differentiation of payments
Stability of income for organic farms	Payments for organic agriculture do not always sufficiently compensate additional cost organic production
Support for organic agriculture motivates other farmers to start the conversion to organic farming	Inaccurate controls of farm eligibility criteria at the application stage
	High administrative burden
	Agri-environmental measures also benefit land managers who do not produce in an agro-ecological way
	A lack of long term change in attitudes such that farmers would not consider continuing farming practices if Agri-environmental measures ceased

3.3.3. Factors relating to R&D/advice/training/information provision

The advisory, information, training and experimentation initiatives were generally considered as one of the key instruments to facilitate the agro-ecological transition. These services can significantly change attitudes towards agricultural approaches, especially if economic profitability is clearly explained.

These services are potentially positive because:

(1) they help farmers address the administrative requirements association with applying and complying with funding and support payment regulations;

(2) they can encourage farmers to experiment;

(3) they can help to stimulate "strategic thinking" at the farm level and at the group level;

(4) they raise awareness of farmers about environmental problems, and explain the reasons behind new practices which have proven effective in promoting uptake by other farmers;

(5) they support for farmers, reducing potential feeling of being alone on a transitions to Agro-ecological Farming Systems;

(6) they enable the exchange of knowledge and know-how between farmers, as well as between farmers, technicians and researchers. Peer-to-peer learning encourages farmers to explore solutions in real-life situations;

(7) the existence of these services is associated with the generation of more innovative public projects, and administrative staff willing to listen to the problems of producers.

Advice from private providers can be biased due to own economic interests. For example, in the CH case study free of charge advisory services by up- and downstream industries are considered an important instrument hindering the transition towards lower animal numbers because advise is provided by companies like fodder traders who have an interest themselves in keeping animal numbers high.

The provision of advice by public bodies is not sufficiently effective. This could be improved by the provision of better support and guidance to farmers on agro-ecological practices with such advice available throughout the value chain, and combined with holistic technical advice.

The greatest effectiveness has been with farmers who are already aware of agro-ecological farming practices, open-minded, or predisposed to make use of the new tools. More effective knowledge transfer is likely to be required with farmers who are more reluctant to adopt agro-ecological farming practices, and less likely to be influenced by advice as to the benefits.

Increasingly complex farming systems mean that farms often require highly specialized advice, with advice which works for one farm not being suitable for all farms. Current support does not fit the needs of organic farmers. This is one consequence of weaknesses in education and research in agronomy, and at the level of the agricultural system, into the roles of Agro-ecological Farming Systems and the use of knowledge of traditional approaches to farming and land management. Gaps in knowledge means that advice about aspects of agro-ecological farming practices can be limited due to a lack of examples, comparisons and counterfactual situations.

Some case studies (e.g. in DE, FR, IT) noted that only a minority of farmers access services of R&D/advice/training/information provision. Many small farms do not benefit from advisory services due to their cost, even when such services are subsidised by public authorities. The cost of advisory services can lead to them not being used by those farmers whose need for them is greatest.

The support which can be provided by some advisory services is limited by their financial means and are understaffed. They may also lack qualified advisers with knowledge of agro-ecological agricultural practices, particularly of their benefits for biodiversity. This implies a need for more training for advisors.

Case study workshops also reported that the existence and maintenance of publicly funded advisory services depends on political support, and the direction of policy with respect to future agriculture. Some evidence was reported of inertia and resistance to change by technical advisory personnel within public administrations. Tailoring engagement and knowledge transfer towards those advisors could be an effective means of enabling the transition to Agro-ecological Farming Systems.

Table 9. Main factors that limit or enhance the effectiveness of R&D/advice/training/information provision related instruments.

