

USING ECO-SCHEMES IN THE NEW CAP

► A GUIDE FOR MANAGING
AUTHORITIES



Published by:

IFOAM EU

124, rue du Commerce

1000 Brussels

Belgium

www.ifoam-eu.org

Authors:

Lampkin N¹, Stolze M¹, Meredith S³, de Porras M², Haller L², Mészáros D²

¹FiBL Switzerland, Frick

²FiBL Europe, Brussels

³IEEP, Brussels

This report should be cited as: Lampkin N, Stolze M, Meredith S, de Porras M, Haller L, Mészáros D (2020) Using Eco-schemes in the new CAP: a guide for managing authorities. IFOAM EU, FiBL and IEEP, Brussels.

Production support: Verena Mitschke, Eva Berckmans, Léna Brisset, Eric Gall

Layout design: Hearts&Minds

Illustrations: Cover page Triin Viilvere - P13 Bundesanstalt für Landwirtschaft und Ernährung (BLE) - P18 Véronique Doyle - P26 Berenika Sikora - P35 Léna Brisset - P41 Triin Viilvere - P53 Jo Smith - P54 DEBIO - P61 DEBIO - P74 Laura Ullmann - Back cover page Véronique Doyle

Funded by:



EKHAGASTIFTELSEN



wessanen



CONTENTS

FOREWORD	5
ACKNOWLEDGEMENTS	6
1. INTRODUCTION	7
1.1 Who is this Guide for?	9
1.2 Why use this Guide?	10
2. WHAT IS THE GREEN ARCHITECTURE AND ITS ROLE IN CAP STRATEGIC PLANS?	11
2.1 Environmental and climate objectives of the new CAP	11
2.2 A brief overview of the Green Architecture of the new CAP	12
2.3 Eco-schemes as an integral part of the Green Architecture	13
2.4 Functional inter-relationship between Eco-schemes and other CAP interventions	14
2.5 Ensuring greater environmental and climate ambition through common strategic planning	16
2.6 Potential for monitoring and evaluating environmental and climate performance	16
3. DESIGNING AND IMPLEMENTING EFFECTIVE AND EFFICIENT ECO-SCHEMES	17
3.1 Eco-schemes: what are the opportunities?	17
3.2 Delivering well-designed Eco-schemes – key principles	21
3.2.1 <i>The legal requirements</i>	21
3.2.2 <i>Supporting the delivery of EU environmental and climate objectives</i>	21
3.2.3 <i>Conditionality baseline</i>	26
3.2.4 <i>Evidence of benefits and relevance to deliver CAP specific objectives</i>	26
3.2.5 <i>Engaging stakeholders</i>	30
3.2.6 <i>Contractual requirements</i>	31
3.2.7 <i>Verifiability</i>	31
3.2.8 <i>Administrative structures and institutional capacity</i>	32
3.2.9 <i>Choosing the payment model and calculating payment rates to achieve target uptake</i>	33
3.2.10 <i>Information support for Eco-schemes (AKIS and EIP)</i>	34
3.2.11 <i>Use of sustainability assessment tools for Eco-schemes</i>	34

4. WHAT KIND OF INTERVENTIONS COULD BE USED FOR ECO-SCHEMES?	37
4.1 Considerations for selecting interventions	37
4.2 Examples of possible Eco-scheme interventions	40
4.2.1 <i>Conditionality plus</i>	40
4.2.2 <i>Individual interventions for different purposes – a hierarchical approach</i>	40
4.2.3 <i>Bundles of individual interventions</i>	41
4.2.4 <i>Results-oriented interventions</i>	46
4.2.5 <i>Points-based schemes</i>	48
4.2.6 <i>Farm assurance schemes</i>	49
4.2.7 <i>High environmental value</i>	49
4.2.8 <i>Conservation agriculture</i>	50
4.2.9 <i>Integrated management</i>	50
4.2.10 <i>Circular agriculture</i>	51
4.2.11 <i>Organic farming</i>	51
4.2.12 <i>Pasture-fed livestock production</i>	52
4.2.13 <i>High Nature Value (HNV) farmland including Natura 2000</i>	52
4.2.14 <i>Agroforestry</i>	53
4.3 Comparative assessment of Eco-scheme intervention options	54
5. MONITORING AND EVALUATION	58
5.1 Effective monitoring and evaluation of Eco-schemes	58
5.2 Links with the Performance Monitoring and Evaluation Framework	60
6. RECOMMENDATIONS: POLICY PRIORITIES AND OPPORTUNITIES	69
ANNEX: ABBREVIATIONS AND ACRONYMS	72

FOREWORD

Dear Readers,

One of the oldest policies of the European Union is currently being reformed. After almost 60 years of existence, the Common Agricultural Policy (CAP) still has a huge impact on the way we produce food in Europe.

The CAP post-2020 reform shifts the responsibility towards Member States. The so-called 'New Delivery Model' could be a good opportunity to match better regional specificities, but the common aspect of the CAP must be safeguarded. Moreover, while 40% of the CAP's budget is expected to contribute to climate action, the articulation between the different instruments of the Green Architecture must still be specified.

One of the promising aspects of this reform is the introduction of Eco-schemes in the first pillar, which represents most of the CAP budget. This new instrument, 100% EU-funded, could help farmers to introduce new practices and evolve towards more sustainable models. If well designed, it could be a first step towards the remuneration of public goods and environmental services.

The new Eco-scheme represents a huge opportunity for organic farmers at a time when the second-pillar money is being severely cut, which endangers the future of conversion and maintenance measures. Nevertheless, Eco-schemes don't have any ringfenced budget at this stage of negotiations several uncertainties remain on their implementation.

Which practices could be supported through Eco-schemes? How to avoid double funding with second-pillar measures? What kind of measures (points-based, result-oriented, single or multi objective, system-based) are the most appropriate? How to choose the payment model?

This guide aims to help managing authorities, ministries, policymakers and all stakeholders involved in the definition, implementation and evaluation of the CAP Strategic Plans to get a better understanding of this new policy tool.

Together with strong governance, good indicators, safeguarded second-pillar environmental measures and a significant climate and environment budget, effective Eco-schemes could foster a better uptake of sustainable practices such as organic farming. This would benefit not only farmers and farmland, but also biodiversity and all EU citizens.

Jan PLAGGE
IFOAM EU President
Bioland President



ACKNOWLEDGEMENTS

We would like to acknowledge the ideas and contributions of many individuals from inside and outside the organisations responsible for the production of this Guide, including:

- » Ministry, farming and environment NGO representatives who participated in the case studies conducted in Hungary and France in early 2019
- » Participants in the IFOAM EU Farmers Group meeting in Kutna Hora, CZ, 12-13 June 2019
- » Participants in the IFOAM EU Workshop for representatives of Member States involved with Eco-scheme development in Brussels, 25 June 2019
- » Participants in the IFOAM EU CAP Workshop in Järvenpää, FI, 20 November 2019
- » Clunie Keenleyside and Faustine Bas-Defossez (IEEP) for helpful comments and inputs during the inception of the Guide and in the case studies
- » Susanne Padel for detailed comments on an advanced draft of the Guide

Any errors of interpretation remain the responsibility of the authors.

1. INTRODUCTION

The political debate on the new European Union Common Agricultural Policy (CAP) for the period 2021-2027 has been influenced by two main topics: subsidiarity and the environmental impacts of agriculture. Subsidiarity has become especially relevant in the context of Brexit and anti-EU parties gaining political momentum in many EU Member States (MS). In this political context, traditional one-size-fits-all CAP solutions are no longer seen as a possibility and more responsibility for defining policies is being delegated to MS.

The second major topic, the environmental impacts of agriculture, has been gaining strength due to the increasing concerns of EU citizens over climate change, biodiversity loss, plastic waste and other environmental problems. Relevant international discussions and agreements around the environment and climate change, such as the Paris agreement or the Agenda 2030, point to agriculture as one of the biggest polluting sectors in EU economy.

The CAP is a political framework that still represents one of the historical foundations of the EU. It was established in 1962, implementing the agricultural part of the 1956 Treaty of Rome. It represented more than the 40% of EU budget in 2016 and its wide-reaching political objectives are far from being achieved despite several major reforms¹. The political relevance of the CAP, as a central Pillar of the EU, has exposed it to different critiques, especially about centralisation and lack of environmental concern.

As a result, the European Commission published the new CAP proposal for 2021-2027 in June 2018², developing a new political approach for this policy, aiming to address the above-mentioned issues. A key change involves leaving more freedom to MS to decide their own priorities through their CAP Strategic Plans (CSP), in order to increase the national ownership of CAP interventions. At the same time this obliges MS to implement the so-called Green Architecture that establishes voluntary environmental measures for farmers, not only for Rural Development (Pillar 2) but also for Pillar 1 direct payments, so that the CAP as a whole makes a meaningful contribution to EU environmental and climate goals. This proposal reflects the political momentum of the EU and poses new challenges on the MS administrations.

The negotiations over the new proposals have been long drawn out and were delayed by the EU elections and establishment of a new Commission in 2019 as well as the extended Brexit process. However, the discussions over the proposals are continuing, with a view to implementing them from 2022, with transitional regulations based on the old CAP covering 2021³.

With this political proposal, MS are now responsible for delivering the specified objectives of the CAP (Figure 1.1) through their CSPs, including the environmental ones. National administrations will be responsible for identifying their problems and needs, establishing and prioritising their objectives and programming the interventions and instruments to achieve them. These objectives will have to reflect the specific objectives of the new CAP set out in Articles 5 and 6 of the EC (2018) proposal² (Box 1.1).

¹ Pe'er G et al. (2019) Action needed for the EU Common Agricultural Policy to address sustainability challenges. Paper submitted to People and Nature. www.idiv.de/en/cap-scientists-statement

² EC (2018) Proposal for a regulation of the European Parliament and of the Council establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans). COM(2018) 392 final. European Commission, Brussels.

³ EC (2019) Proposal for a regulation of the European Parliament and of the Council laying down certain transitional provisions for the support by the European Agricultural Fund for Rural Development (EAFRD) and by the European Agricultural Guarantee Fund (EAGF) in the year 2021. COM(2019) 581 final. European Commission, Brussels.

FIGURE 1.1: THE NINE OBJECTIVES FOR THE NEW CAP



Source: European Commission

BOX 1.1: CAP OBJECTIVES FOR 2021-2027 AS PROPOSED BY THE EU COMMISSION²

General objectives (Article 5)

Support from the EAGF and EAFRD shall aim to further improve the sustainable development of farming, food and rural areas and shall contribute to achieving the following general objectives:

1. to foster a smart, resilient and diversified agricultural sector ensuring food security;
2. to bolster environmental care and climate action and to contribute to the environmental- and climate-related objectives of the Union;
3. to strengthen the socio-economic fabric of rural areas.

These objectives shall be complemented by the cross-cutting objective of modernising the sector by fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake.

Specific objectives (Article 6)

The achievement of the general objectives shall be pursued through the following specific objectives (summarised in Figure 1.1):

- a. Support viable farm income and resilience across the Union to enhance food security
- b. Enhance market orientation and increase competitiveness including greater focus on research, technology and digitalisation
- c. Improve the farmers' position in the value chain
- d. Contribute to climate change mitigation and adaptation, as well as sustainable energy
- e. Foster sustainable development and efficient management of natural resources such as water, soil and air
- f. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes
- g. Attract young farmers and facilitate business development in rural areas
- h. Promote employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry
- i. Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, food waste as well as animal welfare

When pursuing the specific objectives Member States shall ensure simplification and performance of the CAP support.

Planning and programming these environmental objectives at national level through the interventions proposed in the Green Architecture will create additional challenges for MS administrations. However, from the point of view of the authors, this new approach creates opportunities to address some of the problems that EU agriculture and the environment are facing in a more efficient way. The Green Architecture represents a useful set of new interventions, which if adequately programmed can provide EU farmers with the possibility of being appropriately remunerated for the public goods they are already providing to society at large, and to enable them do much more in the future to address the scale of the environmental and climate challenges facing the sector.

The main objective of this guide is to provide support for policy makers at national and regional level involved in the programming, implementation and evaluation of the new CSPs to address the environmental needs and priorities identified. The guide includes support to identify the main problems and barriers and to develop effective and efficient measures to address environmental problems, with a special focus on Eco-schemes, the voluntary schemes for farmers linked to the first Pillar. The guide also aims to support the programming of these Eco-schemes and other Climate and environmental measures, to achieve high acceptability among EU farmers who are central to this new delivery model for environmental public goods.

1.1 WHO IS THIS GUIDE FOR?

This guide has been developed primarily for policy makers and Member State officials involved in the national and regional programming processes of the CAP Strategic Plans (CSPs). This process might involve different administrative levels (national, regional, local), different political fields (agriculture, environmental, food and health ministries), different public bodies (paying agencies, environmental agencies, rural development offices) depending on the administrative setting of each MS.

In addition, the guide provides support to other stakeholders and practitioners from the public and private sectors and civil society (including agricultural, environmental, food, health and consumer NGOs), with a direct or indirect involvement in the programming and evaluation process of the CSPs. Since these new plans will have a strong impact on MS environments, agricultural sectors, rural areas, etc., the engagement of all stakeholders will be an important asset for supporting an effective implementation of the CSP objectives.

There are many others with potential interests in the contents of this guide. EU citizens have demonstrated their increasing interest in the contents of the CAP objectives and policy framework, as demonstrated both by civil society initiatives and consumption decisions. The contents of this guide may therefore also be of interest to other societal actors with interests in agricultural and environmental policies, such as researchers, journalists, trade unions, and civil society organizations. However, the guide is intentionally more focused on the technical needs of those involved in CSP development and implementation.

1.2 WHY USE THIS GUIDE?

The contents of this guide are intended to support the delivery of environmental and climate public benefits under the new CAP 2021-2027 framework. We assess the opportunities provided by the new Green Architecture framework, as well as the barriers, and examine opportunities to maximize the potential for provision of public benefits. The recommendations are based on a review of research and policy literature and two case studies of current processes in MS (France and Hungary), in order to identify the main opportunities and barriers that impact on the potential for environmental public good provision in CSPs.

The analysis of the opportunities and potential barriers of the new CAP framework has been done using the European Commission's 2018 proposal² as a basis. Due to the length of the political negotiations, the final legal text of the new CAP was not agreed at the time of publication. However, significant efforts have been made to keep the contents in line with the developments of the legislative proposal, following closely the main changes during the political negotiations, including the Presidency drafting suggestions of 5th September 2019⁴.

A key innovation of the new CAP Green Architecture is the Eco-scheme. This guide explores in detail how MS can make the best use of this intervention to maximise environmental public good provision with the support of the CAP first Pillar. This new intervention goes beyond the logic of the "cross-compliance" and "greening" developed under the previous CAP framework. The main innovation with Eco-schemes is that these are voluntary schemes for farmers, providing the basis for recompensing the voluntary provision of environmental public goods with direct payments from Pillar 1 of the CAP.

In Chapter 2, we provide a simple overview of the new Green Architecture and the opportunities represented by the Eco-scheme approach.

In Chapter 3, we explore in more detail the legal basis for Eco-schemes, including their relationship to Conditionality and Pillar 2 measures. Key principles applicable to the design and implementation of Eco-schemes are explored.

In Chapter 4, we provide examples of particular options ranging from targeted measures to multi-functional, system-based approaches such as support for organic and integrated farming. We also include a comparative assessment of the different options with respect to the CAP specific environmental objectives, based on research evidence, and administrative issues. This section is intended to support the process of choosing options to include in Eco-schemes that will help deliver high environmental and climate gains.

In Chapter 5, we look at the requirements for monitoring and evaluation, using both the Commission's proposed indicators (the Performance Monitoring and Evaluation Framework or PMEF) and the potential for integrating additional national indicators. Possible data sources are considered in this context. As such, the guide provides the basis for more ambitious monitoring and evaluation of the environmental impact of farms, presenting tools and indicators that go beyond the minimum requirements of the CAP framework.

Chapter 6 provides recommendations for policy-makers building on the key issues covered in the Guide and looks forward to possible future policy developments in the context of the ongoing negotiations and the new EU Commission's Green Deal proposals as they affect agriculture and food, in particular the Farm to Fork Strategy.

This Guide builds on a previous review of the potential of Eco-schemes published by IFOAM EU in January 2019⁵.

⁴ EU Council (2019) Presidency drafting suggestions for the proposal for a regulation of the European Parliament and of the Council establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans). Working Paper WK 9357/2019 INIT, 5th September 2019, Council of the European Union, Brussels. The current European Parliament (2019-2024) has not officially elaborated its drafting suggestions and is working from proposals put forward by the AGRI and ENVI committees in the previous parliamentary cycle 2014-2019.

⁵ Meredith S, Hart K (2019) CAP 2021-27: Using the eco-scheme to maximise environmental and climate benefits. Report by IEEP for IFOAM EU, Brussels

2. WHAT IS THE GREEN ARCHITECTURE AND ITS ROLE IN CAP STRATEGIC PLANS?

Before considering the potential approaches to Eco-scheme design and implementation, this chapter introduces the key elements of the Commission's proposal from an environmental and climate perspective. This includes an overview of the 'new delivery model', the Eco-scheme and other elements of the Green Architecture, as well as the emphasis placed on creating synergies between different CAP interventions and achieving greater environmental and climate ambition. Finally, the chapter highlights the overall shift towards a more coordinated approach to planning, monitoring and evaluation of the policy's different interventions.

2.1 ENVIRONMENTAL AND CLIMATE OBJECTIVES OF THE NEW CAP

A principal feature of the next CAP is the goal of shifting the policy towards greater 'results-orientation' under the umbrella of a national CAP Strategic Plan (CSP). Under this 'new delivery model', Member States are required to plan and implement all chosen CAP interventions according to their national/regional needs and aligned to the nine CAP Specific objectives (outlined in Chapter 1). The EU Commission's role is focused more on monitoring delivery of the plans and assessing achievement of the objectives. Three CAP Specific objectives cover environmental and climate issues:

- d. Contribute to climate change mitigation and adaptation, as well as sustainable energy
- e. Foster sustainable development and efficient management of natural resources such as water, soil and air
- f. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes

with one new objective addressing broader societal concerns:

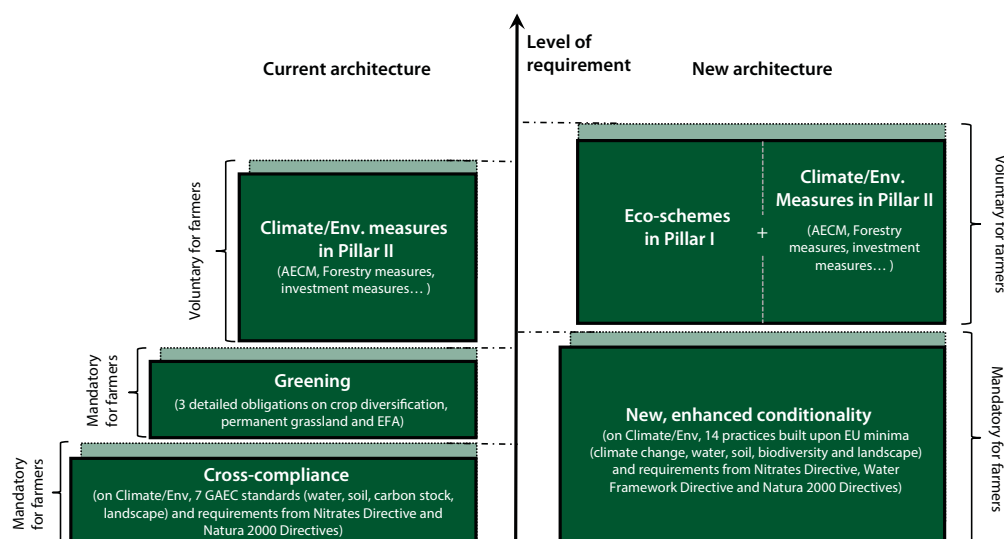
- i. Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, food waste, as well as animal welfare

Eco-schemes are to be based on the three environmental objectives, but the EU Parliament and some MS are proposing that animal welfare should be included as well.

The 'new delivery model' also marks a new departure for the planning of Pillar 1 interventions, as managing authorities must now indicate more concretely how such interventions will address their specific national/regional needs with reference to the CAP Specific objectives. At the same time, this builds on the rich history of EU Rural development programming under Pillar 2 - a key part of the CAP since 2000. While the two-Pillar system remains, the 'new delivery model' seeks to facilitate common strategic planning and support a more results/performance-based CAP. Overall the reform enshrines the need for all CAP funds (e.g. EAGF and EAFRD) to be used to address the scale of the environmental and climate challenges facing the agriculture and forestry sector in unison with other economic and social objectives of the CAP.

