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Assessment of the Common Agricultural Policy 2014–2020 in Supporting Agroecological Transitions: A Comparative Study of 15 Cases across Europe

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Abstract: This article is aimed at analyzing the potential that CAP 2014–2020-related instruments have on supporting agroecological transitions in Europe by focusing on the strengths and weaknesses of key instruments. Through a stepwise participatory research methodology, 105 key stakeholders (farmers, advisors, academics, environment experts, administration representatives, and professionals from food chains) in 15 countries in Europe were engaged in the discussion of the potential of current CAP instruments to solve the barriers that constrain agroecological farming systems in their particular regions. The results of this comparative study show which CAP instruments are valued with a high potential to support transitions to agroecology. The analysis of the stakeholders' perceptions contributes to an enhanced understanding of why CAP instruments have failed or succeeded to promote agroecological transitions.

Keywords: EU agricultural policy; CAP instruments; sustainable agriculture; agroecological transitions; participatory research



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1. Introduction

In the last few decades, the negative environmental and social externalities of the conventional model of production [1,2], which is still dominant, have raised the awareness of the necessity to promote a transition toward more sustainable farming and food systems. Among those models, agroecology has become prominent in the research and policy debate about the sustainability of agriculture [3–5]. In Europe, debates around the sustainability of agriculture are becoming increasingly prominent [2,6–10], and the European Union (EU) recently increased its commitment to sustainable agriculture with the approval of the Green Deal, the Biodiversity Strategy, and the Farm-to-Fork Strategy, while the new Common Agricultural Policy (CAP) reform (2023–2027) establishes ambitious environmental objectives.

Market and policy instruments (MPIs) are key to support a transition of European farming systems toward sustainability, especially by adopting agroecology, which considers the needs of local actors [11]. Among the policy instruments, the CAP is particularly relevant, as it represents the policy framework that regulates agricultural production in the EU. There is a long-standing debate on the effectiveness and efficiency of the CAP framework in promoting sustainable farming systems in Europe [12,13]. Some studies indicate that current CAP instruments have contributed to some extent to positive transformations in the agricultural sector, e.g., by increasing the organic production [14–17]. However, despite

the achievements, the European strategy for agroecological and sustainable agriculture remains unclear and marginal in the EU CAP and national policies of the most Member States [11,18].

To study this issue in depth, data and studies are lacking, particularly comparative studies across Europe. Most of the existing publications concerned about the impact of CAP instruments are single case-based studies and/or primarily focused on organic farming support [16,19–23]. To help guide the construction of better policies, more research efforts are needed to understand the performance of current policies in supporting agroecological transitions in Europe.

To bridge that gap found in the literature, this article is aimed at analyzing the potential that CAP 2014–2020-related instruments have on supporting agroecological transitions, by focusing on the strengths and weaknesses of key instruments. To do this, we created an inventory of market and policy instruments (MPIs) with relevance to support agroecological transitions. The instruments were evaluated for their greater or lesser ability to support transitions to agroecology, and the factors that impact the ability of these instruments to contribute to this objective were identified.

A participatory process with 105 stakeholders was developed across 15 case studies. The case studies were selected to represent the contextual and geographical variability of Europe. To the best of the authors' knowledge, an inventory of agroecology-related MPIs with such a wide international coverage is missing in the literature. The perceptions of local actors about the inventoried instruments were collected at the case study level and used to generate new understanding about the strengths and weaknesses of those instruments to address practical issues.

This paper builds on the results obtained within the EU Horizon 2020 research project UNISECO. In particular, it is partly based on the results reported to the European Commission in the Deliverable Report 5.3 "Participatory analysis of MPIs for agroecological transition" [24].

The remainder of the paper is structured as follows: Section 2 presents a literature review of previous studies on the topic; Section 3 reports on the research method used and data collection carried out in the 15 case studies; Section 4 provides the results obtained from the comparative analysis of the data (the inventory created with the identified MPIs, with special focus on CAP instruments; the potential of those instruments in supporting the transition to agroecology; and the main policy factors that enhance or limit their potential, i.e., the strengths and weaknesses of those instruments). Lastly, the discussion and conclusions reached are presented in Sections 5 and 6.

2. Conceptual Framework: The EU CAP Policy in Relation to the Agroecological Transition

Despite the fact that the term agroecology has been used for decades, there is not yet an agreed single definition [25]. While a framework of a consolidated set of 13 related agroecological principles has been identified [3,26], many of these principles do also apply to other alternative agricultural approaches such as organic farming. It is important to recognize these similarities in principles and practices between agroecology and organic farming, particularly if the IFOAM principles and not EU organic farming regulations are the basis of comparison [27]. IFOAM principles of organic farming provide a broader vision of sustainable farming systems including social values and goals that are also reflected in principles of agroecology [26,28].

Scientists have opted to refer to agroecology as a dynamic concept that results in continuous adaptations through a transition pathway from fully conventional agriculture to fully agroecological and sustainable agriculture. Agroecological transition can be defined as the development of territorial biodiversity-based agriculture [29].

Different transformation pathways, steps, strategies, and actions toward agroecology have been developed by scientists [30,31]. They have also elaborated a spectrum of agricultural practices that fit in each phase of the transition pathway. Depending on the

agricultural practices applied, agroecological farming systems can be distinguished as follows [32,33]:

- “Weak” agroecology (or “efficiency/substitution-based agroecology”) based on increasing resource use efficiency (fertilizer, pesticides, and water) and substitution of inputs (replacing chemical inputs with biological inputs);
- “Strong” agroecology (or “biodiversity-based agroecology”) aimed at enhancing ecosystem services and generally requiring a redesign of the farming system.

Moreover, scientists have used different theoretical frameworks to explain agroecology as a result of a complex system where social and ecological factors and processes interact. Comparative analyses of different frameworks can be found in literature [34–36]. Agroecological farming systems (AEFS) are “based on the sustainable use of local renewable resources, local farmers’ knowledge and priorities, wise use of biodiversity to provide ecosystem services and resilience, and solutions that provide multiple benefits (environmental, economic, and social) from local to global” [1].

Therefore, a sustainable agroecological transition includes political, sociocultural, economic, environmental, and technological shifts in rules, practices, institutions, and values, leading to more sustainable modes of production and consumption [37,38]. The transition requires both institutional and technological innovation [39]. Figure 1 shows relevant drivers for the transitions, from the current conventional system to an agroecological system in an advanced stage of redesign.

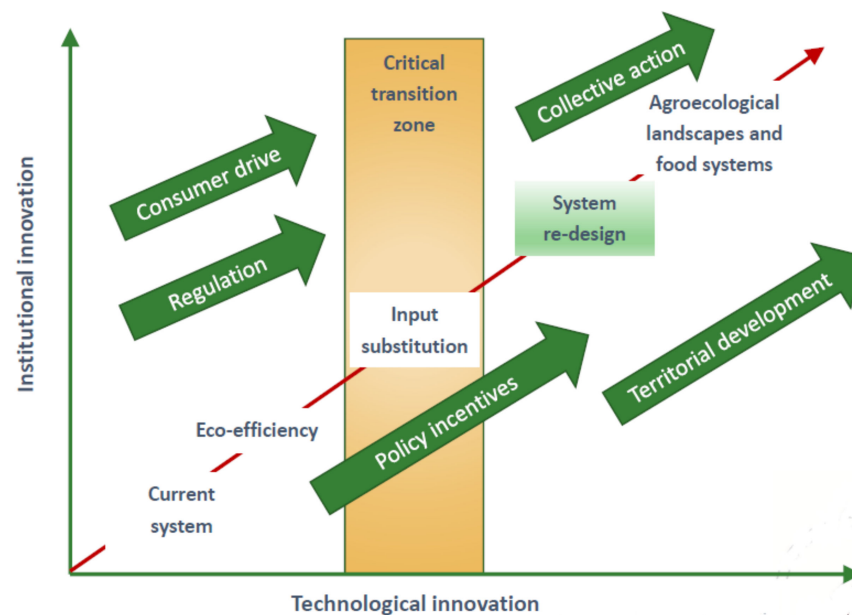


Figure 1. Examples of drivers for agroecological transitions [40], adapted from [39].