Public R&D, Advisory and Training Services	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Changes attitudes towards agricultural approaches and raises awareness of environmental problems	More specialized advice is required, with current support not tailored to the needs of organic farmers
Increases the commitment of farmers to new practices	A lack of qualified advisers with knowledge of agro-ecological agricultural practices, with more training required for technicians
Helps farmers address administrative requirements	A lack of suitable education and research on agronomy and agro-ecological farming practices
Stimulate "strategic thinking" at the farm level and at the group level	Only a minority of farmers access these services
Support farmers in transition to agro-ecological farming practices, reducing feelings of loneliness	Advisory and training services have a low influence on farmers reluctant to adopt agro-ecological farming practices
Encourages the exchange of knowledge and know-how	The maintenance of public service depends on political support
Peer-to-peer learning encourages farmers to experiment and to explore solutions in real-life situations	Agro-ecology encounters inertia and resistance to change by personnel within public administrations
Greater willingness of technicians to listen to the problems of producers	
Private R&D, Advisory and Training Services	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
None reported	Advisory services developed by private companies (CH case study) do not have the same benefits as public services as they are motivated by optimizing profits

3.3.4. Factors relating to Certification Schemes

Certification Schemes include several with different impacts on the transition to Agro-ecological Farming Systems. Some of the certification requirements are considered too weak, for example in relation to the use of external inputs, and do not promote the adoption of agro-ecological practices, and can be awarded without having to change farming practices. Therefore, there is a risk that certifications will be used as a low-requirement baseline which is accessible to most farmers.

The European certification for organic farming is the most valued instrument within this category. It is considered very relevant and reliable. Certification enables the entire food chain to be valued and offers the possibility of being rewarded by the market for recognizing sustainable agricultural practices. Therefore, it can be an economic incentive for farmers to become certified and possibly to improve their farming practices. Likewise, it also contributes to raising the awareness of citizens of the relationship between food, the environment and human health.

However, the EU organic certification alone is not sufficiently effective. More differentiated certification schemes are needed to better reflect different organic farming techniques used in agricultural production. The EU scheme makes a positive contribution but only covers the basic

rules of organic agriculture[9]. Additional rules (additional standards) would strengthen the certification system and increase reliability and trust. Small farmers complain that the EU certification is being used in intensive monocultures, so they see the certification as an additional cost without being sufficiently recognised in the market.

Another problem lies in the certification of diversified agricultural systems. From a technical perspective, it is perceived that it is easier to make a transition to organic agriculture for an already diversified farm, since this is closer to an organic system. However, from the perspective of certification, the transition of these systems is more complex. Designing the instrument for these cases is more difficult, as more activities must be certified in a diversified system.

Certification schemes that provide labels of origin and certify specific regional or national quality aspects places value on the origin of the product (for example, in specific mountain areas), and traditional products or gastronomic practices (national origin, historical recipes). However, in general these types of certification schemes do not seek to protect specific environmental practices in agricultural production. Voluntary certification schemes are generally designed to meet the interests of the large commercial market without necessarily promoting more sustainable practices. Therefore, they do not usually have a direct impact on the transition to sustainable production practices.

Additionally, there are 4 adverse effects of these certification schemes that may be hindering the transition to Agro-ecological Farming Systems:

i) The increasing number of certification schemes can create confusion amongst consumers (e.g. consumers cannot distinguish which schemes are organic) and compete with organic certification, reducing the effectiveness of the latter;

ii) some of the labels of origin become stronger with the result that some farmers abandon organic certification;

iii) some of the rules associated with the labels of the method of production may be counterproductive with respect to environmental issues;

iv) ultimately, some labels help large companies control the market without providing any appreciable benefit to the environment and society.

The positive link is that some of these schemes (for example, PDO/PGI labels of origin) have associated benefits for the environment due to their promotion of consumption of locally produced products (short marketing circuits), and a corresponding reduction in carbon footprint. Some "national quality food and agricultural products" labels promote small-scale extensive agriculture. In future, such labels could include agro-ecological practices.

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[9] Council Regulation (EC) No 834/2007 defines the aims, objectives and principles of organic farming and production, and two implementing regulations (No 889/2008 and No 1235/2008) detail the organic production, labelling, control and import rules. This set of rules will change with regulation (EU) 2018/848 which will apply from the 1 January 2021 (IFOAM, 2018).

Table 10. Main factors that limit or enhance the effectiveness of Certification Scheme related instruments.