2.2 A BRIEF OVERVIEW OF THE GREEN ARCHITECTURE OF THE NEW CAP

FIGURE 2.1: COMPARISON OF THE CAP'S CURRENT AND PROPOSED NEW GREEN ARCHITECTURE



Source: European Commission

To support the delivery of environmental and climate action in the farming and forestry sectors, the new Green Architecture of the CAP consists of three interventions which managing authorities are required to programme (outlined in Figure 2.1). This includes:

- The new Eco-scheme, open to farmers on a voluntary basis, which aims to incentivise more sustainable farm and land management using direct payments (Pillar 1).
- Agri-environment-climate measures (AECM), which aim to tackle key environmental and climate challenges using Rural development programmes (Pillar 2). They are also available on a voluntary basis for farmers as well as land managers.
- Conditionality, which sets out the basic requirements and standards⁶ that farmers and land managers must fulfil in order to receive area and animal-based payments under both Pillars 1 and 2.

Whereas Conditionality (in the form of Cross-compliance and Greening) and Pillar 2 AECM have been part of the CAP for some time, the Eco-scheme is a novel feature of the new Green Architecture that can be customized to Member States' specific environmental and climate needs⁷.

Together these interventions should work collectively to increase the CAP's environmental and climate ambition and ensure that the agriculture and forestry sectors are making a meaningful and active contribution to EU environmental and climate policy objectives and targets. Managing authorities have the flexibility to either design and implement the Eco-scheme as entry-level commitments supporting more ambitious rural development commitments, or as semi-autonomous interventions programmed independently, but working side by side in a complementary way.

⁶ Practices of good agricultural and environmental condition (GAEC): 1. Maintenance of permanent grassland based on a ratio of permanent grassland in relation to agricultural area; 2. Appropriate protection of wetland and peatland; 3. Ban on burning arable stubble, except for plant health reasons; 4. Establishment of buffer strips along water courses; 5. Use of Farm Sustainability Tool for Nutrients; 6. Tillage management reducing the risk of soil degradation including slope consideration; 7. No bare soils in most sensitive period(s); 8. Crop rotation; 9. a) Minimum share of agricultural land devoted to non-productive features or areas, b) retention of landscape features, c) ban on cutting hedges and trees during the bird breeding and rearing season, d) as an option, measures for avoiding invasive plant species; 10. Ban on converting or ploughing permanent grassland in Natura 2000 sites. The final text for these conditions is still under discussion according to the September 2019 Presidency proposals⁶

⁷ The actual measures within the CAP that made up the green direct payments introduced under the CAP 2014-2020 are not replaced, but now fall under the new conditionality element of the policy

2.3 ECO-SCHEMES AS AN INTEGRAL PART OF THE GREEN ARCHITECTURE

The Eco-scheme is an integral part of CAP Strategic Plan's (CSP) Green Architecture design and implementation, which managing authorities are required to put in place in order to contribute to one or more of CAP's specific environmental and climate objectives (Article 28, Recital 31). Under the intervention, managing authorities must establish a 'list of agricultural practices beneficial for the climate change and the environment' based on the needs and priorities they have identified at national and/or regional level. The Eco-scheme would give managing authorities more autonomy to define the actual content of environmental and climate actions supported under Pillar 1. This moves away from the approach taken with the Greening direct payments whereby Member States implemented a common set of practices with detailed rules set at EU level, applicable to all eligible farmers in receipt of direct payments.

Although no EU-wide practices are prescribed in the proposal, certain management practices that could be supported by an Eco-scheme are signposted by the Commission. They include enhanced management of permanent pasture and landscape features as well as organic farming. As direct payments constitute the largest proportion of EU spending and cover the

majority of the EU's utilised agricultural area (UAA), the Eco-scheme can be a more ambitious way to address the key environmental and climate challenges facing the sector³. Indeed, there is nothing stopping managing authorities from dedicating the majority of their national envelopes for direct payments to the Eco-scheme as there is no limit to their extent. Some authors have suggested their share could increase over time, even to 100% of direct payments at the end of the 2021-2027 planning period.

Using most of the direct payments envelope to help farmers transition towards more sustainable farming practices and systems could constitute a new source of income and represent a genuine implementation of the principle of public money for public goods. The Eco-scheme is also 100% financed by EU funds and therefore does not necessitate match funding from Member States (unlike Pillar 2 AEEM, which require national or regional co-financing). This means that managing authorities have more options to use both Pillars of the new CAP to invest in solutions that can address the scale of the environmental and climate challenges facing the agriculture and forestry sector, including the provision of both global and local public goods.



2.4 FUNCTIONAL INTER-RELATIONSHIP BETWEEN ECO-SCHEMES AND OTHER CAP INTERVENTIONS

The shift towards a more performance focussed CAP requires managing authorities to look at all elements of the Green Architecture in order to determine how best to respond to their environment and climate needs. As a result, the Eco-scheme should not be seen in isolation, but rather as a component part of the overall Green Architecture. This includes:

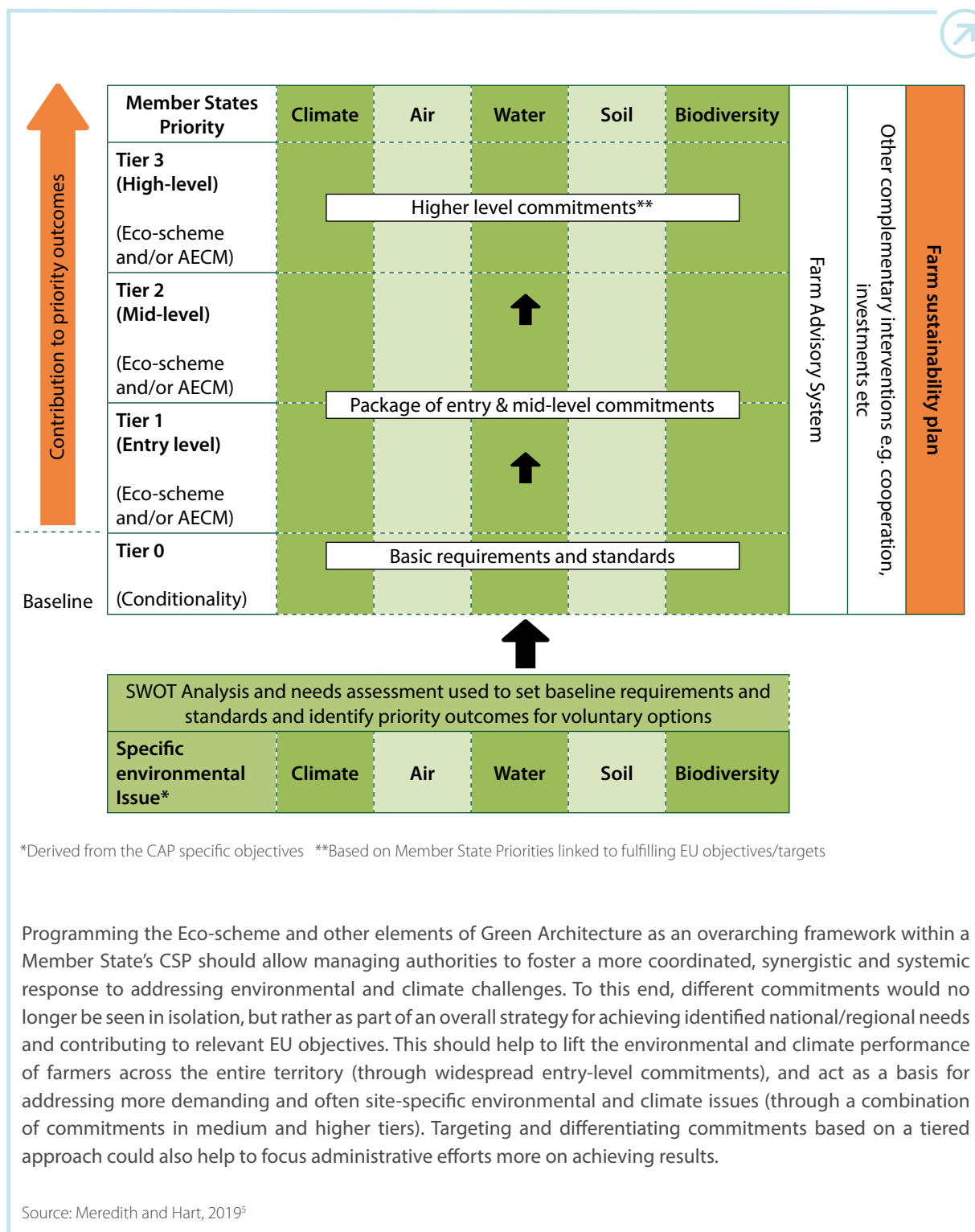
- **Conditionality** (Articles 11-12, Recitals 21-23, Annex III), which sets the mandatory baseline or reference level for the Eco-scheme and AECM commitments as well as other area and animal-based payments. In other words, the voluntary commitments can only pay for schemes that go beyond the mandatory basic requirements and standards.
- **Agri-environment-climate commitments** (Article 65, Recitals 37-39), which are another type of payment that can support both farmers and land managers undertaking relevant voluntary actions. These Pillar 2 schemes are financed through a combination of EU and national/regional funds with slightly different requirements than the Eco-scheme.
- **The Farm Advisory Service (FAS)** (Articles 13, 72, Recitals 12, 15, 24, and 46) is a horizontal intervention designed to support more effective implementation of the Eco-scheme and other environmental interventions. Its remit covers all CAP objectives – environmental, social and economic.

- **Other rural development interventions** co-financed by the EU and Member States, which may also complement the implementation of Eco-scheme and agri-environmental climate commitments. This includes payments to support non-productive investments, the development of the Natura 2000 network, the establishment of operational groups under the European Innovation Partnership and other knowledge exchange and information actions

The new approach to common strategic planning should encourage Member States to use the Eco-scheme in combination with the full range of CAP interventions to better reconcile environmental, social and economic needs. The figure in Box 21 illustrates how the Eco-scheme could be organised alongside other CAP environmental and climate-related interventions.

The framework is based on a graduated approach to environmental and climate delivery, whereby managing authorities could use a multi-tier hierarchy to incentivise and reward farmers and land managers to undertake a combination of basic and more demanding commitments. There are of course different ways that the Member States may conceive the implementation of the Green Architecture. The way in which managing authorities, in partnership with relevant stakeholders, use the Eco-schemes and other interventions in a joined-up way will be critical to addressing the scale of the environmental and challenges facing the EU agriculture and forestry sector.

BOX 2.1: TOWARDS A COMMON IMPLEMENTATION FRAMEWORK FOR THE ECO-SCHEME AND OTHER RELEVANT INTERVENTIONS



2.5 ENSURING GREATER ENVIRONMENTAL AND CLIMATE AMBITION THROUGH COMMON STRATEGIC PLANNING

A key condition of the new CAP's Strategic planning approach is the requirement for Member States to demonstrate a higher level of ambition for the environment and climate under the CAP 2021-2027 compared to the current period (Article 92). Furthermore, to address the CAP's environment and climate objectives Member States must take account of existing national environmental and climate plans emanating from EU environmental and climate legislation such as the implementation of the Prioritised Action Frameworks (PAFs) for Natura 2000 and the Energy and Climate Plans (NECPs) in their CSPs.

Under the 'new delivery model', responsibilities for the design and implementation of the CAP between the EU and the MS change significantly (Articles 95-109, 111; Recitals 54-68, 70). While the overall parameters of the policy are set at EU level, managing authorities determine the content of their CSP aligned to the CAP's objectives. The Commission approves the CSP on the basis that the plan meets all EU requirements and is in line with the provisions of the relevant CAP regulations.

Within the CSP, MS set out their plans for both Pillars for the entire programming period.

As part of this assessment, managing authorities must explain how the Eco-scheme will work, together with other elements of the Green Architecture, to reach the CAP's environmental and climate objectives. Managing authorities are also required to demonstrate how the Eco-scheme and other parts of the Green Architecture will contribute to national targets set out in existing national environmental and climate plans⁸. The actual assessment of the CSP focuses strongly on the adequacy of the plan's intervention strategy *vis-à-vis* the CAP Specific objectives and the managing authority's targets, interventions, and budget allocations, taking account of the SWOT analysis, needs assessments and the *ex-ante* evaluation conducted by the managing authority or on its behalf.

Design and implementation options are discussed in further detail in Chapters 3 and 4.

2.6 POTENTIAL FOR MONITORING AND EVALUATING ENVIRONMENTAL AND CLIMATE PERFORMANCE

A new Performance Monitoring and Evaluation Framework (PMEF) is used to assess how the CSPs are contributing to the CAP's General and Specific objectives and the overall results/performance of the policy (Articles 111, 115-129; Recitals 70, 73-77). A key part of the PMEF is the so-called annual review process between managing authorities and the Commission. Under this process, managing authorities must report on the implementation of their CSP for the preceding year by submitting an annual performance report to the Commission. A monitoring committee of national stakeholders is also responsible for examining the progress in the implementation of the CSP, including the achievement of MS milestones and targets set out

in the plan. CAP objectives, including those related to environment and climate, are accompanied by a common set of output, result and impact indicators used to monitor and evaluate the implementation of the CSPs. However, a major limitation is that the monitoring and evaluation of the CSP under the PMEF is largely focused on reaching a certain target coverage assigned to each intervention rather than focusing the expected or actual contribution or impacts of the interventions towards achieving the Member States own operational objectives set out in its CSP.

Monitoring and evaluation requirements and possibilities are discussed in more detail in Chapter 5.

⁸ In the September 2019 Presidency proposals⁴ the option to include impact indicators from existing national plans is deleted.

3. DESIGNING AND IMPLEMENTING EFFECTIVE AND EFFICIENT ECO-SCHEMES

Although it is tempting to start with the previous CAP Greening and Cross-compliance provisions as a basis for developing Eco-schemes in the new CAP, there are many opportunities with this new approach to be creative and innovative in order to deliver better results, while at the same time respecting administrative and resource constraints. In this Chapter, we explore what requirements need to be met and how best use can be made of the opportunities, what innovative approaches might be considered, how tools such as sustainability monitoring and assessment can be used effectively to support the process, and how the engagement of stakeholders can make both design and implementation more effective. This can include measures emphasising system redesign, and not just improving efficiency or input substitution, with the potential for much greater environmental and sustainability gains^{9,10}.

3.1 ECO-SCHEMES: WHAT ARE THE OPPORTUNITIES?

As a new instrument of the CAP agri-environment and climate policy in Pillar 1, Eco-schemes, unlike Pillar 2 agri-environment-climate measures (AECMs), do not require national or regional co-funding, but are 100% funded by the EU. Member States can be more flexible in the amounts they pay to farmers as the payment calculations do not need to follow the income foregone approach of Pillar 2. However, Eco-schemes are not a replacement for Greening and, like AECMs, require going beyond both the new Conditionality (which includes Greening) and EU/national legislation. While Eco-schemes must not be the same as Pillar 2 AECMs, Member States should aim to use them in a complementary and integrated way to address their environmental and climate challenges.

As the Pillar 1 direct payments constitute the largest proportion of EU spending, Eco-schemes can be a more ambitious way to refocus EU funds on environment and climate friendly agriculture, rather than primarily on income support as in the past.

While Pillar 2 AECMs have been and will continue to be a major instrument for addressing key challenges facing sustainable agriculture and land management, these measures cover a much smaller portion of the EU's UAA (around 25% in 2007-2013). This contrasts with direct payments, which cover a much larger portion of the UAA (about 90%). As a result, the Eco-scheme has the potential to have a much wider reach.

Member States can, therefore, mobilise more EU funds and have more options to use both Pillars of the CAP to invest in environment- and climate-friendly farming practices. Moreover, there is nothing stopping Member States from dedicating most of their national envelopes for direct payments to the Eco-scheme. Using most of the direct payments envelope to help farmers adopt more sustainable farming practices and systems could constitute a new source of income for them, rewarding their delivery of public goods.

⁹ Pretty J, Benton TG, Bharucha ZP et al. (2018) Global assessment of agricultural system redesign for sustainable intensification. *Nature Sustainability*, 1, 441–446.

¹⁰ Lampkin NH, Pearce BD, Leake AR, Creissen H, Gerrard CL, Girling R, Lloyd S, Padel S, Smith J, Smith LG, Vieweger A, Wolfe MS (2015) The role of agroecology in sustainable intensification. Report for the Land Use Policy Group of the UK Nature Conservation Agencies. Organic Research Centre, Newbury and Game & Wildlife Conservation Trust, Fordingbridge.



Eco-schemes permit using the Pillar 1 direct payments budget for achieving environmental and climate objectives, through schemes targeted and tailored to Member States needs and priorities. This is unlike previous Pillar 1 practice¹¹ and means that Member States have much more autonomy to use Eco-schemes in a complementary way to existing AECMs.

Overall programming is the responsibility of the MS who coordinate regional actions, so there is scope for design of the Eco-schemes or AECMs to take place at national or regional level. While the Commission has proposed only CAP Strategic plans at MS level, there is now a debate in the European Parliament as to whether there should be regional plans. In any case, national plans could incorporate regional sub-plans.

The key differences between Pillar 1 Eco-schemes and Pillar 2 AECMs are that the former are 100% EAGF (EU)-financed and budgeted on an annual basis, whereas EAFRD-derived budgets for Pillar 2 are co-financed and organised on a multi-annual basis. The payment options for the Eco-scheme are also more flexible than Pillar 2 AECMs, with the possibility of income support top-ups. Further details of these differences are outlined in Table 3.1, with strengths and weaknesses assessed in Box 3.1.

While the Eco-scheme offers opportunities, which we have outlined above, there are some risks. The organisation of Eco-scheme budgets on an annual basis is one potential

drawback of the approach. In contrast to the Pillar 2 budget, the Pillar 1 funding allocation for a specific year must be spent and cannot be rolled over to another year.

As a result, eco-schemes could be designed with low ambition and be less target-oriented in order to mitigate the risk of financial penalties if predicted uptakes are not achieved. Conversely, if uptake of Eco-schemes is higher than anticipated, then the basic payment received by all farmers will need to be reduced so as not to exceed the total annual budget, as it is not possible to exclude eligible participants from the Eco-scheme.

In addition, as the Commission did not set out technical or specific environment and climate requirements, the legislative proposal carries the risk that some Member States will be inclined to spend a high share of the national ceilings on payments for basic income support, arguing that farmers already support the environment and climate.

Thus, to achieve environment and climate goals, it is critical that Eco-schemes are well-designed technically and financial resources are adequate, providing sufficient incentive for participation^{1,12,13}. In addition to attractive and ambitious Eco-scheme options, effective minimum requirements for Conditionality and a clear baseline on which Eco-schemes and AECMs can deliver high environment and climate impacts will be needed. Potential solutions are considered in more detail below.

¹¹ Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy.

¹² Latacz-Lohmann U, Balmann A, Birner R, Christen O, Gauly M, Grethe H, Grajewski R, Martínez J, Nieberg H, Pischetsrieder M (2019) Zur effektiven Gestaltung der Agrarumwelt- und Klimaschutzpolitik im Rahmen der Gemeinsamen Agrarpolitik der EU. Berichte über Landwirtschaft.