MPIs can play an important role in enabling progress in the transition pathway by stimulating the implementation of sustainable practices at a farm level or enabling a transformation of the food system.

Among all the dimensions that affect agroecological farming systems and agroecological transitions, this paper examines the policy factors, in the context of EU CAP 2014–2020, that enhance or limit agroecological transitions in Europe.

The current CAP 2014–2020, still under application until the new CAP 2023–2027 is implemented, is aimed at increasing not only agricultural competitiveness and production through market orientation and income support (Pillar I) but also the remuneration of public goods and rural development through the strengthening of the “conditionality” (in the form of “cross-compliance” and the new “greening”) measures for young farmers and small farms, as well as “agri-environment and climate measures” (CAP Pillar II–RDP).

In each European country, CAP instruments have been developed differently [12]. Variations can be found at the level of regulation or decision making, the amount of funds dedicated to organic farming, and the eligibility criteria. Thus, impacts on agroecology may also vary. In this respect, agroecological farming systems (in different transition stages and facing different transition dilemmas) in different national and regional policy environments are considered in the case studies. This is to enable the identification of the variety of policy factors affecting transitions to agroecology and to synthesize common key factors through a comparative analysis.

3. Materials and Methods

A participatory research design was developed to understand complex and context-specific issues associated with the policy instruments that support agroecological transitions in the 15 case studies. Participatory research, based on multiactor approaches, has been widely supported in the literature as a suitable and beneficial method for the production of environmental knowledge [41–43].

Qualitative techniques were used for data collection, in the form of workshops or interviews, to promote discussion among stakeholders. Three activities were carried out during the workshops or interviews: (i) identification of relevant market and policy instruments (MPIs) in each case study; (ii) assessment of MPIs with respect to their agroecological potential through a quantitative survey (questionnaire); (iii) discussion about factors that enhance (strengths) or limit (weaknesses) the potential of MPIs in supporting the agroecological transition.

National case study teams firstly conducted data analysis, and their results were reported to project research coordinators, who are the authors of this paper. Then, coordinators carried out a comparative analysis with the different results obtained, producing three final outputs: (i) construction of a database and inventory of MPIs; (ii) comparative analysis of the agroecological potential of MPIs; (iii) comparative analysis of key policy factors that enhance (strengths) or limit (weaknesses) their potential. Figure 2 summarizes the steps followed for data collection and analysis.

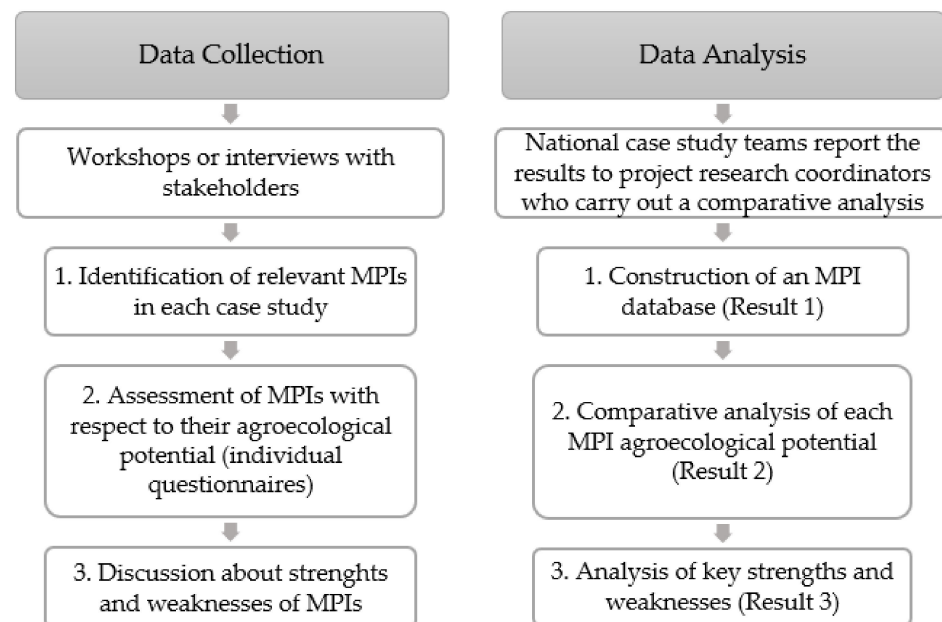


Figure 2. Overview of the methodological approach (authors' own elaboration).

3.1. Data Collection

The case studies selected in the project included different farming systems (arable, perennial, livestock, and mixed) at different geographical levels (national, subnational, and local). Table 1 shows an overview of the 15 case studies [44].

Table 1. Overview of the 15 UNISECO case studies (adapted from [45]).

Code	Case Study	Geographical Scope	Farming System
AT	Ökoregion Kaindorf, Austria	Local	Mixed
CH	Lucerne Central Lakes Region, Switzerland	Local	Livestock
CZ	Vysočina Region, Czechia	Subnational	Livestock
DE	Nienburg County, Lower Saxony, Germany	Local	Arable
ES	Basque Country and Navarra, Spain	Subnational	Mixed
FI	Nivala, Finland	Local	Livestock
FR	Auvergne Rhône Alpes, France	Subnational	Permanent crops
GR	Imathia, Greece	Subnational	Permanent crops
HU	Hungary	National	Arable
IT	Chianti Biodistrict, Italy	Local	Permanent crops
LT	Lithuania	National	Livestock
LV	Latvia	National	Livestock
RO	Transylvania, Romania	Subnational	Mixed
SE	Sweden	National	Livestock
UK	North-east Scotland, United Kingdom	Subnational	Mixed

For the data collection, national teams carried out participatory activities with local stakeholders, through dedicated multiactor platforms (MAPs) [46]. The national research teams performed the data collection following common guidelines, which provided a common operationalization of the research method while enabling flexibility to adapt to the local contexts of the case studies. Each team could select the most suitable data collection technique, i.e., workshop or interviews, to meet MAP member availability and the sociocultural context of the case study (Table 2).

Table 2. Data collection method used in the 15 UNISECO case studies (authors' own elaboration).

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

The number of participants in the workshops and interviews ranged from 5 to 10, covering 6 types of stakeholders [47]: (i) farmers and farmers' associations; (ii) science, innovation, advisory, and capacity-building actors; (iii) authorities and administrations; (iv) nongovernmental organizations (NGOs), civic society organizations, and local community representatives; (v) consumers; (vi) agri-food value chain actors. In total, 105 stakeholders participated in the case study workshops or interviews (Table 3), 76% of whom were from public authorities, scientists, or advisory experts, with a lower representation of the consumer sector.

The workshops and interviews followed a similar structure, both seeking to collect the same type of information from stakeholders.