Organic Certification Schemes	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
The EU certification for organic farming is well valued, considered very relevant and reliable	EU certification is being used in intensive monocultures, so certification does not sufficiently differentiate diversified Agro-ecological Farming Systems
Potentially rewarded by the market for recognizing sustainable agricultural practices	Concerns that certification will be used as a low-baseline requirement, accessible to most farmers
Economic incentive for transition	More differentiated schemes targeted to agro-ecological practices are needed
Increased citizen awareness about links between food, environment and human health	Technical problems with certifying diversified agricultural systems
Labels of Origin / National Quality	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Environmental benefits due to consumption of locally produced products (i.e. reduction in carbon footprint)	Do not require sustainable production practices
Some national quality food and agricultural products labels also promote extensive small-scale agriculture	Confusion among consumers, so they cannot distinguish which products are organic
	Abandonment of organic certificates to obtain other labels
	Method of production of these labels may be environmentally counterproductive
	They can help large companies control the market without providing any appreciable benefit to the environment and society

3.3.5. Factors relating to Food Chain Initiatives

Improving the value chain and market access is one of the most important challenges identified in several case studies. Several categories of MPI in the database have aims of supporting the food value chain. The particular categories in the database are those of "Payments for investments", "Food Policies", "Market Measures", "Networking instruments" and "Regional Policies". These MPIs experience similar drivers and barriers that enhance or limit agro-ecological transitions. Particular issues are those relating to food processing and marketing to add value to products, and increasing the economic profitability of Agro-ecological Farming Systems.

Within this combination of "food chain" MPIs, the case studies identified several Rural Development Programme measures (CAP PILLAR II) of relevance including CAP II PILLAR Farm modernization and investment, CAP II PILLAR Establishment of agricultural producer groups, CAP II PILLAR Support for investments in processing/marketing of agricultural products, and for horizontal and vertical cooperation between actors along the supply chain. These Rural Development Programme measures provide funds for projects to stimulate rural entrepreneurship and generate added value. They support investments in processing, marketing and cooperation between local actors (producers, processors, retailers, food service providers, public authorities) throughout the supply chain.

These measures aim to improve the overall performance of farms by increasing their economic competitiveness, diversifying production and quality of agricultural products, stimulating the restructuring of small and medium-sized farms to become commercial farms, and supporting the processing and direct sale of value-added products. This is achieved by filling gaps in the available infrastructure, equipment and facilities necessary to create value-added products. These policy instruments can finance, for example: the creation or modernization of processing and sales units; the introduction of new technologies for the development of new products and processes; the implementation of environmental protection measures; joint marketing or sale of products in short supply chains; and support for the creation of small businesses in rural areas (and non-agricultural activities) to promote economic development in these areas. These instruments also provide leverage to support the agro-ecological transition by linking the instruments with ecological criteria.

Through these funds, in several case study areas funding has been provided for regional and local projects across the food value chain (e.g. in the ES case study Ekoalde, in the FR case study CUMAs and GIEE; in the SE case study Matlust, Smaka på Skåne and Östgötamat; and in the RO case study Local Action Group Podişul Mediaşului and Local Action Group Microregiunea Valea Sâmbetei). These initiatives are of collectives, post-harvest models for small farms to carry out joint transformation and sales actions. Examples of collective actions are the purchase of equipment and machinery for organic farmers or the creation of collection centres. The integrated and multi-sectoral nature of these strategies is based on the interaction of actors from different sectors of the local economy.

These MPIs, Rural Development Programme Measures and projects, were considered to be relevant in addressing barriers due to the high degree of market concentration, the role of farmers as price takers, and the lack of market awareness of strategic and innovative initiatives. They are instruments which are useful for supporting the agro-ecological transition, and can positively influence future scenarios of how market drivers and barriers develop and impact on transitions.