¹³ Hart K, Bas-Defossez F (2018) CAP 2021-27: Proposals for increasing its environmental and climate ambition, Report for NABU. IEEP, Brussels

TABLE 3.1: DIFFERENCES BETWEEN ECO-SCHEMES AND PILLAR 2 AGRI-ENVIRONMENTAL MEASURES

	PILLAR 1 ECO-SCHEME: SCHEMES FOR THE CLIMATE AND THE ENVIRONMENT (ART. 28) ²	PILLAR 2 AECD: ENVIRONMENT, CLIMATE AND OTHER MANAGEMENT COMMITMENTS (ART. 65) ²
Beneficiaries	'Genuine' farmers	Farmers and land managers, collective contracts possible
Fund	100% EU financed (EAGF)	EU and nationally co-financed (EAFRD)
Focus	Agricultural activities delivering CAP Specific objectives d-f	Environment, climate and other management commitments delivering CAP Specific objectives d-f
Duration	Annual, possibly multiannual	Multiannual up to 5-7 years or more
Payment calculation	Full or partial compensation for costs incurred/income foregone (including opportunity costs) as for AECD, or Fixed top-up payment to the basic income support (based on Member State justification)	Full or partial compensation for costs incurred/income foregone (including opportunity costs)
Payment basis	Annual, per hectare	Per hectare, head of livestock, number of trees etc., annual flat-rate or as a one-off payment per unit
Eligibility criteria	Fulfilling the genuine farmer, eligible hectares criteria defined by the Member States, other selection criteria could also be defined by the Member States	Achieving one or more of the CAP specific objectives; other selection criteria could be defined by the Member States
Time of application	With main application (15 th May)	Initial application before the first commitment year, then annually (15 th May)
Links with other measures	General reference to Article 13 advisory services	Beneficiaries must be allowed access to the knowledge and information they need to implement the scheme
Minimum spending requirement	No (but still being debated by the EU Council and Parliament)	At least 30% of EAFRD-budget for measures which address CAP Specific objectives d-f

Source: Own compilation, based on Latacz-Lohmann et al., 2019¹² and SAB, 2019¹⁴

¹⁴ SAB (2019) Designing an effective agri-environment-climate policy as part of the post-2020 EU Common Agricultural Policy. Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection at the Federal Ministry of Food and Agriculture, Bonn, Germany.

» BOX 3.1: STRENGTHS AND WEAKNESSES OF ECO-SCHEMES

» Strengths of Eco-schemes

- Eco-schemes allow for using the Pillar 1 direct payment budget for achieving environmental and climate objectives in a more targeted way
- Regional programming of Eco-schemes is possible, even if part of national CAP strategic plans
- MS have more flexibility in the amount they pay to farmers than with AECM as the payment level may be calculated as a top-up to the income support for sustainability. Payment calculations are not limited to the requirement only to pay incurred costs or income forgone
- There is a legal right to receive the payment, which means that farmers who want to and are eligible cannot be excluded for budgetary or other reasons
- Programming on MS not regional level: opportunity to design measures in a more coherent way (e.g. national support for organic farming, pasture-based ruminant systems, HNV farming etc.)
- The commitment is normally for one year, which means adoption barriers to farmers may be lower as they can try out Eco-schemes without committing to a multi-annual contract
- Higher acceptance in agricultural sector as only genuine farmers are eligible as beneficiaries

» Weaknesses of Eco-schemes

- Budgetary rules do not allow unspent funds under the EAGF to be rolled over to the subsequent year if the target uptake value has not been reached, unlike the EAFRD. Legal clarification is needed in order to understand if some flexibility can be applied to the budgetary rules once the unspent funds are used to fund the specific environmental and climate objectives.
- If too many participants, either Basic or Eco-scheme payments may have to be reduced to respect budgets.
- Risk of double funding: AECMs can be supported as Pillar 1 Eco-schemes and as AECMs in Pillar 2. Pillar 1 Eco-Schemes should not overlap with Pillar 2 AECMs to avoid double funding, but there is a danger that efforts to mitigate the risk of double funding could negatively impact on complementarity between schemes.
- Environment and climate measures need a long-term perspective to achieve impacts. Annual commitments linked to annual budgets may be ineffective, e.g. for increasing biodiversity, as farmers can drop the measure after one year, but longer-term commitments can be programmed despite budget constraints.
- Eco-schemes and payment rates could change annually. Thus, compared to multiannual commitments, farmers' planning security decreases
- As currently proposed, Eco-schemes cannot be used for food quality or animal welfare measures, although if they have an environment/climate objective they may be eligible. Discussions are continuing about whether to formally include animal welfare measures in Eco-schemes
- Member States' flexibility in scope of design of Eco-schemes could lead to ineffective agri-environment and climate measures (race to the bottom)

Source: Own compilation, Latacz-Lohmann et al., 2019¹²

3.2 DELIVERING WELL-DESIGNED ECO-SCHEMES – KEY PRINCIPLES

Getting the scheme design right is important to make best use of the opportunities and strengths of Eco-schemes while addressing their challenges and weaknesses. A key challenge is to find the right balance between Conditionality, Eco-schemes, Pillar 2 AECMs and other policies to address the environmental needs and priorities identified in the national CAP Strategic plans.

For example, to make a meaningful contribution to farmland biodiversity and climate mitigation and adaption, managing authorities should take account of all priority actions for agriculture and forestry that have been identified in their planning tools linked to EU environmental and climate legislation, such as their Prioritised Action Framework for Natura 2000 2021-2027, their National Climate and Energy Plans 2021-2030 as well as National Action Plans for the Sustainable Use of Pesticides.

From these priority actions Member States must determine the most appropriate tool within the Green Architecture to address the priority and what level of uptake is needed to achieve the desired outcome. This should be done in a process involving key stakeholders and which is administratively simple in order to ensure maximum acceptance and potential uptake. In this section we set out the key legal and other principles that should be considered when designing Eco-schemes.

3.2.1 THE LEGAL REQUIREMENTS

Article 28 of the Commission Proposal sets out the legal requirements for Eco-schemes (see Box 3.2 for full text). This leaves significant freedom to MS to specify what measures might be included, although some guidance on possible options is contained in the preamble to the proposed regulation. Possible Eco-scheme options are described in Chapter 4.

3.2.2 SUPPORTING THE DELIVERY OF EU ENVIRONMENTAL AND CLIMATE OBJECTIVES

As with other parts of the Green Architecture, the principle aim of the Eco-scheme is to use the CAP in an effective and efficient way to deliver on the EU's environmental and climate legislation and accompanying national planning tools (see Box 3.3 and Table 3.2). Cross-linkages with the relevant legislation, strategies and action plans need to be considered explicitly and referenced in the CAP Strategic plans as illustrated in the CSP Plan template¹⁵.

¹⁵ CAP Strategic Plan template: Non Paper (October 2018) WK 11284/2018 ADD 1 Council of the European Union, Brussels.

» BOX 3.2: ECO-SCHEME REQUIREMENTS SPECIFIED IN COMMISSION LEGAL PROPOSAL²**Article 28 Schemes for the climate and the environment**

1. Member States shall provide support for voluntary schemes for the climate and the environment ('eco-schemes') under the conditions set out in this Article and as further specified in their CAP Strategic Plans.
2. Member States shall support under this type of intervention genuine farmers who make commitments to observe, on eligible hectares, agricultural practices beneficial for the climate and the environment.
3. Member States shall establish the list of agricultural practices beneficial for the climate and the environment.
4. Those practices shall be designed to meet one or more of the specific environmental- and climate-related objectives laid down in points (d), (e) and (f) of Article 6(1).
5. Under this type of interventions, Member States shall only provide payments covering commitments which:
 - (a) go beyond the relevant statutory management requirements and standards of good agricultural and environmental condition established under Section 2 of Chapter I of this Title;
 - (b) go beyond the minimum requirements for the use of fertilisers and plant protection products, animal welfare, as well as other mandatory requirements established by national and Union law;
 - (c) go beyond the conditions established for the maintenance of the agricultural area in accordance with point (a) of Article 4(1);
 - (d) are different from commitments in respect of which payments are granted under Article 65.
6. Support for eco-schemes shall take the form of an annual payment per eligible hectare and it shall be granted as either:
 - (a) payments additional to the basic income support as set out in Subsection 2 of this Section; or
 - (b) payments compensating beneficiaries for all or part of the additional costs incurred and income foregone as a result of the commitments as set pursuant to Article 65.
7. Member States shall ensure that interventions under this Article are consistent with those granted under Article 65.
8. The Commission is empowered to adopt delegated acts in accordance with Article 138 supplementing this Regulation with further rules on the eco-schemes.

BOX 3.3: ANNEX XI – EU LEGISLATION CONCERNING THE ENVIRONMENT AND CLIMATE TO WHOSE OBJECTIVES MEMBER STATES' CAP STRATEGIC PLANS SHOULD CONTRIBUTE PURSUANT TO ARTICLES 96, 97 AND 103²



- a. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
- b. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
- c. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy
- d. Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources
- e. Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe
- f. Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC
- g. Regulation 2018/841 of the European Parliament and of the Council on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change
- h. Regulation 2018/842 of the European Parliament and of the Council on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 for a resilient Energy Union and to meet commitments under the Paris Agreement and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change
- i. Directive 2009/28/EC on the promotion of the use of energy from renewable sources;
- j. Directive 2018/2002 of the European Parliament and of the Council amending Directive 2012/27/EU on energy efficiency
- k. Regulation 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union, amending Directive 94/22/EC, Directive 98/70/EC, Directive 2009/31/EC, Regulation (EC) No 663/2009, Regulation (EC) No 715/2009, Directive 2009/73/EC, Council Directive 2009/119/EC, Directive 2010/31/EU, Directive 2012/27/EU, Directive 2013/30/EU and Council Directive (EU) 2015/652 and repealing Regulation (EU) No 525/2013
- l. Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides

TABLE 3.2: KEY EU ENVIRONMENTAL AND CLIMATE POLICIES, ISSUES, EXPECTED OUTCOMES AND RELATED NATIONAL TOOLS

EU LEGISLATION/ POLICY*	(SO)** ISSUE	EXPECTED OUTCOMES	NATIONAL TOOLS
EU Birds and Habitats Directives <small>*a,b</small> EU Biodiversity Strategy 2020 ¹⁶	(f) Farmland biodiversity	<i>Halting the loss</i> of biodiversity and the degradation of ecosystem services in the EU by 2020 and restoring them in so far as feasible. In longer-term, <i>improvement in</i> the quantity, species diversity or conservation status of the flora and fauna on the land concerned, or in adjacent water bodies.	Priority Action Framework for Natura 2000 2021-2027 National biodiversity strategies and action plans
	(f) Agricultural landscapes	<i>Maintenance and protection of</i> individual landscape elements or the characteristic structure of a more traditional agricultural landscape as a whole.	
Water Framework Directive <small>*c</small> Nitrates Directive <small>*d</small>	(e) Water quality	<p><i>Reduce</i> the pollution of water caused or induced by the application and storage of inorganic fertiliser and manure on farmland and prevent further such pollution to safeguard drinking water supplies and to prevent wider ecological damage through the eutrophication of freshwater and marine waters.</p> <p>To <i>enhance</i> the status and prevent further deterioration of aquatic ecosystems and associated wetlands, promote the sustainable use of water and reduce water pollution and achieve good status of all water bodies by 2027</p>	Nitrates action programme River Basin Management Plans
	(e) Water availability	<p><i>Promote</i> the sustainable use of water and to mitigate the effects of droughts and floods, including:</p> <p><i>Reduction</i> in the demand for irrigation or <i>improve</i> the availability and timeliness of water flows to replenish surface and groundwater systems.</p>	River Basin Management Plans
Air quality and national emission ceilings directives <small>*e,f</small>	(e) Air quality	<i>Reduction</i> in ammonia emissions consistent with national commitments by improving animal husbandry practice, livestock housing, manure storage and spreading techniques and improving nutrient management and cropping practices to limit the volatilisation of ammonia from nitrogenous fertilisers.	National Air Pollution Control Programme

¹⁶ EC (2011) Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (COM/2011/0244). European Commission, Brussels.

EU LEGISLATION/ POLICY*	(SO)** ISSUE	EXPECTED OUTCOMES	NATIONAL TOOLS
Energy and Climate Change Regulations and Directives *g,h,i,j,k EU Climate Neutral Strategy 2050	(d) Climate change mitigation	<i>Contribution towards</i> reducing the net greenhouse gas (GHG) emissions attributable to that land and/or improving the capacity for carbon sequestration or reducing carbon emissions. The effects considered are limited to activities and biological processes within the management area and do not take into account the full life cycles of products or inputs. <i>Ensure</i> that for each 5-year compliance period (2021-25, 2026-30), the amount of carbon absorbed in the LULUCF sector is at least equivalent to that emitted, in accordance with the accounting rules. <i>Reduce emissions</i> by 30% and <i>increase energy efficiency</i> by at least 32.5% by 2030 and more subsequently.	National Energy and Climate Plans (NECPs)
	(d) Climate change adaptation	<i>Maintenance or improvement the opportunities</i> for semi-natural habitats and species to adapt their range to changing climatic conditions and/or <i>reduces</i> the pressure of agricultural externalities on natural systems so that they are more resilient to the effects of climate change.	National Energy and Climate Plans (NECPs)
Thematic Strategy for Soil Protection (COM/2006/231)	(e) Soil functionality	To protect and ensure the sustainable use of soil by preventing further soil degradation and restoring degraded soils including: <i>Improvement</i> in the proportion of organic matter, the level of susceptibility to erosion by wind or water, the soil's structure and capacity for infiltration, the health of its biota, or <i>reduces</i> the level or risk of contamination.	
Sustainable Use of Pesticides Directive *i	(e,f,i) Sustainable resource use, water, farmland biodiversity, safe food	<i>Reduce risks and impacts</i> of pesticide use on human health and the environment and encourage the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides.	National Action Plans on the Sustainable use of pesticide
EU One Health Action Plan against AMR	(i) Farm animal health	<i>Contribution</i> to reducing antibiotic resistance by <i>investing in</i> preventative health management planning to limit the routine use of veterinary antimicrobials.	
EU animal welfare strategy 2012-2015	(i) Farm animal welfare	<i>Reduction</i> in unnecessary suffering or injury of farm animals and taking account of their physical and behavioural needs by applying good animal husband practices and providing appropriate living conditions.	

* As specified in Annex XI of the Commission Proposal (see Box 3.3) ** CAP Specific objective (see Section 1.1)

Source: Own compilation adapted from Cooper et al., 2009¹⁷ and Keenleyside et al., 2011¹⁸

¹⁷ Cooper T, Hart K, Baldock D (2009) The provision of public goods through agriculture in the European Union. Report for DG Agriculture and Rural Development, Institute for European Environmental Policy, London.

¹⁸ Keenleyside C, Allen B, Hart K, Menadue H, Stefanova V, Prazan J, Herzon I, Clement T, Povellato A, Maciejczak M, Boatman N (2011) Delivering environmental benefits through entry level agri-environment schemes in the EU. Report for DG Environment, Institute for European Environmental Policy, London.

3.2.3 CONDITIONALITY BASELINE

Conditionality is intended to provide the legal baseline for support including both Pillar 1 Eco-schemes and Pillar 2 AECMs (see Article 28.5.a), which means that the Conditionality specifications cannot also be funded as part of Eco-schemes. The Conditionality requirements cover both Statutory Management Requirements (SMRs) and practices aimed at maintaining land in Good Agricultural and Environmental Condition (GAEC). The proposed legal text (Articles 11 and 12)² is presented in Box 3.4. The detailed requirements are in Annex III of the Commission proposal. We have summarized these requirements in Box 3.5, including the proposed amendments contained in the September 2019 Presidency proposal⁴. As can be seen, some aspects of Greening under the previous CAP, such as crop rotations (GAEC 8), ecological focus areas (reframed in GAEC 9), and protection of permanent grassland area (GAEC 1) have been included, with some new initiatives such as nutrient budgeting (GAEC 5) also proposed.

The September 2019 Presidency proposals delete references to nutrient budgeting, and to several animal registration and disease SMRs. They also moderate the requirement for crop rotations, by including reference to crop diversity, and permit the inclusion of catch crops and legumes grown without inputs in GAEC 9. The exclusion of nutrient budgeting may now permit the application of nutrient budgeting and other farm sustainability tools to be included in Eco-schemes, an option we consider in more detail later. But it may also exclude the potential for measures based around the use of legumes (important for climate change mitigation as well as biodiversity by reducing the need for nitrogen

fertilisers) to be included in Eco-schemes, which could be a significant disadvantage. At time of publication, the new European Parliament 2019-2024 has not developed its own proposals and is currently working from proposals put forward by AGRI and ENVI committees in the previous parliamentary cycle.

Many MS also have national environmental standards that go beyond EU regulations. It may be appropriate for some of these to be supported as part of the Eco-scheme framework so that a level playing field for trade with other EU MS can be maintained. However, this is only likely to be acceptable where there is no legal requirement to meet the national standard, for example voluntary codes of practice.

3.2.4 EVIDENCE OF BENEFITS AND RELEVANCE TO DELIVER CAP SPECIFIC OBJECTIVES

As part of the results-based approach, and the delegation of responsibilities for specifying measures to the Member States, there will be a need to evidence how the Eco-schemes will deliver the CAP Specific objectives *and* long-term national targets set out in or deriving from the legislative instruments referred to in Annex XI of the CAP plan regulation. Member States are required to establish a 'list of agricultural practices beneficial for the climate change and the environment', which are designed to meet the CAP environmental and climate objectives as the basis for the programming of their Eco-schemes. This is an issue of *a priori* justification, rather than *ex post* monitoring and evaluation, which is covered in more detail in Chapter 5.



BOX 3.4: CONDITIONALITY – PROPOSED LEGAL REQUIREMENTS (ARTICLES 11 AND 12)²



Article 11 Principle and scope

1. Member States shall include in their CAP Strategic Plans a system of conditionality, under which an administrative penalty shall be imposed on beneficiaries receiving direct payments under Chapter II of this Title or the annual premia under Articles 65, 66 and 67 who do not comply with the statutory management requirements under Union law and the standards for good agricultural and environmental condition of land established in the CAP Strategic Plan, as listed in Annex III, relating to the following specific areas:
 - (a) the climate and the environment;
 - (b) public health, animal health and plant health;
 - (c) animal welfare.
2. The rules on the administrative penalties to be included in the CAP Strategic Plan shall respect the requirements set out in Chapter IV of Title IV of Regulation (EU) [HzR].
3. The legal acts referred to in Annex III concerning the statutory management requirements shall apply in the version that is applicable and, in the case of Directives, as implemented by the Member States.
4. For the purpose of this Section, 'statutory management requirement' means each individual statutory management requirement under Union law referred to in Annex III within a given legal act, differing in substance from any other requirements in the same act.

Article 12 Obligations of Member States relating to good agricultural and environmental condition

1. Member States shall ensure that all agricultural areas including land which is no longer used for production purposes, is maintained in good agricultural and environmental condition. Member States shall define, at national or regional level, minimum standards for beneficiaries for good agricultural and environmental condition of land in line with the main objective of the standards as referred to in Annex III, taking into account the specific characteristics of the areas concerned, including soil and climatic condition, existing farming systems, land use, crop rotation, farming practices, and farm structures.
2. In respect of the main objectives laid down in Annex III Member States may prescribe standards additional to those laid down in that Annex against those main objectives. However, Member States shall not define minimum standards for main objectives other than the main objectives laid down in Annex III.
3. Member States shall establish a system for providing the Farm Sustainability Tool for Nutrients referred to in Annex III, with the minimum content and functionalities defined therein, to beneficiaries, who shall use the Tool.

The Commission may support the Member States with the design of that Tool and with data storage and processing services requirements.

4. The Commission is empowered to adopt delegated acts in accordance with Article 138 supplementing this Regulation with rules for good agricultural and environmental condition, including establishing the elements of the system of the ratio of permanent grassland, the year of reference and the rate of conversion under GAEC 1 as referred to in Annex III, the format and additional minimum elements and functionalities of the Farm Sustainability Tool for Nutrients.

BOX 3.5: CONDITIONALITY – STATUTORY MANAGEMENT REQUIREMENTS (SMR) AND PRACTICES OF GOOD AGRICULTURAL AND ENVIRONMENTAL CONDITION (GAEC) (ANNEX III ADAPTED)^{2,4,15}

Climate and environment



Climate change mitigation and adaptation

GAEC 1: Maintenance of permanent grassland based on a ratio of permanent grassland in relation to agricultural area (at national, regional, sub-regional, group-of-holdings or holding level. The variation of this ratio shall be maximum 5% compared to reference year 2015 or 2018).

GAEC 2: Appropriate (minimum) protection of wetland and peatland (by 2024).

GAEC 3: Ban on burning arable stubble, except for plant health reasons.

Water

SMR 1: Directive 2000/60/EC of 23 October 2000 of the European Parliament and of the Council establishing a framework for Community action in the field of water policy: Article 11(3)(e) and Article 11(3)(h) as regards mandatory requirements to control **diffuse sources of pollution by phosphates**.

SMR 2: Council Directive 91/676/EEC of 12 December 1991 concerning the **protection of waters against pollution caused by nitrates from agricultural sources**: Articles 4 and 5.

GAEC 4: Establishment of buffer strips along water courses.

GAEC 5: Use of Farm Sustainability Tool for Nutrients (DELETED).

Soil protection and quality

GAEC 6: Tillage management reducing (or other appropriate cultivation techniques to limit) the risk of soil degradation including slope consideration (taking into account the slope gradient).