Activity 1. National teams prepared a preliminary list of existing market and policy instruments (MPIs) implemented in each case study area that address the agroecological transition according to desk research. For the purpose of this research, market and policy instruments (MPIs) are defined as any measure, mechanism, or incentive with relevance for supporting agroecological transitions. Previous UNISECO reports were used as a baseline for desk research [48]. Then, the list was shared with the local stakeholders for refinement and completeness of information.

Table 3. Profile and number of participants in each UNISECO case study workshop (authors' own elaboration).

Types of Actors	AT	CH	CZ	DE	ES	FI	FR	GR	HU	IT	LT	LV	UK	RO	SE	Total
Farmers and farmers' associations	3	1	4	1	4	1		1	2	1	2	1	1		3	25
Science, innovation, advisory, and capacity-building actors		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 organizations, 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

Activity 2. Once the MPIS were identified and characterized, the next step was to obtain insight into the assessment of the identified MPIS from stakeholders. Thus, stakeholders were asked, through an individual questionnaire, about the level of potential influence of each MPI to support the agroecological transition using the following scale: high and negative (−3); medium and negative (−2); low and negative (−1); no effect (0); low and positive (+1); medium and positive (+2); high and positive (+3). All of the MPIS included in the database were assigned an agroecological potential score at the case study level (average of individual participants' scores or agreed score among participants during collective discussions).

Activity 3. Next, stakeholders were encouraged to discuss why and how the identified MPIS have limitations or potential in supporting agroecological transitions. Only the most relevant instruments in each case study were discussed in depth. Participants gave their insights about these instruments, providing a collective analysis of their weaknesses and strengths.

3.2. Data Analysis

National case study teams analyzed the data by comparing the information given by the stakeholders in the questionnaires and during the discussions. Then, they presented the case study results in their corresponding reports to the research coordinators. To enable the comparison across case studies, the guidelines provided a structure for reporting the results.

In the final step, the research coordinators carried out a comparative analysis of results from all case studies, producing three final outputs or results, as described below.

Result 1. The final list of identified instruments was transformed into an inventory or database of market and policy instruments (MPIS). These instruments were classified according to the following categories (see Appendix A for details):

- a. Nature of instruments: policy, market, or mixed instruments.
- b. Link to CAP policy framework.
 - b1. Belonging: CAP Pillar I; EU Directives—Compliance CAP Pillar I; CAP Pillar II—RDP.
 - b2. Not belonging: other EU, national, regional, or local instruments.
- c. Type of instrument: area-based payments; market measures; practice-based payments; result-based payments; payments for investments; R&D/advice/training/information; regulatory restrictions addressed to farming practices; regulatory restrictions addressed to territories; certification schemes; food policies; regional development policies; networking instruments; other instruments.
- d. Level of implementation: farming system, value chain, or territorial level.

Result 2. As a result of activity 2, all MPIS obtained an "agroecological potential score" with respect to their potential to promote agroecological transition in each case

study. These scores were comparatively analyzed between case studies to find similarities and differences.

Result 3. The output of activity 3 was an improved understanding of the factors that limit (weaknesses) or enhance (strengths) the potential of MPIs to support agroecological transitions across the 15 case studies.

4. Results

This section provides the results of the research findings. As this paper focuses on the CAP 2014–2020 instruments, the agroecological transition potential and the strengths and weaknesses of key instruments only refer to instruments related to the current CAP policy framework.

4.1. Inventory of Market and Policy Instruments

This subsection presents the inventory of MPIs identified. The data collection process led to the identification of 288 MPIs.

Across the case studies, there was a high variation in the number of identified MPIs. The majority of case studies identified between 12 and 20 instruments (Figure 3). This variation is likely due to the specific circumstances of the case studies and their different agroecological farming systems.

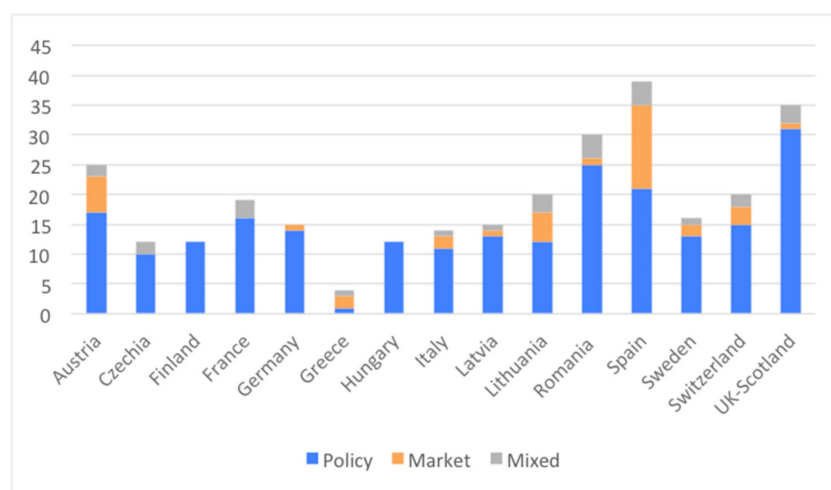


Figure 3. Number and categories of policy, market, and mixed MPIs per case study (authors' own elaboration).

Similar numbers of CAP instruments (149) and non-CAP instruments (139) were identified in the case studies (Tables 4 and 5). Most of the instruments linked to the CAP policy framework were policy instruments (97%); among non-CAP instruments, 57% were policy instruments, and 43% were market and mixed instruments. Among the CAP instruments, Pillar II instruments stood out (98), while national (62) and regional instruments (44) were the most numerous among non-CAP instruments.

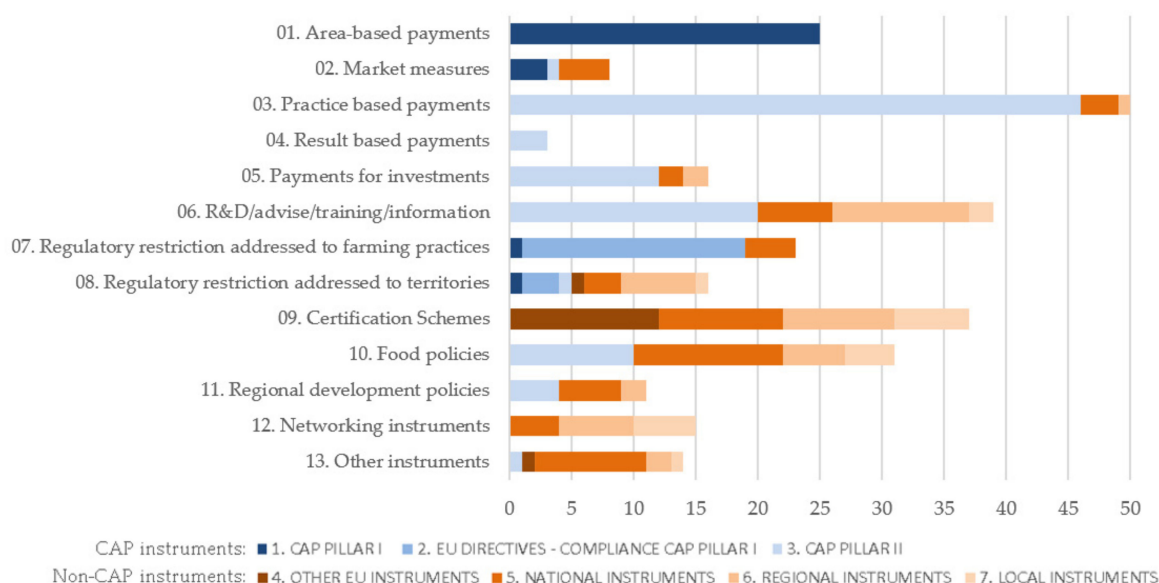
Table 4. CAP instruments (authors' own elaboration).