Positive factors identified by the participants in the workshops are that:

i) they stimulate rural entrepreneurship and generate short supply chains in rural areas;

ii) they help to close gaps within the value chain and facilitate improvements in organic farming systems, making it easier for agro-ecological farms to process food and develop innovative products;

iii) the investments help to increase the competitiveness by equipping farms with efficient machinery and equipment;

iv) the use of alternative marketing models enables the autonomous generation of value added through agro-ecological farms without relying on large distribution and ensure a fair price for the products.

v) the instruments facilitate the creation of local groups and networks that experience the same problems in rural areas and common goals, and foster territorial interconnection and horizontal and vertical cooperation among actors;

vi) multi-sectorial strategies facilitate the knowledge exchange and cost sharing between farmers to handle technical obstacles and plan solutions together, creating a climate that facilitates innovation and experimentation (looking for new responses to existing rural

development problems). Consequently, farmers involved in such initiatives may be more likely to risk innovative agro-ecological practices;

vii) networks improve the governance capacity of local farmers, by promoting the participation of the local population in planning, decision-making and implementation of the strategies necessary for territorial development;

viii) joint activities to increase economic profitability, by enabling agro-ecological farms (which often are the weakest actors in the market and trapped in a low productivity regime, with no means to add value to their agricultural production) to access the market in better conditions.

In conclusion, because of all these reasons, existing MPIs in the food value chain have a positive potential to promote the transition of small-scale farming to a more economically viable model.

Potential negative side effects were reported as:

i) farms still face difficulties of economic viability, e.g. due to support mechanisms that do not fit with the particular local context, inadequate value chain facilities and projects still depend on financial aid;

ii) concerns about viability to respond to growing demand for organic products (a future scenario), which is a model that works for local and small markets, but is not appropriate for distribution of large volumes of products;

iii) schemes are insufficiently effective to increase the profitability of the farm, making it difficult to adopt new production lines and practices at the farm level;

iv) the involvement in groups takes time that farmers may not be able to afford due to financial constraints;

v) the relationships between actors can be characterised by low levels of trust, which makes cooperation difficult;

vi) some groups have used measures to obtain aid for investments in activities that are not related to the adoption of agro-ecological practices and that do not offer any environmental benefit. Therefore, there is a need for clearer and stricter requirements and selection criteria;

vii) Rural Development Programme funds are difficult for small and medium farmers to attract. One of the main obstacles for farmers when applying for such funds is the lack of a business approach and the lack of co-financing[10]. In addition, the complex regulations often disadvantage smallholder farmers, who often lack time, money and the capacity to comply with all of the rules;

viii) Rural Development Programme measures facilitate modernization and improvements in infrastructure in conventional agricultural systems. The provision of greater and preferential investment support to the value chain of organic agricultural products would further stimulate transition to Agro-ecological Farming Systems.

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[10] Funding only covers part of the expenses incurred with the respective project and the grant is received as reimbursement or as down payment only for beneficiaries who are able to provide equivalent bank guarantees.

In several of the UNISECO case studies an innovative food policy has been implemented involving public procurement of the purchase of organic and local food in public canteens (Food policy category). This instrument has increased market opportunities for organic producers and has closed gaps in value chains by promoting public purchases of organic and local products.

The potential of this idea was assessed as high, as it ensures demand for organic food and stabilizes the incomes of farmers. However, it was still perceived as being ineffective due to problems with its implementation in relevant case studies. These were:

    i)   the large producers win the tender because, in addition to the organic and local criteria, they also offer a lower price;

    ii)   diffusion problems and as a result farmers do not apply to the initiative;

    iii) administrative complexity can overwhelm smaller farms;

    iv) the acquisition of organic products through public canteens (for example school canteens) is voluntary and the amount required for consumption is small, so canteens at schools opt for conventional products;

    v)   a lack of awareness and knowledge amongst consumers about sustainable agriculture and sustainable food.

Table 11. Main factors that limit or enhance the effectiveness of initiatives related to the Food Chain.