GAEC 7: No bare (Minimum) soils (cover) in (periods and areas that are) most sensitive period(s).

GAEC 8: Crop rotation (or other practices aiming at preserving the soil potential, such as crop diversification).

Biodiversity and landscape protection and quality

SMR 3: Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the **conservation of wild birds**: Article 3(1), Article 3(2)(b), Article 4(1), (2) and (4).

SMR 4: Council Directive 92/43/EEC of 21 May 1992 on the **conservation of natural habitats and of wild flora and fauna**: Article 6(1) and (2).

GAEC 9: a) (in areas that are most appropriate) minimum share of agricultural land devoted to (i) non-productive features or areas (or (ii) catch crops or nitrogen-fixing crops, cultivated without plant protection products); b) retention of landscape features; c) ban on cutting hedges and trees during the bird breeding and rearing season; d) as an option, measures for avoiding invasive plant species.

GAEC 10: Ban on converting or ploughing permanent grassland (designated as environmentally-sensitive permanent grasslands) in Natura 2000 sites.

(Text in parentheses is taken from Presidency proposed amendments, September 2019)⁴



Public health, animal health and plant health

Food safety

SMR 5: Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general **principles and requirements of food law**, establishing the European Food Safety Authority and laying down procedures in matters of food safety: Articles 14 and 15, Article 17(1)3 and Articles 18, 19 and 20.

SMR 6: Council Directive 96/22/EC of 29 April 1996 concerning the **prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and beta-agonists**: Article 3(a), (b), (d) and (e) and Articles 4, 5 and 7.

Identification and registration of animals (DELETED)

SMR 7: Council Directive 2008/71/EC of 15 July 2008 on **identification and registration of pigs**: Articles 3, 4 and 5. (DELETED)

SMR 8: Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the **identification and registration of bovine animals** and regarding the labelling of beef and beef products: Articles 4 and 7. (DELETED)

SMR 9: Council Regulation (EC) No 21/2004 of 17 December 2003 establishing a system for the **identification and registration of ovine and caprine animals**: Articles 3, 4 and 5. (DELETED)

Animal diseases (DELETED)

SMR 10: Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the **prevention, control and eradication of certain transmissible spongiform encephalopathies**: Articles 7, 11, 12, 13 and 15. (DELETED)

SMR 11: Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on **transmissible animal diseases**: Article 18(1), limited to foot-and-mouth disease, swine vesicular disease and blue tongue. (DELETED)

Plant protection products

SMR 12: Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the **placing of plant protection products on the market**: Article 55, first and second sentence.

SMR 13: Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the **sustainable use of pesticides**: Article 5(2) and Article 8(1) to (5), Article 12 with regard to restrictions on the use of pesticides in protected areas defined on the basis of the Water Framework Directive and Natura 2000 legislation, Article 13(1) and (3) on handling and storage of pesticides and disposal of remnants.

Animal welfare

SMR 14: Council Directive 2008/119/EC of 18 December 2008 laying down minimum standards for the **protection of calves**: Articles 3 and 4.

SMR 15: Council Directive 2008/120/EC of 18 December 2008 laying down minimum standards for the **protection of pigs**: Article 3 and Article 4.

SMR 15: Council Directive 98/58/EC of 20 July 1998 concerning the **protection of animals kept for farming purposes**: Article 4.

The primary source of *ex ante* evidence is likely to be a combination of results from the monitoring and evaluation of previous Agri-environment schemes as well as research evidence and pilot test results for specific measures. These may be locally, nationally or internationally based^{17,18,19}. In some cases, EU or National audit offices may also have carried out reviews of specific measures, which could be used as justification for inclusion.

3.2.5 ENGAGING STAKEHOLDERS

The design and implementation of environment and climate schemes require a combination of technical know-how and political will. Meaningful engagement with stakeholders during different stages of the policy cycle is therefore essential. Stakeholder consultation in the development of CAP Strategic Plans is a requirement of the Commissions' proposals, with participation in implementation monitoring committees also foreseen.

There is a strong case for taking this further, to include active engagement in the development and implementation of Eco-schemes. Effective stakeholder engagement can help ensure good design and testing of schemes, as well as achieve greater acceptance to meet uptake targets. Stakeholder engagement can provide the managing authority with a range of different perspectives and experiences that can help to build schemes in a participatory way that instils ownership and acceptance and supports continuous improvement of schemes.

Key stakeholders to involve may include:

- Government officials in different Ministries/ Departments working on agriculture, food, the environment and rural affairs, as well as education, health research, trade and economic development, in order to ensure synergies and connectivity in policy-making;
- Associations of farmers and individual farmers who have a direct stake in the schemes, which may affect their income and have implications for how they manage the natural resources on their farmland. The success of the scheme is very much dependent on the overall attractiveness of the scheme which may influence general acceptance and actual participation;

- Civil society organisations, in particular environment, nature conservation and consumer NGOs, which seek to represent the public interest and may have a role in providing knowledge and skills and can help to support the overall legitimacy of the schemes in terms of their contribution to environmental and climate action;
- Public agencies and authorities who are mandated to deal with agricultural and environmental issues such as environmental protection agencies, competent authorities in charge of environmental protection, river basin management and national parks, agricultural extension services;
- Research institutes and universities who are professionally interested in environment and climate issues and can help to potentially help to inform the evidence base on and policy choices; and
- Private businesses and industry who may be affected or feel they have a stake in the design and implementation of the schemes such as different upstream and downstream actors within the value chain.

Care should be taken not to compartmentalise discussions by limiting individual meetings to specific interest groups. For example, organic farmers have interest that span agricultural, food and environmental perspectives, so that excluding them from discussions with e.g. mainstream farming organisations may miss critical points of common interest.

Stakeholders are often fully aware of their interests. Overall engagement is more likely to be successful when a suitably broad range of stakeholders is involved using different methods throughout the design and implementation phase. This may include direct interviews, focus groups and written consultation that should be adapted to particular needs and situations. However, not all stakeholders necessarily need or want to be involved in all stages of design and implementation. Care should be taken to involve a suitably broad range of stakeholders to achieve the desired result. At the same time, it is important to be mindful that not all stakeholders have the capacities (e.g. knowledge, skills) and resources (e.g. time, money, political authority) to actively engage in relevant parts of the design and

¹⁹ Sanders J, Hess J (eds.) (2019) Leistungen des ökologischen Landbaus für Umwelt und Gesellschaft. Thünen Report 65. Thünen-Institut, Braunschweig

implementation process. Therefore, where involvement is required or requested a clear overview of the process including the time commitment and funds needed to cover costs is essential.

Effective stakeholder engagement is vital during the early stages in the designing of the Eco-scheme and other elements of the Green Architecture as it enables the managing authority to discuss and resolve questions and concerns, and alleviate the risk of uncertainty and lack of information undermining the final content and acceptance of the scheme. This reflects the fact that there may be strong resistance to new ideas, particularly in the case of the Eco-scheme constituting a new departure compared to the current instruments programmed under Pillar 1. Skilled leadership is therefore critical on the part of the managing authority to ensure that the design of all interventions is fully on track to meet the environment and climate objectives and targets. This includes grounding the scheme design on good evidence and avoiding the pressure to programme commitments that are easy and popular to put into practice, but are unlikely to have the desired environmental and climate effect²⁰.

It may, therefore, make sense to develop a needs profile of the key stakeholders in terms of their:

- current knowledge and views of agri-environment schemes and whether it is needed;
- practical skills and engagement with scheme deliver, as administrators and beneficiaries
- specific interests, fears and uncertainties;
- the tendency to resist or cooperate on specific issues;
- past experience (either positive or negative) that might influence their attitude; and
- preferred means of communication (e.g. verbal, electronic or written).

Overall, it is important that the involvement of stakeholders is well prepared, given sufficient time and deploys suitable methods to address the key environmental and challenges identified in a meaningful way. Meaningful stakeholder engagement goes well beyond the design phase and should continue throughout the programming period in order to support the implementation, monitoring and evaluation of Eco-schemes.

3.2.6 CONTRACTUAL REQUIREMENTS

Clear contractual requirements are needed, both for the beneficiary to understand the expectations of schemes and what they actually entail, and for the paying agency to validate whether the contractual arrangements have been fulfilled. Contracts must clearly set out the eligibility criteria and commitments relevant to the specific scheme being programmed. While the contractual requirements should contain no ambiguity, the level of information should be kept to a minimum and all efforts should be made to ensure that the requirements are easy for beneficiaries to understand. The nature and content of the contract requirements will depend on the type of scheme being implemented e.g. management-based or result-based. This is particularly important in terms of the verifiability of the contractual requirement by the paying agency

3.2.7 VERIFIABILITY

Ensuring that beneficiaries are complying with their contractual requirements is critical to supporting the achievement of the environmental and climate objectives of the Eco-scheme or other AEC interventions. For controls to be effective, they need to be designed taking account of the objectives and expected or actual results to be achieved. However, there is also a need to avoid unnecessary bureaucracy and complexity, potentially leading to excessive transaction costs, not least in recognition that the commitments are annual and to ensure good acceptance so that planned uptakes are achieved. Monitoring and evaluation are considered in more detail in Chapter 5.

²⁰ Baldock D, Bennett H, Petersen J-K, Veen P, Verschuur G (2002) Developing agri-environment programmes in Central and Eastern Europe – a manual. Report for DG Environment and the Dutch Ministries of Agriculture, Nature Management and Fisheries and the International Affairs. Institute for European Environmental Policy, London

The type of payment scheme selected – management- or results-based – will also influence the control system needed²¹. For management-based schemes, the general principle is that the control system needs to be able to verify that the management actions set out in the management contract are being carried out. Both administrative checks (e.g. written or electronic notification), physical inspections (e.g. habitat condition) and off-farm sampling (e.g. test for nitrates in watercourses) may be required to determine expected and actual results. This should also take advantage of new technologies such as remote sensing.

One option to reduce the administrative costs of management-based schemes could be the use of certified schemes, which potentially could range from basic farm assurance through to integrated and organic farming (see Chapter 4). The advantage of such schemes is that standards have been developed and published, and the monitoring, inspection and verification procedures are already in existence. Evidence will be needed that any certified schemes selected actually deliver against the CAP Specific objectives and the needs and priorities specified in the CSP. Such evidence might be obtained from research literature, the certification bodies, or statistical sources.

For result-based schemes (explained in Chapter 4 and Box 4.3), the emphasis is on the use of appropriate results indicators which must be capable of verifying the actual result achieved. Results-based schemes may be perceived to be preferable, because controls are based only on the actual results and not on practices undertaken, which in some cases may be difficult to verify. However, these schemes require greater knowledge, skills and institutional capacity (although in some cases farmer self-assessment may also be relevant) and are only applicable to commitments where a measurable result can be verified. Depending on the objective, result-based management schemes may be more suitable for zonal schemes where a very specific result is desired, rather than horizontal schemes.

Finally, clear procedures for resolving disputes where a beneficiary in breach of their contractual requirements are essential. This is particularly important for results-based payments where the farmer or land managers have been prevented from achieving the desired result due to circumstances outside their control (e.g. weather events).

3.2.8 ADMINISTRATIVE STRUCTURES AND INSTITUTIONAL CAPACITY

Running a range of agri-environment-climate commitments can be a very complex and resource-intensive process, which involves managing authorities dealing with a range of administrative issues²⁰. This includes dealing with applications and financial management, which are the responsibility of managing authority and the paying agency respectively. Managing the Eco-scheme and other AEC commitments require the Member States to make full use of different electronic databases and geographic information systems, which make up the Integrated Administration and Control System (IACS). The existing Land Parcel Identification System (LPIS) remains the backbone of IACS, however new features such as the Area Management System which seeks to make use Copernicus Sentinel satellite data to track and assess agricultural activities and practices on agricultural areas should assist in helping to establish and administer, and monitor and evaluate new schemes. (For further information on monitoring and evaluation see Chapter 4).

The majority of managing authorities already have an extensive knowledge of designing and implementing agri-environment-climate schemes over the last number of decades largely through rural development programmes. However, the institutional capacity needed to design and implement Eco-schemes that work in a coherent and complementary way with other elements of the Green Architecture should not be under-estimated. It will require a range of in-house and external training and capacity building amongst different government departments, paying agencies and the Agricultural Knowledge and Innovation System (AKIS). This may include:

- Officials involved in the design and steering of the Eco-scheme and other agri-environment-climate commitments including not only the schemes themselves but also the linkages with other CAP interventions;
- Administrative staff responsible for the day-to-day management of schemes, the handling of applications, selection of successful applicants, finalising contracts, payment procedures, inspections and controls and communication with beneficiaries;

²¹ Allen B, Hart K, Radley G, Tucker G, Keenleyside C, Oppermann R, Underwood E, Menadue H, Poux X, Beaufoy G, Herzon I, Povellato A, Vanni F, Pražan J, Hudson T, Yellachich N (2014). Biodiversity protection through results-based remuneration of ecological achievement. Report Prepared for the European Commission, Report for DG Environment. Institute for European Environmental Policy, London.

- Officials, administrative staff and external personnel responsible for the monitoring and evaluation of the schemes and the CSP; and
- Advisors and planners, who often play a role in the initial decision to take up schemes as well as supporting the implementation of day-to-day management practices, may need to be re-trained on the latest agri-environmental issues going beyond basic information on the scheme requirements.

Better integration of new technologies and digital tools in administrative systems should greatly assist in improving the effectiveness of scheme establishment and implementation. However, it is also important the managing authorities ensure that the right balance is struck between IT systems and face-to-face communication with frontline staff. While IT systems can significantly simplify complex schemes by presenting applicants or beneficiaries with real-time information that is relevant to them, face-to-face communication is also needed to build practitioner trust in schemes and to allow personnel to exercise expert judgement where the use of digital tools is unnecessary or counterproductive.

3.2.9 CHOOSING THE PAYMENT MODEL AND CALCULATING PAYMENT RATES TO ACHIEVE TARGET UPTAKE

The Eco-scheme approach presents managing authorities with two models to pay for environmental and climate commitments.

The first option is a top-up to the basic income support which provides significant flexibility at first sight. Managing authorities should be able to clearly justify that the payment is compliant with Annex 2 to the WTO Agreement on Agriculture (covered by Article 10 and Annex II of the Commission proposal). Furthermore, care should be taken to ensure the payment is calculated based on the actual or expected results to be achieved rather than as a supplementary form of direct payment, which risks not delivering value for money.

The second option is the established model for agri-environment-climate payments. This option is often criticised for only covering income foregone and additional costs, which are perceived to offer too weak an incentive to encourage high levels of participation in order to deliver the objectives of a scheme. However, this payment model has much greater flexibility to incentivise uptake than may first appear. In particular, there is greater scope to take account of opportunity costs where alternative, less desirable production practices and farm management systems are no longer possible as a result of scheme participation. The strong criticism of this established model and the difficulty of determining how payments are set in different Member States suggests that the inclusion of 'opportunity costs' has not been sufficiently applied. Furthermore, payments can be determined on a regional or local level with target values linked with a higher level of payment to enable a certain level of participation to be reached.

There may also be some potential for managing authorities to apply a more creative approach by combining the two payments whereby payments are largely calculated on the basis of the costs incurred or income foregone, but beneficiaries are provided with a percentage top-up for progress through different stages of a multi-tier hierarchy of commitments (see Box 2.1)⁵.

There is also a need to consider how to respond if Eco-schemes are under- or over-subscribed. In the case of lower than expected uptake in a given year, the underspend on planned expenditure cannot be carried forward, but the basic payment may be adjusted to upwards to absorb unused funds. For future years, the payment rate could be increased using the combined top-up and income foregone approaches suggested above to provide an added incentive (in addition to any scheme modifications considered appropriate). In the case of over-subscriptions, a reduction in payment rate per hectare for the Eco-scheme may mean that income foregone/additional costs incurred are not fully covered and that the risk of payment rates changing could discourage continued or future participation. In this case, reductions in the basic payment rate, so that the Eco-scheme payments can be maintained, may be preferable.

3.2.10 INFORMATION SUPPORT FOR ECO-SCHEMES (AKIS AND EIP)

Training, advice, information and knowledge exchange are essential to ensure the efficient and effective implementation of the Eco-scheme and other AEC interventions. However, the specific requirements of a Member States' Agricultural Knowledge and Innovation System (AKIS) are often under-estimated by managing authorities or overlooked by beneficiaries due to passive engagement or the system failing to meet their needs. Indeed, the Commission's proposal acknowledges that a well-performing AKIS can help to address some of the tensions between enhanced environmental ambition and viable farm income e.g. lower returns in the short to medium-term resulting from some environmental requirements.

Recognising the importance of better information, advice, training and innovation, the Commission proposal includes a cross-cutting objective of modernising the sector by fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake (Article 5). This includes continuing support for Farm advisory services (FAS), which shall cover economic, environmental and social dimensions and deliver up to date technological and scientific information developed by research and innovation. FAS should be integrated within the interrelated services of farm advisors, researchers, farmer organisations and other relevant stakeholders that form the Agricultural Knowledge and Innovation Systems (AKIS) (Article 13). Knowledge exchange and information activities are further supported under Article 72 and as well as through the European Innovation Partnership for Agricultural Productivity and Sustainability (Article 114).

The remit of the CAP's Farm Advisory Service (FAS) is broadened and now covers all elements of the Green Architecture. Better integration of environmental requirements, standards and commitments into the FAS as part of existing national and regional AKIS can help to support more effective implementation of the Eco-scheme and other agri-environment-climate commitments. This may require a cultural shift on the part of managing authorities, to move beyond providing beneficiaries with basic information about environmental and climate commitments and to increase the emphasis on the actual implementation or achievement of the objective in question.

It would also require a farmer to be open to accommodate the value of aligning environmental and climate objectives with the overall business of the farm and the demands of the market. In addition, there needs to be provisions to ensure that advisors are competent and have access to good professional development training and support tools themselves.

The results from European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-Agri) Focus and Operational groups can also be used to support innovation in Eco-scheme design and delivery, including the piloting of new ideas. EIP can act as a filter for results from H2020 Research, Interreg and other projects, highlighting those with potential for environment and climate benefits.

3.2.11 USE OF SUSTAINABILITY ASSESSMENT TOOLS FOR ECO-SCHEMES

A greater focus on sustainability planning at the farm level may be one way to support a more integrated approach between the existing national and regional AKIS and the Green Architecture. For instance, all farmers and land managers could be paid to draw up a farm sustainability plan, integrating technical, business and environmental components, in partnership with an accredited farm advisor to increase farmers and land managers' awareness of how addressing the current range of environmental and climate priorities may be relevant and could be applied to their farm business. The plan would lay the groundwork for the take up of Eco-scheme and other AEC commitments, requiring farmers and land managers to document their contribution to environmental and climate priorities from the perspective of their overall farm enterprise. The AKIS could then be able to assess progress over time, taking advantage of relevant decision-making support tools such as the FST under Conditionality or other public or private initiatives allowing for adjustments to be made, if problems arise in farm management. Depending on the type of practice(s) within the agreement and level of commitment, farmers and land managers could be financially supported to work on implementing the plan with a farm accredited advisor to address environmental and climate priorities relevant to their farm business and the commitments they have made. Accredited advisors could help to implement plans on an individual basis or with a group of farmers.

The Commission proposal foresees as part of the GAEC framework the establishment of farm specific nutrient management plans with the help of a dedicated electronic Farm Sustainability Tool (FST)²² in order to support both the agronomic and the environmental performance of farms. It is expected that additional FST modules will be developed in future. These modules should be made available by the Member States to individual farmers for on-farm decision support. However, the inclusion of the FST for Nutrients in GAEC has been met with resistance from Member States and the EU Parliament, and it looks likely to be removed in the final agreement.⁴ This would strengthen the case for the implementation of farm sustainability assessments including carbon and nutrient budgets to be supported as part of Eco-schemes.

While the proposed widespread adoption of the FST for Nutrients is new and ambitious, with substantial resources being invested by the EU Commission, the development of sustainability assessment tools for agriculture has been progressing in the private sector over many years. There is now a great variety of sustainability assessment tools (e.g. Public Good Tool, RISE, REPRO, SMART) which have not been used as extensively as they could be in the implementation of agricultural policy²³. In principle, sustainability assessment can support agricultural policy in four ways (Figure 3.1):

• For Member States and regions

a) in designing and targeting agri-environment and climate policies more effectively according to the principles of sustainable development and according to societal needs,

b) in monitoring and controlling the sustainability performance of the farms, and in targeting actions to address specific weaknesses on individual farms,

c) in allocating payments according to the degree of achieving sustainability goals, i.e. bridging the gap between action-based and results-based payments, and

• For farmers

d) in supporting them to develop farm sustainability strategies in line with, and to assess current farm performance against, the CAP specific objectives and the national strategic plans.