CAP Instruments	Policy	Market	Mixed	Total	%
1. CAP Pillar I	30			30	20%
2. EU Directives—Compliance CAP Pillar I	21			21	14%
3. CAP Pillar II—RDP	93		5	98	66%
Total	144	0	5	149	100%
%	97%	0%	3%		

Table 5. Non-CAP instruments (authors' own elaboration).

Non-CAP Instruments	Policy	Market	Mixed	Total	%
4. Other EU instruments	5	2	7	14	10%
5. National instruments	41	14	7	62	45%
6. Regional instruments	27	13	4	44	32%
7. Local instruments	6	9	4	19	13%
Total	79	38	22	139	100%
%	57%	27%	16%	100%	

Figure 4 shows the number of instruments identified regarding the types of instruments, highlighted according to their relationship with the CAP framework. Only the CAP instruments are analyzed in the subsections below.

**Figure 4.** Number of MPIs according to type of instrument and relationship with CAP (authors' own elaboration).

4.2. Agroecological Transition Potential of the CAP 2014–2020 Instruments

In this subsection, the results reported are of a comparative analysis of how stakeholders across the case studies assessed the potential of the CAP instruments to promote agroecological transitions, according to the quantitative information obtained from individual questionnaires.

The stakeholders had a positive perception of most MPIs (122 out of 149) with respect to their ability to foster the agroecological transitions. Most of the instruments were scored as having between a “low and positive” (58 instruments; 38%) and “medium and positive” potential (48 instruments; 32%), and 16 CAP instruments (11%) were assessed as having a very “high positive” potential. However, 16 instruments (11%) were rated as “not effective”, while 11 (7%) were rated as having a “negative effect” (Figure 5).

In general, stakeholders assessed the potential of instruments of CAP Pillar II higher than those of CAP Pillar I. The results show that the highest-scoring category was CAP Pillar II—RDP, while the lowest-scoring category was CAP Pillar I. In total, 11 of the negatively scored instruments and 7 of the ineffective ones belonged to the first pillar of the CAP.

The scores obtained by the CAP instruments were grouped into 11 types of instruments. In the database, MPIs were classified into 13 types of instruments. However, as no CAP instruments fit into the “09. Certification schemes” and “12. Networking instruments” categories, only 11 types of instruments were analyzed in this section. Figure 6 shows the distribution of scores by type of instrument.

The results show that the worst-rated instruments were within the area-based payments, where CAP Pillar I—Direct Payments was ranked between “medium and negative” and “no effect” by eight case studies (AT, DE, ES, FR, HU, LV, RO, and SE). In addition, two specific direct payments, payments for first hectares and payments for young farmers, received negative scores in the case study of Lithuania (“low and negative” and “no effect”, respectively). The latter was better ranked by Romania with a “medium and positive” score, although this case study noted that this instrument was insufficient and ineffective without measures addressing the lack of services and the low living conditions of rural areas (such as education and health services). On the other hand, the other area-based payments instruments (included in CAP Pillar I) scored higher. In particular, greening and cross-compliance received seven positive scores (low or medium), two “no effect” scores, and two negative scores (low) by 10 case studies (AT, CZ, DE, ES, FR, HU, LT, LV, RO, and SE).

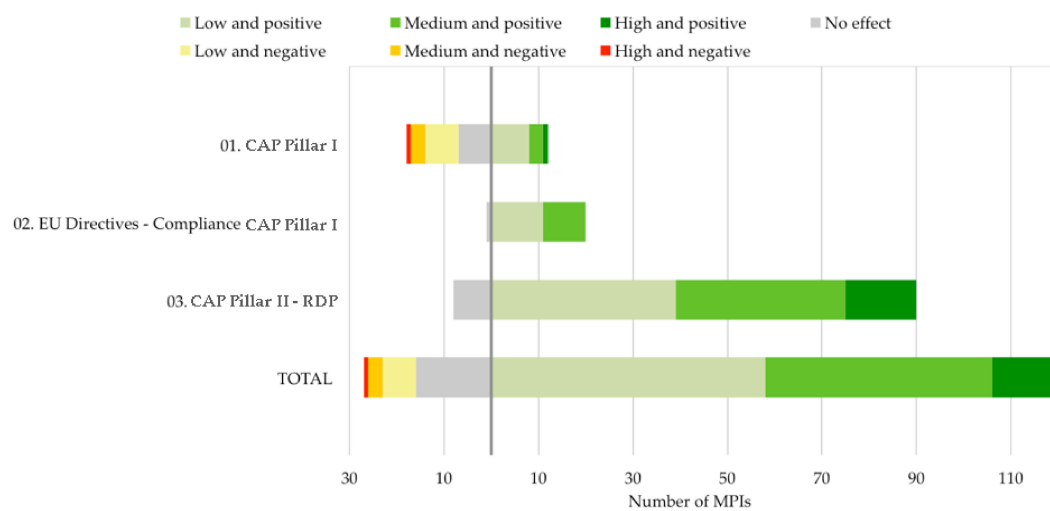


Figure 5. Potential of CAP instruments to promote agroecological transitions assessed in each case study (authors’ own elaboration).

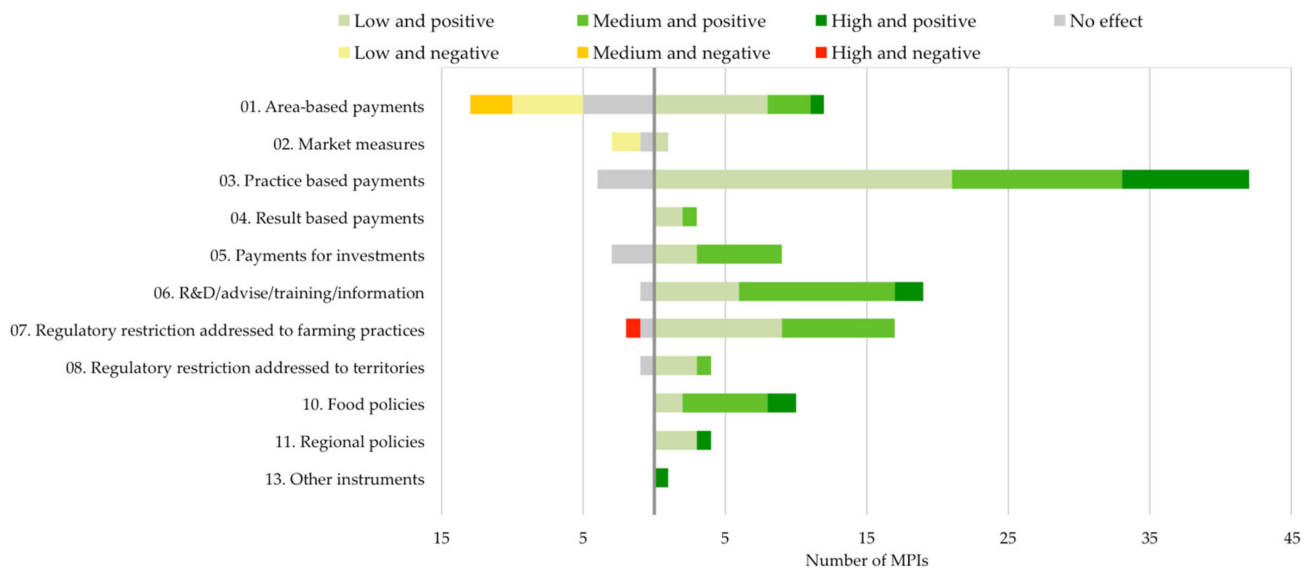


Figure 6. Potential of CAP instruments to promote agroecological transitions in each case study, according to the type of instrument (authors’ own elaboration).