Food Chain	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Stimulates rural entrepreneurship	Problems of economic viability
Improvements in organic farming systems. Allow producers to start processing small-scale food and develop innovative products.	Low capacity to respond to the growing demand of organic products (future scenario)
Increase efficiency and competitiveness	Insufficient increase in economic profitability
Autonomous management and price establishment	Lack of time to participate in collective actions due to workload
Promote local groups, territorial interconnection, and horizontal and vertical cooperation	Distrust in relationships amongst actors
Knowledge exchange and costs shared between farmers to handle technical obstacles and plan solutions together. Innovation-friendly environment.	Improper use of investment aid for activities that are not related to the adoption of agroecological practices. Stricter requirements are needed.
Empowerment of local farmers and participation in rural development	Sometimes investments are not available for groups of producers and it is not easy for small farms to apply.
Increase economic profitability	Preferential investment to organic producers is needed
Public Procurement	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
Stabilizes farm incomes	Criteria applied lead to larger farmers winning public tenders
	Publicity problems
	Administrative burdens
	Lack of commitments by public canteens to buy organic ingredients and sell organic food
	Low consumer awareness

3.3.6. Factors relating to regulations addressed to farming practices

Regulations refer to the nutrients balance, phosphorus, nitrates, and the management of fertilizers and related regulations, which were analysed in depth in 3 case studies (CH, DE, FI).

Generally, the potential of the regulations on nutrients, phosphorus, nitrates and fertilisers towards supporting agro-ecological transitions is considered positive but marginal. All case studies identified weaknesses and scope for improvement of their effectiveness. Case studies also noted that is quite difficult to detect the impact of these regulations in agro-ecological transitions. Some instruments (e.g. the fertiliser ordinance in the DE case study), are new and at the time of the workshops and interviews, their effects were not fully known. In other cases the impacts of these instruments were seen as indirect and difficult to predict.

Regulations were considered to have a positive impact on agro-ecological transitions, particularly in relation to the water system, because all farms have to comply with the rules. In the CH case study, phosphorus emission thresholds have a positive effect in improving environmental conditions. Restrictions will become more rigorous from 2020 onwards, with rules coupled *to* additional voluntary instruments (e.g. contract) in which farmers receive payments for further reducing phosphorus emissions.

In the DE case study, the fertiliser ordinance is considered to have a positive impact on the quality of surface waters while the effect on groundwater quality currently remains unknown, with potential benefits highlighted for biodiversity due to lower or no use of fertilisers (e.g. in boundary areas next to streams and rivers). The reduction in fertiliser use could promote extensification of land use that enhances biodiversity.

In the FI case study, the environmental permit for agricultural activities that could have associated potential environmental hazards, and the environmental permit for a bioproduct plan, are national regulations with a positive impact on addressing the key dilemma of transitions to Agro-ecological Farming Systems. The first permit serves as a motivation for farms to participate in nutrient recycling options and reduce the need for additional land for spreading manure, with incentives to deliver their manure to the Nivala bioproduct plant. These environmental permits played a significant role in the establishment of the Nivala bioproduct plant, since the operation of the plant has to be reliably environmentally sustainable.

In all of the case studies stakeholders reported that regulations are not sufficiently strict and that the thresholds should be more restrictive.

The nutrient balance instrument in the CH case study does not solve ammonium related issues and it's not linked to the regional/local ecological thresholds. The effectiveness of this regulation in controlling the density of animals is limited due to the possibility for trading and transporting manure to other farms to reduce nutrient emissions, which might result in the intensification of plant production in certain areas. Therefore, the instrument could even be considered as the one with the greatest negative impact.

The fertilizer ordinance in the DE case study has limited effectiveness on biodiversity by failing to take into account individual plots. Concerns about the fertiliser ordinance are that it might lead to the cultivation of crops with lower fertiliser needs in "red areas", and more fertiliser-intensive crops in areas in which there are no requirements for reducing the application of fertilisers. Farmers perceive the "across-the-board" requirements of the ordinance as ineffective, and not a targeted long-term strategy, which in turn may reduce their willingness to adopt environmentally

friendly measures. They suggest it would be more effective to allow local adaptation to the ordinance rather than applying it uniformly in all areas, including in those areas with lower problems with water quality.