In order to make use of the benefits of sustainability assessment tools in a coherent way, agricultural policy should consider all the four applications.

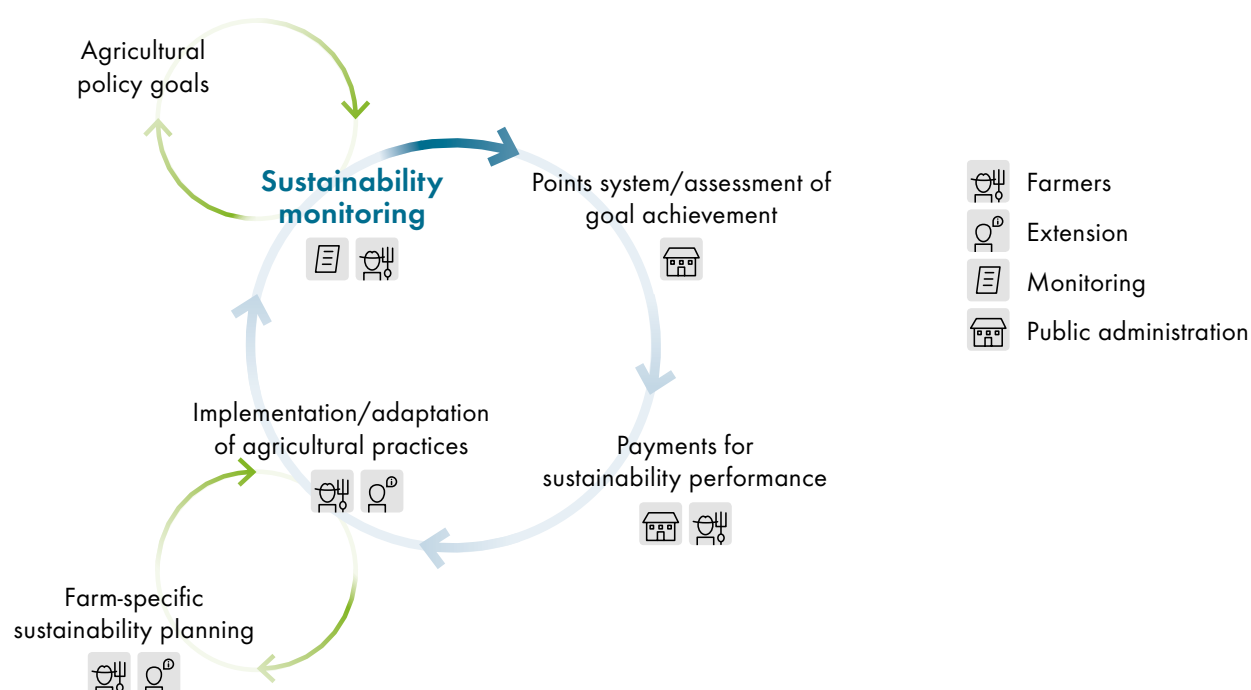
At the same time, there is a need to encourage greater convergence and coherence between sustainability assessment tools. The divergence of indicators and underlying data, and the lack of accepted definitions for data points, prevents the simple transfer of data from one tool to another. A common protocol for the inclusion of sustainability metrics within assessment tools would permit greater convergence and transferability.



²² https://ec.europa.eu/info/news/new-tool-increase-sustainable-use-nutrients-across-eu-2019-feb-19_en

²³ SFT (2017) Sustainability assessment: the case for convergence. Sustainable Food Trust, Bristol. <http://sustainablefoodtrust.org/wp-content/uploads/2013/04/Sustainability-Assessment.pdf>

FIGURE 3.1: CONSISTENT INTEGRATION OF SUSTAINABILITY ASSESSMENT INTO AGRICULTURAL POLICY



Source: Schader et al., 2017²⁴

Using sustainability assessments presents significant opportunities to make use of the benefits of results-oriented approaches, such as the potential for innovation by farmers, motivating farmers, fair remuneration, and context-specific adaptation. Farmers would be free to specifically decide the overall portfolio of food and societal services they would like to provide, whether to markets or society, based on actual assessment of the situation on their own farm. It would allow farmers to be just as flexible and innovative as in a results-oriented approach, as farmers would not only pick from a limited number of different agri-environmental payments, but would also have a large number of options for improving the sustainability performance of their farm in a way that is appropriate for the specific farm. At the same time, the advantages of management-based approaches, based on prescription of practices, would enable easy monitoring and control, because one would not have to collect data on the actual results achieved, but only the input data for the sustainability assessment.

²⁴ Schader C, Grovermann C, Frick R, Grenz J, Stolze M (2017) Towards a new public goods payment model for remunerating farmers under the CAP Post-2020. Potential of Sustainability Assessment tools for Improving the Effectiveness, Efficiency, and Acceptance of the CAP. FiBL and IFOAM EU Group, Frick.

4. WHAT KIND OF INTERVENTIONS COULD BE USED FOR ECO-SCHEMES?

As the debate over recent months has shown^{25,26,27}, there is a wide range of potential interventions that could be considered as part of Eco-schemes. In this Chapter, we explore how best use can be made of the opportunities, including innovative approaches that might be considered, but may not yet have received so much attention.

4.1 CONSIDERATIONS FOR SELECTING INTERVENTIONS

The Commission's proposal requires Member States to establish a 'list of agricultural practices beneficial for the climate change and the environment' and signposts certain management practices and systems that could be supported by an Eco-scheme: e.g. enhanced management of permanent pasture and landscape features, as well as organic farming. But what could be the criteria for selecting farming practices or systems for Eco-schemes?

For the many, not the few: Given the association with direct payments, which almost all farmers achieve, the focus for Eco-schemes should be on enabling wider participation, rather than specialist interventions limited to small numbers of farmers which may be better designed as Pillar 2 AECMs.

Rewarding the provision of global public goods: As the Eco-scheme uses 100% EU financing, it should be expected to largely support the delivery of global public goods such as biodiversity and climate change, which are closely aligned to meeting international agreements e.g. the Convention on Biological Biodiversity and the Paris Agreement (signed by both the EU and the Member States). This would contrast the Eco-scheme with other agri-environmental-climate commitments, which are co-financed using national and regional funds and usually support local public goods such as water quality and protection and management of landscapes.

Leverage at farm level: Eco-Schemes can add value as whole farm approaches (e.g. integrated farming, organic farming) or on farm enterprise level (e.g. forage-based dairy and beef production, low-input cropping systems) or at field level (e.g. biodiversity support measures). For example, it may be beneficial to target input use in specialised arable cropping that has a negative effect on pollinators.

Pillar 1 eligibility criteria: Beneficiaries are required to fulfil the eligible hectares criteria defined by Member States. Concerns have been raised that some farmers, for example small farmers and those with horticultural enterprises, may not fulfil the eligibility requirements or hold entitlements, and therefore could be excluded from access to Eco-schemes. Efforts should be made to ensure that all farmers are eligible for the Eco-scheme where the potential for public goods delivery is clearly evident as failure to include such farmers could increase the risk of intensification or land abandonment. Alternative Pillar 2 provisions might be necessary in such cases.

Spatial targeting: Eco-schemes have the potential to be applied over entire territories, for example as entry level agri-environment schemes, with more advanced schemes (both as part of Eco-schemes and as AECMs) addressing specific regional environmental problems e.g. where nitrogen emissions exceed the carrying capacity or the critical loads. They could also be used

²⁵ Dutch Ministry of Agriculture, Nature and Food Quality Conference (Leeuwarden, 06-08/02/19) CAP Strategic Plans: Exploring Eco-Climate Schemes. <http://capcongress.com>

²⁶ Spanish Ministry of Agriculture, Fishing and Food Conference (Zafra, 29–31/05/19) The CAP Green Architecture: deeping into Eco-schemes. www.mapa.gob.es/es/pac/la-arquitectura-verde-de-la-PAC-POST-2020-eco-esquemas/

²⁷ ENRD Workshop (Brussels, 06/11/19) ENRD Workshop 'Agriculture and environment: speaking the same language within the CAP Strategic Plans' https://enrd.ec.europa.eu/news-events/events/enrd-workshop-agriculture-and-environment-speaking-same-language-within-cap_en

to target farmers in HNV farmland areas where low-intensity management on semi-natural grassland is under threat of intensification or land abandonment, or where farmers are located in a catchment area of a river basin or within the Natura 2000 network.

Care must be taken to avoid restrictive definitions that may lead to large areas of farmland becoming ineligible for support, where continued maintenance is essential for biodiversity. This may include for example habitats in HNV farmland areas with trees and shrubs that are defined as not eligible for CAP support, which may result in either land abandonment or tree removal and intensification, despite their inherent environmental value.

Multi-target vs single target instruments: The advantage of policy instruments that address more than one environment and climate objective simultaneously is that such multi-target instruments are cost effective in delivering multiple benefits due to economies of scope^{28,29}. However, with each target achieved by a multi-target policy, its relative cost-effectiveness compared to single, more tailored measures decreases. Thus, to address very specific environmental problems, tailored AECMs focused on single objectives are to be preferred. Eco-schemes could therefore be focused on multi-functional farming systems-based approaches to provide a baseline, with tailored AECMs targeting specific objectives in combination.

It is important to be mindful that effective targeting and tailoring of Eco-schemes and other AEC commitments is a complex and resource-intensive process, not only for the managing authority and other bodies, but also for the farmers or land managers implementing the scheme. The level of complexity, transaction costs and institutional capacity necessary to design and implement targeted and tailored schemes should be carefully considered throughout the entire process (for further information see Section 3.2.8).

Management-based and result-based policy instruments: Management-based instruments have been favoured for AECMs in the past due to ease of definition and compliance monitoring. The specific practices required to be implemented to achieve specific outcomes can be defined on the basis of previous research and theoretical cause and effect linkages. However, they have the disadvantage that farmers are incentivized to participate but not necessarily to actually achieve success³⁰. There is also little evidence that these management-based measures induce long-term attitudinal and cultural change among farmers³¹. However, it is possible to be more outcome focused with management-based approaches, particularly if supported by effective advisory and training resources.

Several authors^{32,33,34,35} consider result-based AECMs as a more effective way to achieve environmental and climate goals as they can:

- directly link payment provisions to environmental outcomes,
- align payment levels with the corresponding environmental outcomes,
- can be adapted specifically to the site conditions,
- allow farmers to decide how to best achieve the desired outcome.

The type of scheme chosen will depend on the kind of environmental and climate objectives to be achieved, whether an expected or actual result can be determined and measured, the level of targeting to specific regional and local situations required, and the availability of resources (Table 4.1). For further consideration of results-based schemes, see Section 4.2.4.

²⁸ the cost saving gained by producing two or more distinct goods simultaneously, when the cost of doing so is less than that of producing each separately

²⁹ Schader C, Lampkin N, Muller A, Stolze M (2014) The role of multi-target policy instruments in agri-environmental policy mixes. *Journal of Environmental Management* 145, 180-190.

³⁰ Hampicke U (2013) Agricultural conservation measures: suggestions for their improvement *GJAE* 62:203-214

³¹ Burton J, Easingwood C (2006) A positioning typology of consumers' perceptions of the benefits offered by successful service brands. *Journal of Retailing and Consumer Services* 13, 301-316.

³² Herzon I, Birge T, Allen B, Povellato A, Vanni F, Hart K, Radley G, Tucker G, Keenleyside C, Oppermann R, Underwood E, Poux X, Beaufoy G, Pražan J (2018) Time to look for evidence: Results-based approach to biodiversity conservation on farmland in Europe. *Land Use Policy* 71, 347-354.

³³ Russi D, Margue H, Oppermann R, Keenleyside C (2016) Result-based agri-environment measures: Market-based instruments, incentives or rewards? The case of Baden-Württemberg. *Land Use Policy* 54, 69-77.

³⁴ Stolze M, Frick R, Schmid O, Stöckli S, Bogner D, Chevillat V, Dubbert M, Fleury P, Neuner S, Nitsch H, Plaikner M, Schramek J, Tasser E, Vincent A, Wezel A (2015) Result-oriented Measures for Biodiversity in Mountain Farming – A Policy Handbook. Research Institute of Organic Agriculture (FiBL), Frick.

³⁵ Wezel A, Zipfer M, Aubry C, Barataud F, Heißenhuber A (2015) Result-oriented approaches to the management of drinking water catchments in agricultural landscapes. *Journal of Environmental Planning and Management*, 1-20.

TABLE 4.1: DIFFERENT TYPES OF RESULTS-BASED AND MANAGEMENT-BASED SCHEMES

SCHEME TYPE	BASIS ON WHICH PAYMENT IS MADE	MECHANISM FOR CONTROLLING PAYMENTS
Pure results-based No management actions are either specified or required	Solely on biodiversity results, measured using one or more environmental indicators	The observation of the extent to which results have been achieved
Hybrid results-based Management actions or restrictions form part of the scheme	Partly on results, measured using one or more environmental indicators	Observation of results <i>and/or</i> whether management actions have been carried out
Management-based Management actions form the basis of scheme design	Wholly on having carried out specific management actions	Observation of whether management actions have been carried out

Source: Allen et al., 2014²¹

Environmental NGO perspectives: WWF and other NGOs have suggested another set of principles that should guide the development and design of Eco-Schemes³⁶:

1. Eco-schemes should not pay for basic agronomic practices - they should maintain their ambition: e.g. long-cycle rotations with leguminous crops, not just crop rotation;
2. Eco-schemes should not be a top-up of basic income support for all farmers, but should reward better those farmers doing more for the environment, which may mean other farmers not taking part in eco-schemes, or that there are different remuneration levels, in proportion to the level of engagement;
3. Eco-schemes can pay for both the change to and the maintenance of beneficial farming practices, facilitating the transition to more sustainable farming³⁷ and maintaining the practices where they are at risk in the absence of policy support (e.g. High Nature Value and organic farming), ideally with options that become structural and do not risk going back to the previous practice as soon as the payment disappears;
4. Eco-schemes should not remunerate farming practices with contested benefits, such as purpose-grown energy crops, or minimum tillage and soil cover in permanent crops which depends on herbicides, and which may deliver more carbon sequestration in the soil, but would impede achieving other objectives;
5. Eco-schemes should include interventions from EU environmental legislation such as farming-relevant measures included in Prioritised Action Frameworks, National Energy and Climate Plans, or River Basin Management Plans.

³⁶ Ruiz J (2019) Environmental stakeholders suggestions for eco-schemes – Five principles to follow. Presentation at the ENRD workshop Agriculture and Environment, 6.11.2019, Brussels.
https://enrd.ec.europa.eu/sites/enrd/files/w40_environment_wwf_ruiz.pdf

³⁷ However, there is a case where the transition process is long-term and complex, such as with the conversion to organic farming or the establishment of agroforestry, that the transition process may still be better supported as part of Pillar 2 AECMs.

4.2 EXAMPLES OF POSSIBLE ECO-SCHEME INTERVENTIONS

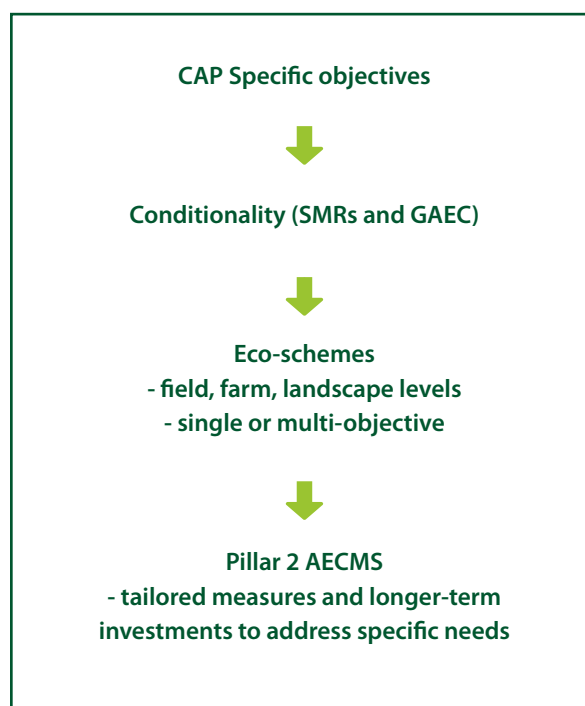
Below, a range of examples are presented to illustrate how Eco-schemes could be implemented by Member States.

4.2.1 CONDITIONALITY PLUS

While Conditionality already represents an extension of Cross-compliance to include Greening, this approach builds on Conditionality by supporting measures covered by, but going beyond, statutory management requirements (SMRs) and standards of good agricultural and environmental conditions of land (GAEC) (see Section 3.2.3). This could cover going beyond minimum thresholds specified in legislation or the MS GAEC definitions required as part of the CAP Strategic Plans, including lower levels of nitrogen and pesticide use, more complex rotations, conversion of arable to permanent grassland and the use of legumes. They could also include national codes of practice for environmental and animal welfare protection that are not part of national legislation. This would be consistent with the proposal above from Environmental NGOs that Eco-schemes should include interventions from EU environmental legislation such as farming-relevant measures included in Prioritised Action Frameworks, National Energy and Climate Plans, or River Basin Management Plans.

4.2.2 INDIVIDUAL INTERVENTIONS FOR DIFFERENT PURPOSES – A HIERARCHICAL APPROACH

One approach is to consider a hierarchy of targeted measures integrating CAP Specific objectives, Conditionality, Eco-schemes and Pillar 2 AECMS:



This approach is favoured by the EU Commission, which has provided Member States with some further guidance on Green Architecture/Eco-scheme options for different farm types and specific environmental objectives (Box 4.1, Box 4.2, Box 4.3)³⁸.

³⁸ Opfermann V, Gumbert A (2019) CAP interventions on Environment. Presentation at the ENRD Workshop Agriculture and Environment, 6.11.2019, Brussels. https://enrd.ec.europa.eu/sites/enrd/files/w40_environment_cap-interventions_opfermann-gumbert.pdf



4.2.3 BUNDLES OF INDIVIDUAL INTERVENTIONS

Instead of attempting to achieve specific objectives with single measures, it may be more effective to use a bundle of related management measures to enhance the delivery of the specific objective (Box 4.4). This is already implicit in the guidance examples for Eco-schemes illustrated above. The concept is also illustrated by the wildlife packages implemented as part of the English Countryside Stewardship scheme in 2018³⁹. Usually, single-objective measures are based on specific management practices which are supposed to contribute to environment and climate goals. However, management practices have different potentials to contribute to these goals. For example, addressing water

quality through more effective input management and the use of buffer strips also has the potential to contribute towards soil functionality and provide space for biodiversity. It is important again to stress that the extent to which actions have the potential to contribute towards these objectives often depends on the way in which they are implemented, where they are located and the extent of uptake in any given location⁴⁰.

Organic Denmark has promoted interventions of this type as an alternative to organic farming maintenance support, open to all farmers with a focus on a) climate change mitigation and b) nature/biodiversity conservation including carbon and nutrient balances, and a prohibition on pesticides not permitted in organic farming.⁴¹

³⁹ www.gov.uk/government/collections/wildlife-offers-countryside-stewardship

⁴⁰ Keenleyside C, Allen B, Hart K, Menadue H, Stefanova V, Prazan J, Herzon I, Clement T, Povellato A, Maciejczak M (2011) Delivering environmental benefits through entry level agri-environment schemes in the EU. Institute for European Environmental Policy, London.