The next worst-rated instruments were market measures, which seek to control the market through price support or control of supply. In particular, the Swedish and Lithua-

nian case studies assessed as ineffective and “low and negative” those measures that support dairy cattle such as the couple payments included in CAP Pillar I.

Another of the worst-evaluated instruments, within practice-based payments, was CAP Pillar II—nonproductive investments. This measure was reported as ineffective by three case studies (DE, HU, and LV). However, in the Italian and Romanian case studies, this instrument scored positive due to its purpose aligning with solutions to their key case study dilemmas.

Another type of instrument where several case studies assigned low scores was payments for investments, included in CAP Pillar II. In particular, farm modernization and investment was assessed as slightly positive, receiving two “no effect” and two “low and positive” scores in four case studies (DE, IT, HU, and LT) and three “medium and positive” scores in another three case studies (CZ, LV, and RO).

Within regulatory restrictions addressed to farming practices and to territories, EU regulations and directives such as the Nitrate Directive, the Pesticides Directive, the Habitat and Bird Directives, and the Water Protection Act received similar scores between “low and positive” and “medium and positive” in nine case studies (AT, CH, CZ, FI, FR, HU, IT, RO, and UK). Regulatory restrictions cover mandatory rules for protecting the environment and the landscape, which are, in most cases, implemented at the farm level through the cross-compliance mechanism.

Within the results-based payments, few instruments were identified in the case studies, but those that were identified (RBAPS and biodiversity payments) in the case studies of Switzerland and Romania were valued positively between a low and medium level.

One of the best-evaluated types of instruments by stakeholders in the case studies was food policies. Regarding the European CAP instruments included in this category (all of them belonging to or funded by CAP Pillar II), they received votes ranging from “low and positive” to “high and positive” in six case studies (ES, LT, LV, RO, SE, and UK). We refer here to RDP measures that support the processing and marketing of organic products, as well as the creation of producer organizations and the promotion of short value chains and local markets.

Another type of instrument highly rated was regional development policies, among which the LEADER program belonging to CAP Pillar II was highlighted. Case studies of Austria, Romania, and the United Kingdom rated it positive, between low and high.

Good scores were also assigned to practice-based payments, where high positive scores were given to CAP Pillar II—agri-environmental instruments (particularly 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, and SE).

Lastly, some of the key instruments for agroecological transitions were those policy instruments that seek to develop training, information, and/or advisory services. This group includes measures of the Rural Development Programs of CAP Pillar II for supporting knowledge transfer to farmers in the form of financial support for advisory services and vocational training. Instruments of CAP Pillar II—advice, information, and training, were assessed in nine case studies (AT, CZ, DE, ES, FR, HU, IT, RO, and UK), with low, (mostly) medium, and highly positive scores. Furthermore, the research programs and innovative or experimental initiatives and funds (e.g., CAP Pillar II—innovation partnership), were positively rated in six case studies (AT, CZ, ES, FR, HU, and 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.

The results presented in this section should be considered as an overview of the best- and worst-rated CAP instruments in their support to agroecological transition in Europe, from a common approach applied across all the case studies. The results imply that, despite the good scores generally obtained, there is still room for improvement, and there are CAP instruments, especially those included in CAP Pillar I, which have been ineffective or have been hindering agroecological transitions.

A more detailed analysis on a case-by-case and instrument-by-instrument basis allowed the identification of specific problems and positive factors, as presented in the next subsection.

4.3. Strengths and Weaknesses of CAP Instruments

This subsection presents the factors that enhance (strengths) or limit (weaknesses) agroecological transitions on the instruments deemed more relevant by stakeholders across the 15 case studies (Table 6). Those CAP instruments that were mentioned only by some case studies are not included in this section. Selected instruments were debated by at least one-third of the case studies (five cases). In some case studies, debate focused on instruments only relevant to their agroecological dilemmas. Those CAP instruments that did not fulfil this criteria (and, thus, not included here) were CAP Pillar II—LEADER (RO); Nitrates Directive (FI); nutrient balance (CH); RBAPS (RO); and result-based payments—biodiversity payments (CH).

Table 6. Most relevant CAP instruments analyzed in depth in most case studies (authors' own elaboration).

Type of Instrument	CAP Instruments Analyzed	Case Studies
Area-based payments	CAP Pillar I—direct payments CAP Pillar I—greening and cross-compliance	AT, DE, ES, HU, LV, RO, SE, UK
Practice-based payments	CAP Pillar II—RDP (M10, M11): agri-environmental instruments; organic farming	AT, CZ, DE, FI, GR, HU, LT, LV, SE
R&D/advice/training/information provision	CAP Pillar II—RDP (M1, M2): support for information, knowledge transfer, and innovation partnership; support for advisory services	DE, CH, ES, FR, HU, IT, LV, UK
Food policies	CAP Pillar II—RDP (M4, M6, M16): promotion of short supply chains and local markets at local level; support for investments in processing/marketing of agricultural products; support for horizontal and vertical cooperation of actors along the supply chain	ES, LT, LV, SE, RO

Common patterns were interpreted across the case studies that have been used to identify those positive and negative influencing factors. These are the factors that explain why CAP instruments may be failing or succeeding in supporting the agroecological transition in the case studies.

4.3.1. Strengths and Weaknesses of Area-Based Payments

Table 7 summarizes the strengths and weaknesses of area-based payments.

Table 7. Strengths and weaknesses of area-based payments related instruments (authors' own elaboration).

CAP Pillar I—Direct Payments	
Positive Factors (Strengths)	Negative Factors (Weaknesses)
Stability of income for small farms Preserving small farm sizes means to slow down structural changes and maintains farming systems with high provisions of public goods	Do not promote sustainable farming systems The principal recipients are a small number of large-scale operators which are dedicated to conventional or intensive production The high proportion of the budget for direct payments means that funds cannot be used to support environmentally friendly practices Dependency of farmers on public funds Does not enable the use and benefits of local knowledge Requirements for applying for support are complex
CAP Pillar I—Greening and Cross-Compliance	
Positive Factors (Strengths)	Negative Factors (Weaknesses)
Ensures a certain protection of biodiversity and waters Shift in producer approach: to think and act in an environmentally friendly way	Measure with limited effect. Only a low contribution to an agroecological transition More information and knowledge transfer is needed

As indicated above, the lowest score of the instruments analyzed in all case studies was achieved by CAP Pillar I—direct payments.

Stakeholders declared that the direct payment scheme was not designed to promote sustainable and environmentally friendly agriculture. The payment is distributed in a nonperformance-oriented way, with no environmental objective other than fulfilling cross-compliance. Thus, the payment is provided regardless of how the land is managed. As a consequence, efforts by farmers to diversify their farm are not rewarded, which discourages them from developing and applying the necessary skills to promote more sustainable production systems.

On the positive side, there was a consensus that these payments are relevant for small and family farms because they help ensure their viability. The direct payment has become an essential source of income for these farms. Without direct payments, they would quit farming, and the number of large farms would increase. In turn, boundary areas and landscape elements that have a positive impact on biodiversity would likely be reduced.