In the FI case study the effectiveness of the Nitrates Directive is reported as being limited, because a large proportion of farms participate in agri-environmental schemes that go beyond the requirements of the Directive. Therefore the potential of the Directive to promote agro-ecological transitions is relatively low.

In the FI case study, there is criticism of the way the area over which manure can be spread is calculated as part of being granted the environmental permit. Feedback from stakeholders was that it would be better to place the emphasis on manure handling, not just the area for spreading manure. They also reported that the conditions attached to the environmental permit have not been sufficiently strict to make many farms apply nutrient recycling.

Table 12. Main factors that limit or enhance the effectiveness of initiatives related to the regulatory restrictions on farming practices.

Regulatory Restrictions	
Positive Factors (Strengths)	**Negative Factors (Weaknesses)**
High compliance with regulations by farms	Regulations and thresholds not strict enough
Phosphorus emission – improvements in environmental conditions; positive tightening requirements, and effective additional voluntary instruments	Nutrient balance – does not solve problems of ammonium; not linked to the regional ecological thresholds; not effective in controlling animal density
Fertiliser Ordinance - low positive impacts on water systems, extensification and biodiversity	Fertiliser Ordinance - limited effectiveness for biodiversity; criticism of the measurement process; increase in fertiliser-intensive crops in areas without requirements for reducing the application of fertilisers; decrease in the willingness of farmers to participate; need for local adaptation
Environmental permits - specific national regulations in FI case study with positive impacts on its dilemma	Environmental permits - criticism of the method of calculation of the area over which manure Is spread in FI case study; conditions insufficiently strict to ensure farms apply nutrient recycling
	Large proportion of farms participate in agri-environmental schemes that go beyond the requirements of the Directive

4. CONCLUSIONS

The objective of this Deliverable is to analyse the existing market and policy instruments (MPIs) that are supporting Agro-ecological Farming Systems, and to identify and understand the most relevant factors that limit or enhance their potential to promote agro-ecological transition in the 15 UNISECO case studies. To that purpose, a stepwise qualitative research design has been developed, based on a participatory approach that involved the contribution of MAP stakeholders from data collection through to interpretation of the results. The research approach has improved the understanding of context-specific issues related to the dilemmas in individual case studies, by focusing on how and why the MPIs which are available have encouraged or prevented the adoption and diffusion of agro-ecological practices at the case study level.

An output of the research was the creation of a database of existing policy, market or mixed instruments with relevance to the transition to agro-ecological farming practices and systems. This database includes details of the level of the MPIs (e.g. value chains, territorial) in key European farming systems (e.g. perennial, arable, livestock and mixed). A significant proportion of the MPIs are from the CAP Pillars I and II. Private initiatives also provide important opportunities for agro-ecological products (e.g. marketing), networking and peer-to-peer learning for farmers, which are important for stimulating and promoting Agro-ecological Farming Systems (i.e. supply and demand sides).

Local stakeholders acknowledge the importance of CAP Pillar II instruments, especially Agri-environment measures, Organic farming and Farm Modernization and Investments, for encouraging the adoption of agro-ecological farming practices. Stakeholders also reported the need to improve their knowledge base by exploiting measures which address the Agricultural Knowledge and Innovation System (AKIS), such as advice, information provision and training measures of Rural Development Programmes.

Findings also highlighted the pivotal role of food policy for creating synergies amongst food chains and supporting consumer responsibilities and involvement in agro-ecological transition pathways. Notable examples of food policy include green public procurement rules for school canteens and national food strategies aiming at creating awareness about the food-health nexus.

The in-depth analysis of the MPIs has enabled the identification of positive and negative factors associated with the current design of certain MPIs with respect to addressing the dilemmas of specific case studies. Key positive factors are income stabilisation; technical and financial support for the adoption of more ecological practices; the promotion of collective action, public-private partnership and peer-to-peer learning; and knowledge transfer about Agro-ecological Farming Systems among consumers.