⁴¹ <https://okologi.dk/media/2579491/contribution-on-the-cap-2021-presentation.pdf>

BOX 4.1: GREEN ARCHITECTURE EXAMPLES FOR CLIMATE CHANGE MITIGATION

FOCUS	GRASSLANDS	REDUCTION OF EMISSIONS FROM ANIMAL HUSBANDRY
Description	Specific combinations for enhancing eco-system services of grasslands, such as the preservation of the carbon stock, biodiversity and for the protection of vulnerable grasslands against the effects of climate change.	Specifically designed for reducing emissions from animal husbandry, in particular enteric fermentation and manure management are source of two GHGs (methane and nitrous oxide) with high global warming potential, as well as air pollutants such as ammonia with negative impact on human health and the environment.
CAP Specific objective(s)	d. Climate change mitigation and adaptation	d. Climate change mitigation and adaptation; e. natural resources
Conditionality	a. GAEC 1: Maintenance of permanent grassland based on a ratio MS: e.g. implement conversion prior authorization system (GAEC main objective general safeguard against conversion to other agricultural uses to preserve carbon stock) b. GAEC 10: Ban on converting or ploughing permanent grassland in Natura 2000 sites c. SMR 3 and 4: Conservation of wild birds and natural habitats	Co-benefits for emission reduction a. GAEC 5: Use of farm sustainability tool for nutrients b. SMR 14: Protection of calves c. SMR 15: Protection of pigs d. SMR 16: Protection of animals kept for farming purposes
Eco-scheme options	a. Temporary grassland in crop rotations b. Management commitment for extensive livestock rearing c. Appropriate grassland management (no ploughing, no cutting before the end of the breeding season)	a. Grassland management schemes including sowing multispecies grasslands b. Maintenance of extensive livestock management systems c. Subscription to decision supporting systems for grazing management optimization as additional module in FaST (GAEC 5)
CAP Pillar II	a. Results-based schemes for mixed-species grasslands b. Co-operation c. Conversion of arable land to grassland d. Support for mixed-species grassland establishment e. Investment for establishment of silvo-pastoral eco-systems	(Reference to the national air pollution control programmes (Directive (EU) 2016/2284)) a. Investments for low (NH ₃) emission animal housing systems b. Investments for low emission manure storage systems c. Cost for feed additives for the reduction of methane emissions d. Investment for low-emission manure spreading techniques e. Investment for on-farm bio-digesters

Source: European Commission

BOX 4.2: GREEN ARCHITECTURE EXAMPLES FOR SUSTAINABLE NATURAL RESOURCE USE



FOCUS	WATER USE (QUANTITY) IN AGRICULTURE	AGRICULTURAL SOILS (PROTECTION AND QUALITY)
Description	Specifically designed for resilience to water scarcity and drought episodes, to answer to the specific need of ensuring long-term availability of water, for areas in which the use of water for irrigation purposes is causing unsustainable pressures to water reservoirs, considering climate change trends (more droughts, different rainfall patterns limiting water recharge, etc.).	As a general rule, to protect agricultural soils, bare soils should be avoided, soil organic matter should be increased and soil disturbances should be reduced
CAP Specific objective(s)	e. sustainable development and efficient management of natural resources such as water, soil and air	e. sustainable development and efficient management of natural resources such as water, soil and air
Conditionality	a. GAEC 6: Tillage management reducing the risk of soil degradation, including slope consideration b. GAEC 5: Use of farm sustainability tool for nutrients. Refer to minimum requirements c. GAEC 8: Crop rotation. Definition of minimum rotation pattern d. GAEC 7: No bare soil in most sensitive period(s). Define soil cover and sensitive period SMR 1: Water framework directive	a. GAEC 6: Tillage management reducing the risk of soil degradation, including slope consideration b. GAEC 7: No bare soil in most sensitive period(s). Define soil cover and sensitive period c. GAEC 8: Crop rotation. Definition of minimum rotation pattern Main objectives of GAECs: minimum land management reflecting site specific conditions to limit erosion; protection of soils in winter; preserve the soil potential
Eco-scheme options	Maintain/shift to less water demanding crops/varieties (or rootstock) in water stressed areas	a. Rotation beyond GAEC 8, with the inclusion of species particularly beneficial. MS can advise. b. Maintenance of organic farming c. Perennial cover in orchards d. Catch crops (up to 100% UAA), beyond GAEC and Nitrate Directive requirements e. Maintenance of zero-tillage
CAP Pillar II	a. Management commitments for agri-environmental practices to increase soil water retention b. Subscription of decision supporting systems in the FaST for irrigation c. Collective actions for land use planning based on land suitability maps d. Investment for water reuse e. Investments for the use of nets to reduce light intensity and water needs Investment for more efficient irrigation systems, stress irrigation, water retention capacities	a. Knowledge transfer, farm advisory b. Investment for lighter tractors c. Use of DSS module in the FaST for optimal soil management d. Management commitments, e.g. burying crops and residues, anti-erosion landscape features e. Management commitment for intercropping, sequential cropping

Source: European Commission³⁸

BOX 4.3: GREEN ARCHITECTURE EXAMPLES FOR PROTECTION OF BIODIVERSITY

FOCUS	LANDSCAPE AND BIODIVERSITY IN AGRIC. LANDS	NATURA 2000 SITES
Description	Designed to focus on several elements beneficial to biodiversity on farm including birds, pollinator protection, and EU protected species. Can support the protection of existing or increase number of landscape elements respectively. Provides measures to prevent damage of protected species on agriculture (e.g. wolves).	Eco-schemes addressing Natura 2000 sites aim at contributing to a favourable conservation status of habitats and species of EU interest in agricultural areas covered by Directives 92/43/EEC and 2009/147/EC, by preserving or restoring habitats associated with agriculture through adequate management for Natura 2000 sites in accordance with the Prioritized Actions Frameworks.
CAP Specific objective(s)	f. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes	f. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes
Conditionality	a. GAEC 9: Biodiversity and landscape (protection and quality) b. GAEC 8: Crop rotation. Definition of minimum rotation pattern c. SMR 3 and 4: Conservation of wild birds and natural habitats Main objectives of GAECs: Maintenance of non-productive features and areas to improve on-farm biodiversity	a. GAEC 10: ban on converting or ploughing permanent grassland in Natura 2000 sites b. SMR 3 and 4: Conservation of wild birds and natural habitats GAEC related objective: protection of habitats and species
Eco-scheme options	a. Maintenance of organic farming b. Land lying fallow, with enhanced species composition dedicated for pollination and farmland birds c. Higher share of permanent devoted area and additional types of elements to be retained, beyond GAEC 9	a. Partial harvesting of crops (refuges and feeding birds) b. Reseeding to restore plant species diversity needed for key Natura 2000 habitats and species c. Low to moderate grazing level
CAP Pillar II	a. Multi-year collective result-based payment scheme: e.g. based on a biodiversity index b. Support for commitments for High Nature Value Farmland, specified by MS c. Conversion to organic farming d. Investment for agroforestry e. Investments for new landscape elements/ or to improve their quality f. Support for the measures indicated in EU and National Species Action plans	a. Investment for restoration of Natura 2000 habitats (Article 68) b. Payment for Natura 2000 agricultural and forest areas (Article 67) c. Management commitment going beyond the mandatory local requirement (Article 65)

Source: European Commission³⁸

BOX 4.4: POTENTIAL OF MANAGEMENT PRACTICES TO CONTRIBUTE TO ENVIRONMENT/CLIMATE GOALS

		<div><div>Potential direct contribution</div><div>Potential indirect contribution</div><div>No potential contribution</div><div>Potentially detrimental</div></div>									
CATEGORY OF MANAGEMENT ACTION	MANAGEMENT ACTION	Farmland biodiversity	Agricultural landscapes	Water quality	Water availability	Soil functionality	Climate change mitigation	Climate change adaptation	Resilience to flooding	Resilience to fire	
Management of grass and semi natural forage	Maintain permanent pasture										
	Traditional management (grass)										
	Grazing regime										
	Restriction on peat cutting										
	No grazing										
	No machinery										
	Scrub or invasive species control										
	Control of burning										
	Restricted management dates (grass)										
	Shepherding										
	Hay making										
	No cutting										
Cutting regime											
Specified grass or seeding regime											
Input management	No fertiliser application										
	Limits to fertiliser application or specified regimes										
	No PPP										
	Limits to PPP or specified regimes										
	No lime application										
	Limits to lime application or specified regimes										
No growth regulators											
Management plans and record keeping	Management plan general										
	Management plan grazing										
	Management plan input										
	Record keeping										
	Analysis										
Soil cover	Grass cover in permanent crops										
	Green or vegetative cover										
	Over winter stubbles										
	Mulching regime										
Soil management	Erosion prevention strips										
	No tillage										
	Tillage regime										
	Runoff furrows										
	Ploughing-in of crop										
Buffer strips	Riparian buffer strip										
	Non-riparian buffer strip										
Crop management	Fallow										
	Traditional management (crop)										
	Rotation with legumes										
	Rotation										
	Maintenance of traditional orchards										
	Spring sown cereals										
	Restricted management dates (crop)										
	No burning of straw, stubble or cut residue										
	Pruning regime										
	Specified crop varieties and/or seeding regime										
	Restricted management times										
Harvesting regime											
Landscape feature management	Management of water features										
	Management of non-aquatic landscape features										
Management for wildlife	Strips or patches for wildlife										
	In field fallow patch for wildlife										
	Sacrificial food crops for wildlife										
Water level management	Water level management										
Non-chemical crop protection	Mechanical or manual weed control										
	Mechanical pest control										
	Biological pest control										
Land out of production	Maintain area of land out of production										
	Take land out of production										
Apiculture	Apiculture										
Irrigation management	Irrigation management										
	No irrigation										
Training	Training										

Source: Keenleyside et al., 2011⁴⁰

4.2.4 RESULTS-ORIENTED INTERVENTIONS

As discussed in Section 4.1, results-based interventions have the potential to be more focused on delivering objectives and of encouraging farmers to be more engaged and innovative in the processes that they use. There are, however, significant challenges with verifying and quantifying outputs from results-based schemes (particularly if there is a long time-lag before results can be observed; see also Section 3.2.7). Management-based options may be more appropriate if measuring results is difficult or costly, or the time horizon before results can be verified is too long^{22,24}. Other strengths and weaknesses are summarised in Box 4.5.

BOX 4.5: STRENGTHS AND WEAKNESSES OF RESULTS-BASED AECMS

Strengths

- Higher flexibility: no management prescriptions, local adaptation, integration into farm management, cost effectiveness
- Payments linked directly to result: result more likely to be reached, visible results, positive for communication
- Farmers become active managers of environment and climate issues
- Potential for administrative simplification: no need for adaptation of management prescriptions to local conditions by administrations; monitoring as part of implementation

Weaknesses

- Higher risk for farmers: e.g. desired result might not be reached due to extreme weather conditions
- Establishment of success dependent on reliable and suitable indicators
- Information and monitoring effort for farmer
- Higher transaction costs for administration: selection of reliable and measurable indicators; provision of information and advice, costly measurement

Source: Nitsch et al., 2014⁴²

Currently, there are very few examples of purely results-based schemes, which have no management prescriptions and give beneficiaries complete flexibility to determine the most appropriate management to achieve the scheme objective. In some cases, schemes have been funded through national funding, CAP funding or a combination of both. An example from England, tested as part of a European project, is illustrated in Box 4.6.

France further developed the “Flowering Meadows Measure” (Box 4.7) by introducing three risk categories depending on the risk of losses incurred by using environment-friendly practices. The calculation of the income foregone is based on the opportunity costs of implementing the result-oriented measure on the farm⁴³.

⁴² Nitsch H, Bogner D, Dubbert M, Fleury P, Hofstetter P, Knaus F, Rudin S, Šabec ND, Schmid O, Schramek J, Stöckli S, Vincent A, Wezel A (2014) Review on result-oriented measures for sustainable land management in alpine agriculture and comparison of case study areas. MERIT RURAGRI Research Programme 2013-2016

⁴³ Stolze M, Frick R, Schmid O, Stöckli S, Bogner D, Chevillat V, Dubbert M, Fleury P, Neuner S, Nitsch H, Plaikner M, Schramek J, Tasser E, Vincent A, Wezel A (2015) Result-oriented Measures for Biodiversity in Mountain Farming – A Policy Handbook. Research Institute of Organic Agriculture (FiBL), Frick.

BOX 4.6: FARMING FOR BIODIVERSITY – RESULTS-BASED PILOT SCHEMES IN ENGLAND



In 2014-15 the European Commission, with financial support from the European Parliament, launched pilot on-farm projects in Ireland, Romania, Spain (Navarra) and the UK (England) to demonstrate the potential of results-based payment schemes (RBPS) for the enhancement of farmland biodiversity, and gather additional know-how on how to design and implement such schemes. The EU Commission held a conference in Brussels in October 2019 where the results of the Irish, English and Spanish pilot projects were presented and discussed.



The English pilot study ran from 2016 to 2018. It operated in Wensleydale (on species rich meadows and grassland for breeding waders) and Norfolk/Suffolk (delivering plots of winter bird food and flower-rich mixes for pollinators). As such the approach was tested on both extensive upland grassland farms and intensive lowland arable farms. Farmers had complete flexibility on how to manage their land, but the annual scheme payment was linked to their level of success in delivering the biodiversity outcome. The project aimed to test whether this outcomes-focused approach motivated farmers to deliver better quality habitats for wildlife compared with the conventional approach in schemes such as Countryside Stewardship, where payments are fixed and the way they manage the land is prescribed in an agreement. It also looked at how accurately farmers could self-assess their own results, tested the cost-effectiveness of the approach and explored participant and stakeholder attitudes.

The Executive Summary report provides a good guide to the experiences, challenges and key issues identified. The full pilot study reports and conference proceedings can be found here: www.ec.europa.eu/environment/nature/rbaps/index_en.htm

BOX 4.7: FARMING FOR BIODIVERSITY – RESULTS-BASED AGRI-ENVIRONMENT SCHEMES IN FRANCE



In 2015, the existing Flowering Meadows Measure was further developed by introducing three risk categories depending on the risk of loss of environmentally-friendly practices, ranging from low risk potential on marginal areas to high risk potential on highly productive areas. The compensation payment level depends on the risk category:

Risk 1 - low risk on marginal areas: 57€/ha

Risk 2 - medium risk of livestock intensification: 79€/ha

Risk 3 - high risks of disappearance of grasslands in favour of crop production: 115 €/ha

The calculation of the compensation payments for each risk category has been based on the opportunity costs to maintain the management of the farming system as a whole, the costs linked to the maintenance of the favourable practices in the target areas and finally the transaction costs of the measure. Farmers' opportunity costs are higher on highly productive areas and lower on marginal areas⁴⁰.

4.2.5 POINTS-BASED SCHEMES

Eco-schemes could be organised using points-based approaches where individual measures are weighted on the basis of their nature conservation value, according to the extent to which environmental and climate goals are achieved or according to the effort involved. Examples include the Ökopunkte (Ecopoint)-System in Niederösterreich under the Austrian Rural Development Programme 2007-13⁴⁴, the Gemeinwohlprämie (Public Goods Premium) piloted in the German region of Schleswig-Holstein^{45,46} (Box 4.8) and the MEKA programme in Baden-Württemberg, Germany. The strength of such points-based systems is that farmers could have the flexibility to choose various measures on their land to meet the points target.

BOX 4.8: PUBLIC GOOD PREMIUM, SCHLESWIG-HOLSTEIN, GERMANY⁴⁸

Input data for the point system:

LAND USE TYPES	LANDSCAPE ELEMENTS (LE)
<ul style="list-style-type: none"> • number of land use types • share of permanent grassland (% UAA) 	<ul style="list-style-type: none"> • total area of LE • number of LE
ARABLE AREA	GRASSLAND
<ul style="list-style-type: none"> • average plot size • soil coverage during winter • number of crops • share summer cereals • no mineral fertilisers, synthetic pesticides • no tillage after harvest • fallow land with natural vegetation • flower strips • conversion of arable land in grassland 	<ul style="list-style-type: none"> • No carting and rolling from 1st April to 20th June • No mineral fertilisers • No organic manures • 1 cut after 21st June
	NUTRIENT BALANCES <ul style="list-style-type: none"> • nitrogen balance • phosphorus balance
Payment calculation: €/farm = total points/farm x value €/point x farmland area (ha UAA)	

This acknowledges different possibilities and priorities of farmers, but may lead to the situation that farmers first attempt to receive rewards for measures which they already implement on their farm anyway. Schader et al. (2017)²⁴ instead suggest rewarding farmers according to the degree of achieving CAP sustainability objectives. Goal achievement or sustainability performance is determined using sustainability assessment tools. The weighting of different sustainability performances, in terms of importance and ultimately in allocation of payments (e.g. the share of funds allocated to water withdrawal instead and the share allocated to water quality), needs to be based on national and regional priorities. Such an approach would unlock farmers' potential as "sustainability entrepreneurs".

⁴⁴ Bundesministerium für Land- und Forstwirtschaft Umwelt und Wasserwirtschaft (BMLFUW): www.oekopunkte.at

⁴⁵ Dierking U, Neumann H, Beckmann S, Metzner J (2016) Public good bonus - putting a price on environmental services provided by agriculture. DVL - Deutscher Verband für Landschaftspflege, Ansbach.

⁴⁶ Neumann H, Dierking U, Taube F (2017) Erprobung und Evaluierung eines neuen Verfahrens für die Bewertung und finanzielle Honorierung der Biodiversitäts-, Klima- und Wasserschutzleistungen landwirtschaftlicher Betriebe („Gemeinwohlprämie“). Berichte über Landwirtschaft 95(3).

In principle, the point-based approach to Eco-schemes has the potential for a more direct link to measurable environment and climate performance (a quasi-market approach)⁴⁷. Payments are granted on the environment and climate value for society rather than on the costs incurred. The Netherlands is considering such an integrated point-based Eco-scheme, based on transparent performance indicators that show how much progress the farm is making towards environment and climate goals. Multi-functional, system-based and certified approaches

Unlike individual targeted measures, system-based approaches normally integrate a variety of different management practices that impact on multiple objectives. While they may not be as effective as targeted measures in achieving specific outcomes, in general terms they can yield a greater combined total of benefits, making the most of synergies between individual actions. They are often certified, or guided through information initiatives, assisting their implementation and verification as environmental measures.

While they can be implemented in isolation from other activities, they can fit well in the hierarchical framework described above. In particular, Eco-schemes can be valuable in supporting the maintenance of system-based approaches, while Pillar 2 schemes could support the establishment, transition or conversion to such approaches, as this often involves significant restructuring (redesign) of the farming systems and investments in new practices and facilities.

It would also be possible to focus entirely on multi-functional system-based/certified schemes of this type as Eco-schemes, using Pillar 2 to top-up with targeted measures to ensure that specific objectives are fully achieved in practice.

4.2.6 FARM ASSURANCE SCHEMES

Farm assurance schemes operate in many countries, often as private or quasi-public sector initiatives, in order to provide a baseline level of assurance to buyers concerning production methods used on individual farms. They are often more focused on food hygiene and safety issues, and do not necessarily contain environmental or animal welfare components going beyond the minimum requirements of national/EU regulations, cross-compliance or conditionality⁴⁸. However, they provide a mechanism for farm inspection and certification that could be used for more demanding measures if implemented. Care needs to be taken to ensure that certified schemes implemented are sufficiently demanding to make a real difference.

Basic sustainability assessment approaches including carbon footprints and nutrient balances could also be considered in this context. If animal welfare is included in Eco-schemes, then there are several animal welfare initiatives that could be relevant in this context, including the private⁴⁹ and government⁵⁰ backed Tierwohl (animal welfare) standards in Germany, the government-backed scheme in Denmark⁵¹ and the RSPCA Assured⁵² standard in the UK.

4.2.7 HIGH ENVIRONMENTAL VALUE

The French scheme Haute Valeur Environnementale promotes three levels of environmental action with linked certification schemes⁵³. Level 3 is the most demanding, with different strategies for biodiversity conservation, plant protection, managed fertiliser use and water resource management. This has been actively considered by the French Government as an option for Eco-schemes.

⁴⁷ Latacz-Lohmann U, Balmann A, Birner R, Christen O, Gaulty M, Grethe H, Grajewski R, Martínez J, Nieberg H, Pischetsrieder M (2019) Zur effektiven Gestaltung der Agrarumwelt- und Klimaschutzpolitik im Rahmen der Gemeinsamen Agrarpolitik der EU. Berichte über Landwirtschaft.

⁴⁸ FERA (2013) Study on farm assurance scheme membership and compliance with regulation under cross-compliance. Defra Project BR0114. Food and Environment Research Agency.

⁴⁹ <https://initiative-tierwohl.de/verbraucher/tierwohl-siegel> - www.neuland-fleisch.de

⁵⁰ www.bmel.de/DE/Tier/Tierwohl/tierwohl_node.html

⁵¹ www.foedevarestyrelsen.dk/english/Animal/AnimalWelfare/Pages/New_animal_welfare_label_will_win_the_hearts_of_Danes.aspx

⁵² www.rspcaassured.org.uk/about-us/

⁵³ <https://agriculture.gouv.fr/certification-environnementale-mode-demploi-pour-les-exploitations>

4.2.8 CONSERVATION AGRICULTURE

Conservation agriculture is defined by ECAF⁵⁴ as “a sustainable agriculture production system comprising a set of farming practices adapted to the requirements of crops and local conditions of each region, whose farming and soil management techniques protect the soil from erosion and degradation, improve its quality and biodiversity, and contribute to the preservation of the natural resources, water and air, while optimizing yields”.