However, despite this positive factor, the main recipients of direct subsidies are a small number of large-scale operators (legal entities), which are dedicated to conventional or intensive production. Thus, this instrument has contributed to preserving the status quo (conventional agricultural practices). In addition, the high proportion of the budget for direct payments means that funds cannot be used to support environmentally friendly practices. These problems have already been pointed out in the literature [14,49].

It is also remarkable that the payments have made small farmers dependent on public aid by limiting the empowerment of the sector. For those farmers, the rules are too complex and bureaucratic, creating difficulties in understanding all the nuances of the requirements, 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; thus, it does not utilize the benefits of local knowledge of the circumstances that prevail in a given year.

In conclusion, agroecological transitions would benefit from the redesign of the direct payment system. In particular, payments would need to penalize agricultural practices that damage the environment.

Among the other area-based payments, CAP Pillar I—greening and cross-compliance received better ratings in terms of agroecological potential. Stakeholders considered that greening ensures a certain base level of biodiversity and water protection in all areas of agricultural production because the payment encourages farmers to think about and adjust land management in an environmentally friendly way. However, as mentioned in the literature [16], greening has a limited effect. In practice, it is 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 agroecological farming systems, with limited contributions made to the improvement of biodiversity and water quality.

Several proposals have been made to increase the potential 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) to ring-fence funding for such measures at a national level; (iv) to improve the knowledge transfer in order to increase the level of awareness of the potential contributions that greening can make to agroecological transitions.

4.3.2. Strengths and Weaknesses of Practice-Based Payments

Table 8 summarises the strengths and weaknesses of practice-based payments.

As seen in the previous section, agri-environmental and organic farming instruments corresponding to CAP Pillar II-RDP are highly valued in most case studies for their positive effects in supporting agroecological transitions. Practice-based payments make it easier for farmers to manage land in an environmentally friendly way. Specific practices with known and validated biodiversity benefits are eligible for payment. Some of these measures are also effective for soil protection through the use of nitrogen and pesticides.

In particular, the organic-farming measure has been seen as the main driver of agroecological practices to date. The stability of the income this instrument gives to 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). Even if the farmer believed in organic farming, this might not be feasible without receiving economic compensation. Without this payment, many organic farms (mostly small) could not survive. In addition, support for organic agriculture motivates other farmers to start the conversion to organic agriculture.

Table 8. Strengths and weaknesses of practice-based payments related instruments (authors' own elaboration).

Agri-Environmental and Organic Farming Measures	
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 aspects of biodiversity	Farmers' willingness to implement agri-environmental measures decreases due to a lack of flexibility, the administrative burdens, and the penalties
Support to income stabilization for organic farms	Payments for organic agriculture do not always sufficiently compensate for the additional costs of 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 and lack of differentiation of payments Agri-environmental measures also benefit land managers who do not produce in an agroecological way A lack of long-term changes in attitudes such that farmers would not consider continuing farming practices if agri-environmental measures ceased

Therefore, in line with the literature [50], the perception of stakeholders of agri-environmental instruments in all the case studies is positive regarding their contribution to the transition to agroecological farming systems. However, there is scope for improvement regarding the design of these instruments. Despite their positive potential, the current form of implementation reduces its potential and some of its initial objectives are not being met. The main problems identified with agri-environmental instruments are: (i) farmers often lack the knowledge to properly implement the practices; (ii) the administrative burdens, 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 agroecological practices; (iii) the financial support provided does not always sufficiently compensate for the loss of income; (iv) a lack of precision regarding the farm eligibility criteria at the application stage; (v) a 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); (vi) in some cases, they benefit land managers who farm the land to maximize subsidy income.

In conclusion, agri-environmental instruments do not fully utilize their agroecological potential. They need to be better defined, targeted, and effectively implemented. Suggestions identified for improving the effectiveness of agri-environmental instruments were: (i) to enlarge the range of schemes to give organic farmers more options and flexibility to adopt the measures; (ii) standardization and consolidation of control mechanisms; (iii) to offer a premium to those farms that also carry out processing activities; (iv) and to promote farmers' awareness so that the continuity of agroecological farming practices does not depend on the existence of these payments.

4.3.3. Strengths and Weaknesses of R&D/Advice/Training/Information Provision

The advisory, information, training, and experimentation measures were generally considered as one of the key instruments to facilitate the agroecological transition, especially when public bodies provide them. Table 9 overviews the strengths and weaknesses of those MPIs.

Table 9. Strengths and weaknesses of R&D/advice/training/information provision-related instruments (authors' own elaboration).

R&D, Advisory, and Training Services	
Positive Factors (Strengths)	Negative Factors (Weaknesses)
Changes attitudes toward 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 agroecological agricultural practices, with more training required for technicians
Helps farmers address administrative requirements	A lack of suitable education and research on agronomy and agroecological farming practices
Stimulates "strategic thinking" at the farm level and at the group level	Only a minority of farmers access these services
Supports farmers in transition to agroecological farming practices, reducing feelings of loneliness	Advisory and training services have a low influence on farmers reluctant to adopt agroecological 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	Agroecology encounters inertia and resistance to change by personnel within public administrations
Greater willingness of technicians to listen to the problems of producers	

These services are potentially positive because: (i) they help farmers address the administrative requirements associated with applying for and complying with funding and support payment regulations; (ii) they can encourage farmers to experiment and stimulate "strategic thinking" at the farm level and at the group level; (iii) they raise the awareness of farmers about environmental problems and explain the reasons behind new practices which have proven effective in promoting uptake by other farmers; (iv) they support farmers, reducing potential feeling of being alone on a transition to agroecological farming systems; (v) they enable the exchange of knowledge and know-how between farmers, as well as among farmers, technicians, and researchers (peer-to-peer learning encourages farmers to explore solutions in real-life situations); (vi) the existence of these services is associated with the generation of more innovative public projects, as well as administrative staff willing to listen to the problems of producers.

The provision of advice and training by public bodies is not sufficiently effective, as pointed out in previous studies [1]. This could be improved by the provision of better support and guidance to farmers on agroecological practices with such advice available throughout the value chain, combined with holistic technical advice.

The greatest effectiveness was seen for farmers who are already aware of agroecological 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 agroecological farming practices and less likely to be influenced by advice as by 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, at the level of the agricultural system, of the roles of agroecological farming systems and the use of knowledge of traditional approaches to farming and land management. Gaps in knowledge mean that advice about aspects of agroecological farming practices can be limited by a lack of examples, comparisons, and counterfactual situations.

In addition, not all 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 public authorities subsidize such services. The cost of advisory services can lead to them not being used by those farmers whose need for them is greatest.

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

Case studies also reported that the existence and maintenance of publicly funded advisory services depends on political support, as well as 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 toward those advisors could be an effective means of enabling the transition to agroecological farming systems.

4.3.4. Strengths and Weaknesses of Food Policy Instruments

Table 10 overviews the strengths and weaknesses of food policy.

Table 10. Strengths and weaknesses of food policy-related instruments (authors' own elaboration).