Key negative factors relate to the generally high transaction costs associated with: public support; lock-ins in the formal education system; high costs for advisory services; the aversion of farmers towards risk; the lack of a clear definition of Agro-ecological Farming Systems which then prevents the development of a dedicated certification and labelling scheme to reduce information asymmetry business-to-consumer; and limited consumer education.

Issues specific to individual case studies depended on their relative social, geographic, and biophysical contexts, as well as on the current stage in the agro-ecological transition pathways. Stakeholders expressed a need to account for those differences by improving the targeting of policies. Additionally, they call for appropriate policy mixes to create synergies amongst factors which can have positive effects and impacts.

Although there was general agreement regarding the positive aspects of most MPIs in the 15 UNISECO case studies, the findings identified potential for improvement. In particular, efforts are needed by policy makers and decision makers in agribusiness to mitigate the negative factors of existing MPIs, which are preventing the adoption of agro-ecological practices by European farms. Additional efforts are needed to improve the delivery of the existing MPI framework, by designing new and improved instruments that properly address contextual issues towards the agro-ecological transition.

Strengthening the knowledge base of the current farming practice and supporting the AKIS is a crucial step to support the diffusion of Agro-ecological Farming Systems, by reducing the aversion to risk of farmers and empowering consumers. This would allow better integration of the three

interpretations and perspectives of agro-ecology, i.e. science, practice and social movement, and the generation and exchange of new knowledge. This could highlight the role that Agro-ecological Farming Systems can play in rural development, the environment, and human health, while creating or reinforcing the link between farmers and consumers.

CAP Pillar I is an important instrument for enabling the viability of farming. It has, to some extent, sustained a more ecological farming approach in the EU by linking direct payments to the greening rules and via the cross-compliance rules. However, it does not provide sufficient support to encourage the agro-ecological transition, which requires a mix of different, and often conflicting, views and interests and may require structural change.

Pillar II instruments are more linked to the agro-ecological transition by supporting the transfer of knowledge about specific practices, including agricultural and income diversification. The problems with those measures are that they do not encourage changes in the attitudes of farmers and thus only have a limited impact on improving the ecological performance of the farm in the long term, and monitoring the impacts of those measures on the environment and ecosystems is not compulsory. A result-based design of some measures would help, with the payment being based on actual improvements and verified results. The use of updated, real-world information would generate reinforcing feedback loops with policy design.

In some contexts, the closure of the organic-conventional yield gap makes the conversion to organic farming a profitable marketing strategy, which can reward the producer with a price premium on sales. However, consumers are not always aware about the meaning and the differences between organic and agro-ecological farming. So, there would be benefit from dedicated education campaigns and certification and labelling schemes to create demand for agro-ecological produce.

The inclusion of lessons about Agro-ecological Farming Systems in the curriculum of secondary and tertiary education could lead to the creation of a new generation of farmers more concerned about the environmental and health implications of different farming methods. Such education and training could also improve the levels of awareness of information and communication technology tools, which is key to the agro-ecological transition in Europe.

Support for collective action is another key element of the current MPI framework, which has shown positive effects in addressing the agro-ecological dilemmas. Farmer cooperatives can facilitate access to specific training, processing facilities and agricultural machinery, which they could not afford otherwise. It also helps with communication between farmers and supports the creation of knowledge exchange amongst peers, which can reduce farmer aversion towards risk associated with the adoption of new agro-ecological practices. Networking contributes to the creation of synergies amongst local actors in the value chain which could enable a fairer distribution of added value, thereby supporting local rural development.

This research draws on the theoretical basis of the UNISECO project, and inputs from the members of the Multi-Actor Platforms, to identify positive and negative factors of existing market and policy instruments relevant for the agro-ecological transition at the case study level. The relatively small number of participants could create anomalies in the scores calculated. However, this is countered by the qualitative analysis of stakeholder discussions, and arguments underlying the consensus approach to scoring and conclusions from the workshops.

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ANNEX 1 - CASE STUDY SUMMARIES (SEPARATE PDF FILE)

ANNEX 2 - DATABASE OF MARKET AND POLICY INSTRUMENTS OF CASE STUDIES (SEPARATE MS EXCEL FILE)