Conservation agriculture is based on three principles:

1. minimize mechanical soil disturbance by using zero tillage;
2. maintaining permanent soil cover including use of catch crops;
3. diverse cropping systems and extended crop rotations (at least 3 different crops).

Conservation agriculture does not impose any constraints on pesticide or fertilizer use, and herbicides are required to enable zero tillage. There is no EU-wide legal definition of conservation agriculture, yet there are several national and regional schemes covering these practices, which currently cover about 5% of the total EU agricultural area⁵⁵.

4.2.9 INTEGRATED MANAGEMENT

The term integrated management has been used at pest, crop and farm levels to describe systems that integrate chemical and biological practices to achieve production objectives with reduced levels of agrochemical and other inputs. The approach is promoted internationally by the International Organisation for Biological Control⁵⁶. In the EU, integrated pest management (IPM) is defined in the Directive on the Sustainable Use of Pesticides 2009/128/EC (SUP)⁵⁷. This Directive sets out eight IPM principles⁵⁸ aimed at minimizing the use of plant protection products (PPP).

Integrated Production or Management (IP/IM) at crop or farm level was further developed building on IPM principles, but extended in the European Integrated Farming Framework⁵⁹ to cover 11 key themes: organisation and planning; human and social capital; energy efficiency; water use and protection; climate change and air quality; soil management; crop nutrition; crop health and protection; animal husbandry; health and welfare; landscape and nature conservation; and waste management and pollution control. The focus of the approach is more on improving input use efficiency than on prohibiting or minimizing specific practices.

There are no EU wide or national regulations defining Integrated Production or Management. Examples for private standards and voluntary certification systems based on IP principles are:

- IP-Suisse⁶⁰, which includes measures for the protection of biodiversity, plant protection, animal welfare, climate protection (e.g. a 10% reduction in GHG emissions on each farm) and social welfare. For each topic, a scoring system was developed and the sustainability of each measure is assessed;
- The Italian Sistema di qualità nazionale produzione integrata (SQNPI)⁶¹ certifies horticultural production in line with regional Integrated Crop Management guidelines;
- The Dutch Milieukeur⁶² is an environmental quality label for which Committees of Experts consisting of representatives of companies, retail, government, scientists and civil society approve final criteria.
- Linking Environment and Farming (LEAF)⁶³ in the United Kingdom.

⁵⁴ www.ecaf.org

⁵⁵ www.ecaf.org/ca-in-europe/uptake-of-ca-in-europe

⁵⁶ www.iobc-global.org/

⁵⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0128&from=DE>

⁵⁸ https://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides/ipm_en

⁵⁹ www.sustainable-agriculture.org/wp-content/uploads/2012/08/EISA_Framework_english_new_wheel_170212.pdf

⁶⁰ www.ipsuisse.ch/mission-b/

⁶¹ www.ccpb.it/en/blog/certificazione/integrated-crop-management-national-quality-system-sqnpi/

⁶² www.milieukeur.com/275/home.html

⁶³ <https://leafuk.org/>

The potential to further enhance the environmental delivery of integrated farming is currently under investigation in Germany. The so-called IP+ measures include:

1. Stricter fertiliser limits with a maximum N input of 120 kg/ha and year. The level of nitrogen fertilisation has a direct correlation with the intensity of plant protection;
2. Compulsory rules for crop rotation, e.g. at least 4 main crops;
3. Restrictions on the use of plant protection products, with some products banned and others subject to mandatory thresholds. Fungicides and insecticides should be applied with high-precision equipment and thus further reduced in quantity.

Due to the reduction of fertilizer use and a 25% reduction of plant protection products, yields would decrease by 10% compared to conventional agriculture. Yet, for arable crops, models have shown that this scenario overall has positive environmental effects. Moreover, the IP+ scenario has the potential to improve its eco-efficiency and local environmental performance further with suitable varieties derived from molecular mutation breeding that significantly improve nutrient use efficiency and reduces the use of synthetic chemical pesticides⁶⁴.

4.2.10 CIRCULAR AGRICULTURE

This approach to improving agricultural sustainability is currently being promoted in the Netherlands (kringloop landbouw)⁶⁵. The model emphasises the recycling of biomass within agricultural systems, closing nutrient cycles where possible, reducing chemical inputs and focusing on organic matter first to maintain healthy soils. The concept is being actively promoted by the Dutch government as an option for Eco-schemes.

It has many similarities to organic farming approaches to nutrient and organic matter cycling, although it does not involve the prohibition of agro-chemical inputs to the extent that organic farming does.

4.2.11 ORGANIC FARMING

Organic farming goes further than conservation agriculture and integrated farming by prohibiting most agrichemical inputs and GMOs. Instead, the focus is on system redesign using for example legumes to fix nitrogen biologically, crop rotations/diversification and mechanical/biological controls to control weeds, pests and disease, the integration of livestock with cropping systems to make use of clover/grass leys and pasture, and the use of reduced stocking rates, free-range production and mixed-species systems to maintain animal health and welfare. The non-use of synthetic nitrogen, herbicides and pesticides offers significant benefits for reduced GHG emissions per ha, biodiversity and sustainable resource use, including water, soil and air quality, while the animal welfare standards have positive animal welfare impacts.¹⁹ As indicated above, there is potential to combine organic management as an Eco-scheme with AECMs to deliver additional benefits, for example specific wildlife interventions building on organic management as a baseline.

Organic farming is the only voluntary scheme legally defined and regulated at EU level, with Regulation (EC) 834/2007⁶⁶ and related regulations setting the current legal framework. From January 2021, the new organic regulation (EU) 2018/848⁶⁷ will be in force. Support for organic farming and maintenance as an agri-environmental measure was introduced EU-wide in 1994, and in the CAP period 2014-2020, organic farming was recognized for the first time in terms of its contribution to public goods in both Pillar 1 (Greening) and Pillar 2⁶⁸.

⁶⁴ Haller L, Moakes S, Niggli U, Riedel J, Stolze M, Thompson M (2020, submitted) Entwicklungsperspektiven der ökologischen Landwirtschaft in Deutschland. Umweltbundesamt (Ed). UBA Texte, Projektnummer 113 177.

⁶⁵ www.wur.nl/en/newsarticle/Circular-agriculture-a-new-perspective-for-Dutch-agriculture-1.htm

⁶⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007R0834&from=DE>

⁶⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0848&from=DE>

⁶⁸ Stolze M, Sanders J, Kasperczyk N, Madsen G, Meredith S (2016) CAP 2014-2020: Organic farming and the prospects for stimulating public goods. IFOAM EU, Brussels.

4.2.12 PASTURE-FED LIVESTOCK PRODUCTION

Pasture-fed livestock production has developed as a response to concerns about the overuse of cereals and other concentrated feeds in feeding ruminants such as cattle and sheep. The aim is to deliver environmental, health and product quality benefits by focusing on grass, legumes and fodder crops, including trees and shrubs. Voluntary certification systems for pasture-fed livestock exist in some countries, for example in the UK⁶⁹, Austria (Heumilch⁷⁰) and Germany (Weidebeef⁷¹). These standards focus primarily on excluding grains and other concentrates. They are utilized by both organic and non-organic farms. They can also include the use of legumes to reduce the need for nitrogen fertilizer use and improve the nutritional value of forage. Both rotational and permanent grassland are covered by the approach.

Permanent grassland is defined in Regulation (EU) No 1307/2013⁷² as: “land used to grow grasses or other herbaceous forage naturally (self-seeded) or through cultivation (sown) and that has not been included in the crop rotation of the holding for five years or more; it may include other species such as shrubs and/or trees which can be grazed provided that the grasses and other herbaceous forage remain predominant as well as, where Member States so decide, land which can be grazed and which forms part of established local practices where grasses and other herbaceous forage are traditionally not predominant in grazing areas.” Under this concept we include the different schemes funded by the previous CAP (both in Pillar 1 and 2) targeted at the maintenance of, or conversion to permanent grassland⁷³ (e.g. from arable land).

Grazing management can also influence the environmental impact from grassland-based livestock systems. According to the EIP-Agri Focus Group “Grazing for Carbon”, rotational grazing has the potential to sequester more carbon than cutting or continuous grazing systems by building soil organic matter⁷⁴. The focus group also formulated guidelines for grazing practices⁷⁵.

4.2.13 HIGH NATURE VALUE (HNV) FARMLAND INCLUDING NATURA 2000

This concept and the data collected concerning these HNV farmland areas has been developed at EU level by the European Environmental Agency, using the following definition: “Those areas in Europe⁷⁶ where agriculture is a major (usually the dominant) land use and where that agriculture supports, or is associated with, either a high species and habitat diversity or the presence of species of European conservation concern, or both”⁷⁷. This definition refers to a set of multiple farming systems that are key in terms of biodiversity and for which data is collected by Eurostat⁷⁸. We also consider here farmland located in the protected areas of the network Natura 2000⁷⁹, protected by the habitats (92/43/EEC⁸⁰) and birds (2009/147/EC⁸¹) Directives. Measures targeting the development or conservation of these systems (e.g. areas with natural constraints) are included in this definition (under the current CAP these can include those covered under Article 30 of Regulation 1305/2013).

⁶⁹ www.pastureforlife.org/

⁷⁰ www.heumilch.at/

⁷¹ www.weidebeef.de/

⁷² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1307&from=de>

⁷³ <https://marswiki.jrc.ec.europa.eu/wikicap/images/5/58/DS-EGDP-2015-02Rev1.pdf>

⁷⁴ https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/fg25_01_minipaper_effects_and_tradeoffs.pdf

⁷⁵ https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/fg25_03_minipaper_guidelines.pdf

⁷⁶ www.eea.europa.eu/data-and-maps/data/high-nature-value-farmland#tab-figures-produced

⁷⁷ http://publications.jrc.ec.europa.eu/repository/bitstream/JRC47063/hnv_final_report.pdf

⁷⁸ https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_High_Nature_Value_farmland#Assessment

⁷⁹ https://ec.europa.eu/environment/basics/natural-capital/natura2000/index_en.htm

⁸⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN>

⁸¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147&from=EN>

4.2.13 AGROFORESTRY

Agroforestry involves the integration of trees and other woody perennials with crops and livestock in a range of different possible combinations, including:

- silvo-arable systems integrating crop production and trees, often based on alley cropping with straight treelines permitting standard mechanical cultivations between the trees;
- silvo-pastoral systems, integrating livestock production and trees, which can range from alley cropping approaches (suited to rotational grassland systems) to dispersed trees in permanent grassland and grazed woodlands with low tree densities;
- field boundary (e.g. hedge) and other tree-based elements in agricultural contexts.

By enabling better utilisation of sunlight throughout the year, deeper rooting depths and return of leaf organic matter to the soil, agro-forestry can also make significant contributions to climate change mitigation, biodiversity and sustainable resource use.

Agroforestry systems are defined in EU Regulation 1305/2013 as “land use systems in which trees are grown in combination with agriculture on the same land. The minimum and maximum number of trees per hectare shall be determined by the Member States taking account of local pedo-climatic and environmental conditions, forestry species and the need to ensure sustainable agricultural use of the land”. Agroforestry provides a multitude of environmental services, including the improvement of soil and water quality, biodiversity and climate protection⁸². The EU-funded AGFORWARD project reviewed current and potential future agroforestry policy support measures^{83,84}.



⁸² www.fao.org/forestry/agroforestry/89999/en/

⁸³ www.agforward.eu/index.php/en/extent-and-success-of-current-policy-measures-to-promote-agroforestry-across-europe.html

⁸⁴ www.agforward.eu/index.php/de/how-can-policy-support-the-uptake-of-agroforestry-in-europe.html

4.3 COMPARATIVE ASSESSMENT OF ECO-SCHEME INTERVENTION OPTIONS

Table 4.2 and Table 4.3 give an overview of the environmental and other impacts of the different measures described above. A set of criteria based on the environmental and other CAP objectives, as well as for practical implementation, has been used.

From this assessment, different Eco-scheme options have sometimes very different characteristics in terms of both their potential contribution to CAP Specific objectives, and their practical suitability as interventions.

Where supported by established certification schemes and regulations, the more complex, system-based approaches offer more potential to deliver objectives, but may be simple to administer if inspections and validations are undertaken as part of the control system. In some cases, they may also contribute to the economic and social objectives of the CAP, through added employment and premium markets, as in the case for example of organic farming.

At the same time, single measures, or bundles of measures, focused on specific objectives may also have the advantage of ease of implementation and administration to address specific local needs.



TABLE 4.2: CONTRIBUTION OF ALTERNATIVE ECO-SCHEME INTERVENTION OPTIONS TO REQUIRED CAP SPECIFIC OBJECTIVES d, e, f AND i

CAP Specific objectives	CAP Indicators (Boxes 5.1-5.5)	Dimension of impact	Conditionality plus	Single interventions	Bundle of measures	Point-based scheme	Farm assurance & animal welfare	High environmental value (FR)	Conservation agriculture	Integrated production	Circular agriculture (NL)	Organic farming	Pasture fed livestock	HNV/Natura 2000	Agroforestry
d. Contribute to climate change mitigation and adaptation, as well as sustainable energy	I.10 I.11	Climate change mitigation/ GHG emissions	a	a	a	b	c	d	e	f	g	h	i	j	k
	R12	Climate change adaptation	l	l	m	m	l	n	n	n	n	n	n	n	o
	I.12	Sustainable energy	p	p	p	p	p	p	q	q	q	r	r	p	s
e. Foster sustainable development and efficient management of natural resources such as water, soil and air	I.15, I.16	Water quality	p	p	j	j	p	d	t	v	w	v	x	j	v
	I.14	Air quality	p	p	j	j	p	d	ii	y	ii	z	aa	j	bb
	I.11, I.13	Soil quality and health	p	p	j	j	p	d	u	cc	cc	cc	cc	j	cc
	I.16, I.17	Sustainable resource use	p	p	j	j	p	d	dd	dd	dd	ee	dd	j	dd
f. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes	I.18 I.19 I.20	Biodiversity (including ecosystems services and habitats)	ff	ff	ff	ff	p	hh	jj	kk	ii	mm	ii	rr	ss
	I.20 R26, R29	Landscapes	ff	ff	ff	ff	p	hh	jj	kk	ii	mm	ii	rr	ss
i. Improve food and health, including safe, nutritious and sustainable food, food waste as well as animal welfare	I.27 I.28	Human health	p	p	p	p	gg	ii	ii	ll	ii	nn	pp	li	li
	I.26	Animal welfare	p	p	p	p	gg	ii	ii	ii	ii	oo	qq	ii	tt

Impact categories: ■ high positive ■ moderate positive ■ neutral

Source: Own assessments

Notes for Table 4.2

- a: if focused on GHG mitigation (e.g. measures to encourage more efficient N use)
- b: if demanding thresholds to achieve point scores
- c: GHG reduction measures not normally included
- d: depending on Tier (1-3)
- e: extended rotations including cover crops and grain legumes, zero/reduced tillage⁸⁵
- f: as e: with reduced agrochemical inputs; potential for greater benefits but lower yields with IP+⁶⁴
- g: as e: with reduced nitrogen use and increased carbon cycling
- h: no synthetic nitrogen fertilisers, conversion of arable to rotational grassland, reduced overall livestock numbers, higher carbon sequestration but lower yields^{10,19,86,87,88}
- i: depending on fertilizer use and grazing management⁸⁹, can be classified good with rotational grazing and legumes replacing nitrogen⁷⁴
- j: assuming well targeted to local circumstances
- k: depending on system design and diversity^{10,90}
- l: no specific climate adaptation benefit expected
- m: if focused on adaptation measures
- n: maintenance/improvement in soil organic matter and water holding capacity
- p: unless specifically targeted
- q: reduced energy use for soil management and agrochemical inputs
- r: as q: and reduced energy for animal feed inputs⁹¹
- s: as q: and r: with potential for biofuel production
- t: reduced NO₃ leaching with cover crops
- u: zero tillage promoting soil health¹⁰
- v: reduced nutrient and pesticide losses^{10,19,64,88}
- w: reduced nutrient losses, concept still being tested⁶⁵
- x: depending on nitrogen use and stocking rates⁹²
- y: reduced pesticide use^{10,64}
- z: very limited pesticide use, less intensive and free-range livestock production^{10,19,88}
- aa: Reduced emissions during the grazing period⁹³
- bb: potential to impede spray drift and capture ammonia¹⁰
- cc: reduced agrochemical inputs, additional organic matter and soil biodiversity, more in organic farming^{10,19,64,88,94}
- dd: overall moderate agrochemical, energy and other input use reductions^{10,64,65}
- ee: high reductions in agrochemical, energy and other input use^{10,19,88}
- ff: if focused on biodiversity conservation and/or landscapes
- gg: if focused on food safety and/or animal welfare
- hh: if Tier 3 and ff:
- ii: not the main focus of these options
- jj: benefits for soil organisms, insects, birds and landscape due to crop diversity¹⁰
- kk: as jj: plus benefits due to inclusion of biocontrol measures, use of less pesticides^{64,95}
- ll: reduced use of pesticides^{10,64}
- mm: substantial reduction in pesticides and other agrochemicals, with legumes and crop rotation, benefits for biodiversity and landscapes^{10,19,88,96,97,98}
- nn: reduced pesticide residues, nitrates, antibiotics, improved food safety^{19,99,100,101}
- oo: specific animal welfare requirements including housing, behaviour, free-range¹⁹
- pp: improved nutritional quality of products from grazed livestock
- qq: free-range access to pasture
- rr: primary focus of this option
- ss: integration of trees, diverse understoreys and associated wildlife, with significant landscape impacts
- tt: provide shade/shelter, alternative nutrient sources and other services to animals¹⁰

⁸⁵ Pittelkow CM, Liang X, Linquist BA, van Kessel Ch (2014). Productivity limits and potentials of the principles of conservation agriculture October 2014 Nature 517(7534)

⁸⁶ Gattinger A, Müller A, Haeni M, Skinner C, Fliessbach A, Buchmann N, Mäder P, Stolze M, Smith P, Scialabba NH, Niggli U (2012) Enhanced top soil carbon stocks under organic farming. Proc Natl Acad Sci USA 109(44):18226-18231

⁸⁷ Skinner C, Gattinger A, Mueller A (2014) Greenhouse gas fluxes from agricultural soils under organic and non-organic management—a global meta-analysis. Sci Total Environ 468–469, 553–563.

⁸⁸ ITAB (2016) Quantifier et chiffrer économiquement les externalités de l'agriculture biologique. www.itab.asso.fr/downloads/amenites/amenites-ab-rapport-nov2016.pdf

⁸⁹ Garnett T, Godde C, Müller A, Röss E, Smith P, de Boer IJM, zu Ermgassen E, Herrero M, van Middelaa C, Schader C, van Zanten H (2017) Grazed and Confused? FCRN, University of Oxford

⁹⁰ Mosquera-Losada MR, Freese D, Rigueiro-Rodríguez A (2008) Carbon sequestration in European agroforestry systems. In: Kumar BM, Nair PKR. Carbon sequestration potential of agroforestry systems: opportunities and challenges. Advances in Agroforestry 8: 43-59.

⁹¹ Schader C (2009) Cost-effectiveness of organic farming for achieving environmental policy targets in Switzerland. Dissertation, Aberystwyth University

⁹² Hubbard RK, Newton L, Hill GM (2004) Water quality and the grazing animal. Journal of Animal Science 82.

⁹³ Amann M, Gomez-Sanabria A, Klimont Z, Maas R, Winiwarter W (2017) Measures to address air pollution from agricultural sources. https://ec.europa.eu/environment/air/pdf/clean_a_ir_outlook_agriculture_report.pdf

⁹⁴ Maeder P, Fliessbach A, Dubois D, Gunst L, Fried P, Niggli U (2002) Soil fertility and biodiversity in organic farming. Science 296, pp.1694-1697.

⁹⁵ Niggli U, Gerowitt B, Brühl C, Liess M, Schulz R, Altenburger R, Bokelmann W, Büttner C, Hartenbach M, Heß J, Märkländer B, Miedaner T, Nödler K, Petercord R, Reineke A, Kröcher CV (2019) Pflanzenschutz und Biodiversität in Agrarökosystemen. In Stellungnahme des Wissenschaftlichen Beirats des Nationalen Aktionsplans zur nachhaltigen Anwendung von Pflanzenschutzmitteln, BMEL, Bonn.