Food Policy Instruments	
Positive Factors (Strengths)	Negative Factors (Weaknesses)
Stimulates rural entrepreneurship	Problems of economic viability (inadequate support mechanisms and facilities) and financial aid dependence
Improvements in organic farming systems, allowing producers to start processing small-scale food and develop innovative products	Low capacity to respond to the growing demand of organic products (future scenario)
Increases efficiency and competitiveness	Insufficient increase in economic profitability
Autonomous management and price establishment	Lack of time to participate in collective actions due to workload
Promotes 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	Improper use of investment aid for activities that are not related to the adoption of agroecological practices, whereby stricter requirements are needed
Innovation-friendly environment	Sometimes investments are not available for groups of producers, and it is not easy for small farms to apply
Empowerment of local farmers and participation in rural development	Preferential investment for organic producers is needed
Increases economic profitability	

Improving the value chain and market access was one of the most important challenges identified in several case studies. Several categories of CAP instruments in the database have aims of supporting the food value chain. Specifically, the case studies identified CAP Pillar II—farm modernization and investment (M4), CAP Pillar II—farm and business development in rural areas (M6), and CAP Pillar II—cooperation measures (M16). These instruments were considered to be relevant to promote the transition 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 have great potential because of the following positive factors: (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 agroecological farms to process food and develop innovative products; (iii) the investments help to increase the competitiveness of farms through more efficient machinery and equipment; (iv) the use of alternative marketing models enables the autonomous generation of value added through agroecological farms without relying on large distribution and ensures a higher 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, as well as foster territorial interconnection and horizontal and vertical cooperation among actors; (vi) multisectorial strategies facilitate 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 agroecological 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 territo-

rial development; and (viii) joint activities to increase economic profitability, by enabling agroecological 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.

On the other hand, the following negative factors that limit their potential were reported: (i) farms still face difficulties of economic viability due to support mechanisms that do not fit with the particular local context, inadequate value chain facilities, and projects that still depend on financial aid; (ii) concerns about viability in responding to a 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 characterized 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 agroecological practices and that do not offer any environmental benefit. Therefore, there is a need for clearer and stricter requirements and selection criteria; (vii) RDP funds are difficult to attract small and medium-size farmers. One of the main obstacles for farmers when applying for such funds is the lack of a business approach and the lack of cofinancing. In addition, the complex regulations often disadvantage smallholder farmers, who often lack time, money, and the capacity to comply with all of the rules; and (viii) RDP 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 agroecological transition.

In conclusion, food policy-related instruments show multiple benefits and great potential in supporting agroecological transitions, but several problems have to be faced, such as the need for local solutions and adaptation, as well as the need of policy integration and coordination, which have also been highlighted by the literature [50].

5. Discussion

In general terms, the findings obtained from the research in the 15 European case studies confirmed the results of previous studies about the CAP contribution to agroecological transitions. Our results further enhance the understanding of explanatory factors that enhance or limit effective policy support, on the basis of a participatory and comparative approach across 15 European countries.

CAP Pillar I measures obtained a more negative assessment than Pillar II measures. Stakeholders acknowledged results of scientific studies concluding that Pillar I—direct payments are limitedly oriented to sustainability performance [49] and continue being the dominant part of the CAP budget, thereby undercutting the support for the adoption of sustainable practices under Pillar II and the EU environment agenda [14,22]. The ambition of the current CAP 2014–2020 of a transition (“public money only for public goods”) has not fulfilled the initial expectations. The current budgetary framework (with the national ceiling for direct payments representing 72.3% of total EU budget for agriculture and incoherent mechanisms for supporting public goods) does not give a clear signal that the provision of public goods is the priority, and it discourages farmers’ investments toward sustainable agriculture [14].

The introduction of the greening was a significant political step; however, in the present form, the environmental impacts are rather limited and will not contribute much to improving the CAP provision of public goods [16]. In addition, there are difficulties in measuring its effectiveness in terms of environmental benefits [51].

On the other hand, the voluntary agri-environmental and organic farming measures in Pillar II are able to promote environmentally friendly practices and to counterbalance trends of intensification linked to the first pillar with direct payments [50]. Overall, 6.4%

of the total funds of RDP (1.5% of the total EU budget) is allocated to organic agriculture with the aim of mitigating the effects of a lower yield of organic production [19]. On the negative side, an undesirable effect of organic farming would be the simplification of the agricultural production in organic farms “which may contradict the need to implement practices consistent with the idea of sustainable development” [16].

In addition, agri-environmental measures show limitations in their design, implementation, and evaluation, as already pointed out in the literature, such as the excess of bureaucracy that imposes heavy administrative burdens on the farmers [52], the need for more flexibility in the measures adapted to each Member State and region [14], and the deficiencies in monitoring and control of their effectiveness [53].

In relation to the main target group of organic farming measures, Konstantinidis [21,54] emphasized that the biggest beneficiaries are large farms, not small ones as suggested. This may be due to the difficulties faced by small farms: lack of access to markets, lack of small farmers’ organizations, and higher bureaucratic, certification, and agronomist service costs. Large corporations consider organic farming measures an opportunity to restore profitability and to gain legitimacy. In this respect, a related challenge is the co-optation and misuse of the term “agroecology” by the food industry [1].

Regarding the advisory, information, training, and experimentation support within CAP Pillar II, the results obtained in this analysis are consistent with those reported in other works. They are key instruments to facilitate agroecological transitions, but some improvements should be made. Education in agroecology and its integration in mainstream agronomy studies are needed, as well as interdisciplinary research on agroecology. Knowledge exchange amongst farmers and other actors must be enhanced, experiential and on-farm learning about agroecological practices must be stimulated, and improved methods for cocreation and exchange of knowledge must be developed [1].

In reference to food value chain instruments, rural development policies contemplate several measures that support food processing and collective provision of public goods [55], and they show multiple benefits and great potential in supporting agroecological transitions. However, several problems were pointed out by stakeholders, which have also been highlighted by the literature, such as the need for local solutions and adaptation and the need for policy integration and coordination. The adaptation of European norms to local specificities is especially important in relation to the food system. To improve the implementation of food-related policies, they should be directly implemented by regional and local governments or with the participation of these actors. Looking at policy integration, in a food-focused policy for sustainable food systems, strategic tools should address the complexity of transition processes by identifying the actors that can drive change and integrating all the areas involved: food production and distribution, consumption policies, and sustainable diets and food environments [50].

In general, all the case studies agreed on whether instruments were negative or positive and whether they were among the worst or best of the existing CAP instruments. However, there may have been some differences between case studies when evaluating whether an instrument was low or medium in its negative or positive effectiveness. A higher or lower score could be due to the different influences of sociocultural conditions in the idiosyncrasies of each country or group, as well as the level of skepticism, group atmosphere, or freedom to criticize or support.

Like any other research, this study was affected by some limitations, as described below.

- The research focused on the ability of CAP 2014–2020 instruments to foster agroecological transitions. Problems of the CAP framework as a whole, such as the lack of policies in specific areas or regions, the lack of cross-sectorial coherence between policies, the existence of distorting effects, or the efficiency of CAP spending, were not investigated.
- The identification and evaluation of CAP instruments that might support agroecological transitions were mainly based on the preferences of the participating stakeholders and are, therefore, indicative but not exhaustive.

- The research was carried out at the case study level. Then, the emerging policy recommendations were based on the formulation of lessons learnt from the cross-case analysis.

To overcome those limitations, this article can inform further explanatory research about the Europe-wide impacts of future policy that is expected to be supportive of agroecological transitions. This would provide a future perspective to the assessment, as well as a statistical generalizability of the findings. To carefully consider contrasting perspectives, future research based on multiactor approaches could give enough space to specific policy issues and options, while aimed at achieving a consensus, e.g., by carrying out a policy Delphi. More diversified perceptions about future policy design might be synthesized through multicriteria analysis.

6. Conclusions

An inventory of market and policy instruments relevant to support agroecological transitions in Europe was created, according to multiple case studies across 15 countries, through participatory research. The inventory includes 288 MPIs, among which 149 (52%) belong to the European CAP framework. Among CAP instruments, references to Pillar II instruments stood out (98), with the most frequently cited instrument being practice-based payments (payments for the adoption of agri-environment measures or support for organic farming), followed by the provision of R&D/advice/training/information.

Discussion with stakeholders was conducted in order to assess the potential of those instruments in supporting the agroecological transition in the 15 European case studies. The results from the analysis provided an overview of the best- and worst-valued instruments in their support of agroecological transition, using a common approach applied across all the case studies. These instruments and their respective ranking are presented in Section 4.2 with the results of the questionnaires.

The lowest-scoring category was CAP Pillar I. In particular, direct payments, within area-based payments, ranked negatively. However, greening and cross-compliance (other area-based payments included in CAP Pillar I) scored higher.

Other types of instruments where several case studies assigned low scores were market measures (measures that support dairy cattle such as the couple payments included in CAP Pillar I), CAP Pillar II—nonproductive investments, a practice-based payments instrument, and CAP Pillar II—payments for investments. However, farm modernization and investment was assessed as slightly positive.

Slightly similar and positive scores were obtained by the EU regulations and directives and the results-based payments (RBAPS and biodiversity payments).

The instruments evaluated highest were those grouped into CAP Pillar II—food policies (RDP measures that support the processing and marketing of organic products, producer organizations, and short value chains), CAP Pillar II—regional development policies (e.g., LEADER program), CAP Pillar II—practice-based payments (agri-environmental instruments and organic farming), and CAP Pillar II—R&D/advice/training/information provision. In general, stakeholders assessed the potential of instruments of CAP Pillar II higher than those of CAP Pillar I.

The analysis of stakeholders' perceptions enabled an improved understanding of the strengths and weaknesses of CAP instruments when it comes to foster agroecological transitions. These positive and negative factors are discussed in Section 4.3, along with the results of the qualitative comparative analysis.

Four relevant CAP types of instruments were analyzed, one belonging to CAP Pillar I (area-based payments) and three belonging to CAP Pillar II (practice-based payments, R&D/advice/training/information provision and food policy instruments).

The discussion made it clear that there was a more positive assessment of Pillar II instruments compared to Pillar I. However, weaknesses in Pillar II instruments to be improved were pointed out in relation to the design, implementation, control, or evaluation of

these measures. Thus, existing Pillar II instruments could have an enhanced agroecological potential in the future if redesigned or improved.

Stakeholders acknowledged the contribution of greening, the agri-environmental and organic measures, the support for information and advisory services, and the support to organic market and short value chains for the development of sustainable food systems, and they considered their existence as important achievements of the policy framework. However, changes should be made with greater support, an increase in the budget, and clearer policy targeting. To date, policies at the EU level have mainly supported an economic system favorable to large-scale, high-input, and capital-intensive agriculture, which prevents the transition to agroecological farming systems. Thus, the Common Agricultural Policy, particularly CAP Pillar I, needs to be redesigned and other policies need to be implemented in order to strengthen support for agroecological approaches.

From the combination of both assessments (potential of CAP instruments in supporting agroecological transitions and a discussion about their weaknesses and strengths), we conclude that the impact of MPIs in supporting agroecological transitions is lower than it could be if they were designed to target support accordingly.

The results of this research add more explanatory and detailed information to the existing literature on the factors that enhance (strengths) or limit (weaknesses) their potential. The comparison of multiple and diverse case studies across Europe enabled the delivery of lessons learnt with Europe-wide relevance.

The presented research findings can inform the forthcoming European agricultural policies to foster agroecological transitions. The findings provide a better understanding of the potential of CAP instruments, and why they have failed or succeeded to promote agroecological transitions, which is valuable knowledge for policy innovations in future transition strategies.

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Appendix A

Table A1. Classification details of the market and policy instruments identified in the 15 case studies (authors' own elaboration).

Market and Policy Instrument Categorization		
	Categories	Explanatory Notes or Examples of Instruments
Nature of instrument	Policy instruments	Any instrument that has a legislative reference
	Market instruments	Any instrument that arises from agreements between private actors
	Mixed instruments	Public–private initiative

Table A1. Cont.

Market and Policy Instrument Categorization			
Categories	Explanatory Notes or Examples of Instruments		
Link to CAP policy framework	CAP Pillar I	Direct payments (payments for young farmers, first hectares, coupled payments) Greening and cross-compliance CMO—planting permits	
	EU Directives—Compliance CAP Pillar I	Habitat and Birds Directive Nitrates Directive Pesticides Directive Water Framework Directive Nutrient balance	
	Belonging to CAP policy framework	Information and knowledge transfer, including innovation partnership (M1–M16) Advisory services (M2) Promotion campaigns (M3) Farm modernization and investment (nonproductive investments in farms, infrastructures) (M4) Payments for forest/environmental services (M5) Farm and business development in rural areas (no farming activities, start-ups, young, food business) (M6) Rural management (Natura 2000, HVE) (M7) Agri-environment/climate measures (AECM) including biodiversity, RBAPS (M10) Organic farming (M11) Payments for Natura 2000 and Water Directive (M12) Areas with natural or other natural handicaps (M13) Cooperation measures (food supply chain, creation of producer groups, including food processing and marketing (M16–M4) Local development (LEADER program) (M19)	
	Not belonging to CAP policy framework	Other EU instruments	European organic farming certification
		National instruments	National food strategy
		Regional instruments	Regional landscape plan
		Local instruments	Local green public tender or procurement
Type of instrument	Area-based payments	Income support to guarantee the maintenance of farming (e.g., direct payments, cross-compliance and greening; payments for farming in marginal areas)	
	Market measures	Instruments used to control the market, mainly through CAP (e.g., price support, control of supply, coupled payments, Single Common Market Organization—CMO)	
	Practice-based payments	Subsidies addressed to management techniques (mainly agri-environmental schemes, e.g., minimum tillage, organic farming), including nonproductive investments (generally considered as supporting agri-environmental schemes)	
	Result-based payments	Subsidies addressed to the achievement of a desired status of the environment (e.g., number of species in grassland, reduction in pollutants in water bodies, and repopulation of pollinators)	
	Payments for investments	Subsidies and/or grants on loans for capital investments	
	R&D/advice/training/information	Any instruments (including payments) addressed to trigger the creation and diffusion of knowledge among various actors from farmers to consumers	
	Regulatory restrictions addressed to farming practices	Limitations in the use of pesticides, fertilizers, livestock densities, etc.	
	Regulatory restrictions addressed to territories	Landscape management rules, wildlife laws, land-use planning, etc.	
	Certification schemes	Certification schemes developed by local actors or imposed by the market	
	Food policies	Policies addressed to food value chains and food systems and consumers, concerning how food is processed, distributed, and purchased (including support for producer cooperation and organization)	

Table A1. Cont.

Market and Policy Instrument Categorization		
	Categories	Explanatory Notes or Examples of Instruments
Type of instrument	Regional development policies	Measures to boost economic growth and jobs, as well as improve quality of life in the development of territories; policies addressed to renewal/creation of local institutions (e.g., LEADER and rural district)
	Networking instruments	Support for partnerships and cooperation among private organizations, NGOs, and/or public organizations
	Other instruments	Any other instruments (market or policy) not specifically classified in the previous categories
Level of implementation	Farming system level	Usually instruments addressed to specific crops/livestock and to the whole farming system (e.g., organic farming and conservation agriculture)
	Value chain level	Instruments addressed to a specific value chain (e.g., PDO/PGI and certification scheme)
	Territorial level	Instruments addressed to the whole territory (e.g., landscape/land-use policies)

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