⁹⁶ Tuck SL, Winqvist C, Mota F, Ahnström J, Turnbull LA, Bengtsson J (2014) Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis. Journal of Applied Ecology 51:746-755.

⁹⁷ Kragten S, de Snoo GR (2008) Field-breeding birds on organic and conventional arable farms in the Netherlands. Agriculture, Ecosystems & Environment 126:270-274.

⁹⁸ Goded S, Ekroos J, Domínguez J, Guitián J, Smith H (2018) Effects of organic farming on bird diversity in North-West Spain. Agriculture, Ecosystems & Environment, 257:60-67.

⁹⁹ Bickel R, Rossier R (2015) Sustainability and Quality of Organic Food. ORC and FiBL, Frick.

¹⁰⁰ Smith-Spangler C, Brandeau ML, Hunter GE, Bavinger JC, Pearson M, Eschbach PJ, Sundaram V, Liu H, Schirmer P, Stave C (2012): Are organic foods safer or healthier than conventional alternatives?: a systematic review. Annals of Internal Medicine 157:348-366.

¹⁰¹ Barański M, Średnicka-Tober D, Volakakis N, Seal C, Sanderson R, Stewart GB, Benbrook C, Biavati B, Markellou E, Giotis C (2014) Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses. British Journal of Nutrition 112:794-811.

TABLE 4.3: ADMINISTRATIVE AND OTHER CHARACTERISTICS OF ALTERNATIVE ECO-SCHEME OPTIONS

Characteristic	Conditionality plus	Single interventions	Bundle of measures	Point-based scheme	Farm assurance & animal welfare	High environmental value (FR)	Conservation agriculture	Integrated production	Circular agriculture (NL)	Organic farming	Pasture fed livestock	HNV/Natura 2000	Agroforestry
Simple for farmers	d	d	a	a	a	a	d	a	b	c	d	a	e
Simple for administration	d	d	a	a	a	a	f	a	b	g	h	a	i
Low transaction costs (including implementation)	d	d	a	a	a	a	j	k	b	k	h	a	l
Data requirements	d	d	a	a	a	a	d	m	b	m	h	a	a
Legally defined	n	a	a	a	a	a		o	b	p		q	r
Existing certification system	a	a	a	a	s	s		s	b	p	s		
Market/economic potential					a	a		t	b	u	v	aa	a
Incentive to exceed requirements		a	a	y	a,y	a,y	w,y	y	w,y	y	y	y	y
Results-oriented	z	z	z	z	z	z	y+z	y+z	y+z	y+z	y+z	y+z	y+z

Impact categories: ■ positive (yes, high value, low cost) ■ potentially (moderate) ■ negative (no, high cost, low value)

Notes for Table 4.3

a: depending on specific requirements
b: concept still being tested⁶⁵
c: integration of crops and livestock, certification
d: limited range of practices specified
e: establishment, management and integration of trees with crops and livestock
f: key practices (rotations, cover crops, tillage) easy to monitor
g: EU legal definition, annual inspections and certification system well-established
h: key practices (non-use of cereals for feed, pasture) easy to monitor
i: establishment, management and integration of trees easy to monitor, but potential conflicts over tree numbers
j: investments and practices relatively easy to implement with low yield impacts
k: potentially complex range of new practices, investments, certification and transition period
l: high establishment costs (ground preparation, trees, tree protection, fencing)
m: control of production, markets

n: legally required activities would be part of conditionality, not additional
o: IPM defined in SUP Directive 2009/128/EC, some national regulations for IP
p: EC Regulation 834/2007, to be replaced by Regulation (EU) 2018/848 from 2021, defines required certification systems
q: areas defined for administrative and statistical purposes, management practices not as depend on local conditions
r: partly-defined in CAP and RDP regulations, also statistics¹⁰², but MS left to define in detail
s: at national or local level, private or public
t: primarily for horticultural products, also cereals, sometimes minimum buyer requirement
u: well developed markets in most countries
v: developing markets in some countries
w: by progression to IP
y: in combination with other AECM and sustainability assessments
z: if appropriately specified
aa: if combined with pasture-fed or organic

¹⁰² https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_High_Nature_Value_farmland

5. MONITORING AND EVALUATION

Monitoring and evaluation are key components of agri-environmental policymaking, in order to improve the planning of individual schemes and the broader portfolio of interventions, monitor the implementation process and assess overall effectiveness and efficiency. In this Chapter, we explore some of the issues that should be considered for effective monitoring and evaluation of Eco-schemes and how this may link to the CAP's wider monitoring and evaluation framework.

5.1 EFFECTIVE MONITORING AND EVALUATION OF ECO-SCHEMES

Effective monitoring and evaluation of Eco-schemes is essential to determine the progress and eventual success or failure of a scheme to deliver on its own objectives and in turn contribute to the broader policy objectives in a Member State's CSP. The primary aim for monitoring and evaluating individual Eco-schemes and other related interventions is to assess the functioning of schemes in order to improve their future design and implementation.

Monitoring and evaluation processes have different functions. Monitoring involves the collection of information about individual schemes, including outputs and results, which can facilitate their adjustment where necessary during the programming period and lay the basis for the final evaluation of the schemes. The evaluation process focuses on the impacts of the schemes against their objectives, drawing on data from the monitoring process, in order to assess their impacts, including links with other CAP interventions and policies.

There is also a need to distinguish between ex-ante evaluations, used in strategy and project planning, and ex-post evaluations used to evaluate impacts after the event. The European Evaluation Helpdesk for Rural Development¹⁰³ has developed a set of resources to assist with ex-ante evaluations to support the development of CAP Strategic Plans.

Traditionally, the monitoring and evaluation of EU programmes has been structured around four key groups of indicators: Outputs, Results, Impact and Context. These can be linked to different categories of targets and objectives in an intervention logic framework (Table 5.1).

Context indicators, such as total agricultural land area, total number of farmers, total CAP expenditure or total agricultural GHG emissions at a given point in time provide additional information required for the interpretation of the output, result and impact indicators being evaluated.

¹⁰³ https://enrd.ec.europa.eu/evaluation_en

TABLE 5.1: KEY ELEMENTS OF THE INTERVENTION LOGIC FRAMEWORK FOR MONITORING AND EVALUATION

INTERVENTION EFFECTS	INTERVENTION TARGETS	INTERVENTION OBJECTIVES	INTERVENTION LOGIC	TYPICAL INDICATORS
Outputs	Agreement holders	Actions	Why are the actions or specific objectives being undertaken? In order to achieve	Projects, agreements, supported ha, expenditure
Results	Direct beneficiaries	Specific (sectoral) objectives	desired results and impacts....	Output, profitability, employment
Impacts	Indirect beneficiaries (wider society)	Broader policy aims/goals	Or conversely: How can the higher level objectives be delivered? By doing x, y, z...	Economic impacts (e.g. GDP) Environmental impacts Social impacts (health, demography)

Source: Own presentation

The design of monitoring and evaluation systems for individual interventions can be quite complex, with the added complication that they need to be sufficiently aligned to the CAP's wider monitoring and evaluation framework (Section 5.2) whilst avoiding unnecessary administrative burdens and ensuring cost-effectiveness²⁰. The identification of relevant output and result indicators is important for both the planning and implementation of Eco-schemes¹².

There is a need to ensure that:

- Monitoring and evaluation requirements are taken into account at the very early stages of the Eco-scheme design so that all information needed is identified, in particular baseline data including the most recently available and reliable information from both quantitative and qualitative sources;
- Indicators used to monitor and evaluate the schemes are directly relevant to the scheme's own objectives. In some cases, the indicators set out in the new PMEF may be relevant, but not always sufficient to support effective monitoring and evaluation of the Eco-schemes. Particular types of management activity with a sound evidence base can often be used as proxies to monitor and evaluate effects and impacts. This is important where direct measurement costs for 'exact' indicators are too high and a compromise is required¹⁴.

For example, if nitrate leaching is a problem needing to be addressed, direct measurement of leaching from individual fields would provide an exact assessment of the results of a scheme to reduce nitrate leaching, but would entail high costs. To reduce costs, the quantity of nitrogen fertiliser used, or better a nitrogen balance calculation at field or farmgate level, could be relevant alternative indicators:

- Independent scheme and wider policy evaluators are included in the design of monitoring and evaluation systems from the start, to help ensure objectivity and that key aspects are comprehensively covered;
- The monitoring and evaluation of Eco-schemes interacts with other CAP interventions, which may be complementary, synergetic or in some cases contradictory to achieving the objectives of the schemes as well as the wider environment, climate and other objectives set out in the Member States' CSP. Therefore, the monitoring and evaluation of Eco-schemes needs to be an integrated part of the overall monitoring and evaluation concept of the CSP;
- Relevant comparisons with control farms, including both participating and non-participating farms with similar socio-economic, agricultural and environmental characteristics, to ensure a comprehensive assessment of the overall effectiveness and efficiency of Eco-schemes;

- Results from sustainability assessments as well as farmer self-assessment approaches may also be relevant in this context. Additional farm inspections for controlling the information submitted by farmers would be required. This can either be done on a regular basis (e.g. every 3rd to 4th year) or by using a risk-based approach with occasional visits. In recent years, research was carried out on how to link sustainability data to existing datasets such as FADN¹⁰⁴.
- Where Eco-schemes are based on certification schemes (e.g. organic farming), the data collected annually by control bodies could provide significant synergies for monitoring and evaluation.

5.2 LINKS WITH THE PERFORMANCE MONITORING AND EVALUATION FRAMEWORK

The monitoring and evaluating of individual Eco-schemes is inevitably linked to the CAP's wider monitoring and evaluation framework. The new Performance Monitoring and Evaluation Framework (PMEF) for the CAP covers all aspects of Pillar 1 and Pillar 2 for the first time, and further consolidates and streamlines the overall monitoring and evaluation procedures set out under the current CAP. In principle, this should allow for the cumulative effects of different interventions to be assessed more coherently against the CAP's Specific and General objectives.

Some output indicators relate directly to Eco-schemes, recording uptake in terms of the number of hectares or number of beneficiaries enrolled. However, these indicators are intended primarily to inform the design and implementation of the CSPs and to assess their contribution to the CAP's General and Specific objectives, rather than monitor and evaluate individual schemes.

A key part of the PMEF is the so-called annual review process between managing authorities and the Commission. Under this process, managing authorities must report on the implementation of their CSP for the preceding year by submitting an annual performance report to the Commission. A monitoring committee of national stakeholders is also responsible for examining the progress in the implementation of the CSP, including the achievement of MS milestones and targets set out in the plan.

The new CAP proposal takes a similar approach to that set out in Table 5.1, with a focus on impact, result and output indicators, although the definitions in Annex 1 of the Commission proposal have different emphases, including with respect to timing:

- Impact: Multi-annual assessment of the performance of the policy (Objectives and their respective performance indicators)
- Result: Annual performance review (only based on CAP-supported interventions)
- Output: Annual performance clearance (interventions and their output indicators)

Annex 1 of the Commission proposal also lists the specific indicators under these headings (see Boxes 5.1-5.5). Of these, Boxes 5.1, 5.3 and 5.4 are of particular relevance for Eco-schemes, but others including investments and installation grants may be relevant in particular circumstances, e.g. for measures to reduce emissions and pollution.

The Commission expects that most of impact indicators are already collected via other channels (European statistics, JRC, EEA etc.) and are used in the framework of other EU legislation or Sustainable Development Goals (SDGs). The data collection frequency is not always annual and there might be 2-3 years delay in their availability, so that they will tend to be used for ex post evaluations.

¹⁰⁴ e.g. EU-Flint project: www.flint-fp7.eu.

The results and output indicators are to be reported annually. Article 128 and Annex XII refer to a core set of indicators linked to each of the nine CAP objectives which will form the basis of Commission reporting to the European Parliament (those highlighted in bold are of particular relevance for Eco-schemes):

- a. Support viable farm income and resilience across the Union to enhance food security (O.3, R.6)
- b. Enhance market orientation and increase competitiveness including greater focus on research, technology and digitalisation (R.9)
- c. Improve the farmers' position in the value chain (R.10)
- d. Contribute to climate change mitigation and adaptation, as well as sustainable energy (R.14)**
- e. Foster sustainable development and efficient management of natural resources such as water, soil and air (O.13, R.4)**
- f. Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes (R.27)**
- g. Attract young farmers and facilitate business development in rural areas (R.30)
- h. Promote employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry (R.31, R.34)

i. Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, food waste and animal welfare (O.16)

The primary focus of the PMEF is on the annual reporting of output and result indicators, focused on reaching a certain target coverage assigned to each intervention rather than on the expected or actual contribution or impacts of the interventions towards achieving the CAP Specific objectives or Member States' own operational objectives set out in their CSPs¹⁰⁵. While the impact indicators may be more relevant in this context, the indicators are only loosely defined, with no reference to baseline levels and expected percentage or absolute changes by specific dates.

The CSPs play a key role and thus should provide an opportunity to be more specific about the impact indicators and their relationship to the PMEF output and result indicators. The inclusion of national targets and indicators, e.g. for GHG emissions and pollution reduction, could be relevant.

There is also the question of data sources for the indicators. Existing databases for administering farm payments, i.e. the Farm Structure Survey (FSS), the Integrated Administration and Control System (IACS) and the Farm Accountancy Data Network (FADN) and similar initiatives at national level could be used for monitoring and evaluating the economic performance of different farm types and farming systems in different regions.



¹⁰⁵ Pe'er G, Zinngrebe Y, Moreira F, Sirami C, Schindler S, Müller R, Bontzorlos V, Clough D, Bezák P, Bonn A, Hansjürgens B, Lomba A, Möckel S, Passoni G, Schleyer C, Schmidt J, Lakner S (2019). A greener path for the EU Common Agricultural Policy. *Science* 365, 449-451.

BOX 5.1: PROPOSED CAP PERFORMANCE MONITORING INDICATORS – CROSS-CUTTING OBJECTIVE *FOSTERING KNOWLEDGE, INNOVATION AND DIGITALISATION*



SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS
Fostering knowledge, innovation and digitalisation in agriculture and rural areas and encouraging their uptake	European Innovation Partnership for agricultural knowledge and innovation (EIP)	O.1 Number of EIP operational groups O.2 Number of advisors setting up or participating in EIP operational groups	R.1 Enhancing performance through knowledge and innovation: Share of farmers receiving support for advice, training, knowledge exchange, or participation in operational groups to enhance economic, environmental, climate and resource efficiency performance.	I.1 Sharing knowledge and innovation: Share of CAP budget for knowledge sharing and innovation
	Knowledge exchange and information	O.29 Number of farmers trained/given advice O.30 Number of non-farmers trained/given advice	R.2 Linking advice and knowledge systems: number of advisors integrated within AKIS (compared to total number of farmers) R.3 Digitising agriculture: Share of farmers benefitting from support to precision farming technology through CAP	

Source: European Commission, adapted layout

BOX 5.2: PROPOSED CAP PERFORMANCE MONITORING INDICATORS – GENERAL OBJECTIVE FOSTER
A SMART, RESILIENT AND DIVERSIFIED AGRICULTURAL SECTOR ENSURING FOOD SECURITY



SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS
Support viable farm income and resilience across the Union to enhance food security	CAP support	O.3 Number of CAP support beneficiaries	R.4 Linking income support to standards and good practices: Share of UAA covered by income support and subject to conditionality	I.2 Reducing income disparities: Evolution of agricultural income compared to general economy
	Decoupled direct support	O.4 Number of ha for decoupled DP O.5 Number of beneficiaries for decoupled DP O.6 Number of ha subject to enhanced income support for young farmers O.7 Number of beneficiaries subject to enhanced income support for young farmers	R.5 Risk Management: Share of farms with CAP risk management tools R.6 Redistribution to smaller farms: Percentage additional support per hectare for eligible farms below average farm size (compared to average) R.7 Enhancing support to farms in areas with specific needs: Percentage additional support per hectare in areas with higher needs (compared to average)	I.3 Reducing farm income variability: Evolution of agricultural income I.4 Supporting viable farm income: Evolution of agricultural income level by sectors (compared to the average in agriculture) I.5 Contributing to territorial balance: Evolution of agricultural income in areas with natural constraints (compared to the average)

BOX 5.2: PROPOSED CAP PERFORMANCE MONITORING INDICATORS – GENERAL OBJECTIVE FOSTER
A SMART, RESILIENT AND DIVERSIFIED AGRICULTURAL SECTOR ENSURING FOOD SECURITY (CONT.)



SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS
Enhance market orientation and increase competitiveness, including greater focus on research, technology and digitalisation	Risk management tools	O.8 Number of farmers covered by supported risk management instruments	R.8 Targeting farms in sectors in difficulties: Share of farmers benefitting from coupled support for improving competitiveness, sustainability or quality	I.6 Increasing farm productivity: Total factor productivity I.7 Harness Agri-food trade: Agri-food trade imports and exports
	Coupled support	O.9 Number of ha benefitting from coupled support O.10 Number of heads benefitting from coupled support	R.9 Farm modernisation: Share of farmers receiving investment support to restructure and modernise, including to improve resource efficiency	
Improve the farmers' position in the value chain			R.10 Better supply chain organisation: Share of farmers participating in supported Producer Groups, Producer Organisations, local markets, short supply chain circuits and quality schemes R.11 Concentration of supply: Share of value of marketed production by Producer Organisations with operational programmes	I.8 Improving farmers' position in the food chain: Value added for primary producers in the food chain

Source: European Commission, adapted layout

**BOX 5.3: PROPOSED CAP PERFORMANCE MONITORING INDICATORS –
GENERAL OBJECTIVE BOLSTER ENVIRONMENTAL CARE AND CLIMATE ACTION AND TO CONTRIBUTE TO THE
ENVIRONMENTAL- AND CLIMATE-RELATED OBJECTIVES OF THE UNION**



SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS
All	Horizontal indicators	<p>O.31 Number of ha under environmental practices*</p> <p>O.32 Number of ha subject to conditionality by GAEP practice</p>		
Contribute to climate change mitigation and adaptation, as well as sustainable energy	Payments for natural constraints and other region-specific constraints	<p>O.11 Number of ha receiving ANC top up (3 categories)</p> <p>O.12 Number of ha receiving support under Natura 2000 or the Water Framework Directive</p>	<p>R.12 Adaptation to climate change: Share of agricultural land under commitments to improve climate adaptation</p> <p>R.13 Reducing emissions in the livestock sector: Share of livestock units under support to reduce GHG emissions and/or ammonia, including manure management</p> <p>R.14 Carbon storage in soils and biomass: Share of agricultural land under commitments to reducing emissions, maintaining and/or enhancing carbon storage (permanent grassland, agricultural land in peatland, forest, etc.)</p> <p>R.15 Green energy from agriculture and forestry: Investments in renewable energy production capacity, including bio-based (MW)</p> <p>R.16 Enhance energy efficiency: Energy savings in agriculture</p> <p>R.17 Afforested land: Area supported for afforestation and creation of woodland, including agroforestry</p>	<p>I.9 Improving farm resilience: Index</p> <p>I.10 Contribute to climate change mitigation: Reducing GHG emissions from agriculture</p> <p>I.11 Enhancing carbon sequestration: Increase the soil organic carbon</p> <p>I.12 Increase sustainable energy in agriculture: Production of renewable energy from agriculture and forestry</p>
	Payments for management commitments (environment-climate, genetic resources, animal welfare)	<p>O.13 Number of ha (agricultural) covered by environment/climate commitments going beyond mandatory requirements</p> <p>O.14 Number of ha (forestry) covered by environment/ climate commitments going beyond mandatory requirements</p> <p>O.15 Number of ha with support for organic farming</p> <p>O.16 Number of livestock units covered by support for animal welfare, health or increased biosecurity measures</p> <p>O.17 Number of projects supporting genetic resources</p>		

* synthesis indicator on physical area covered by conditionality, ELS, AEEM, forestry measures, organic farming

Source: European Commission, adapted layout

BOX 5.4: PROPOSED CAP PERFORMANCE MONITORING INDICATORS – GENERAL OBJECTIVE BOLSTER ENVIRONMENTAL CARE AND CLIMATE ACTION AND TO CONTRIBUTE TO THE ENVIRONMENTAL- AND CLIMATE-RELATED OBJECTIVES OF THE UNION



SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS
Foster sustainable development and efficient management of natural resources such as water, soil and air	<p>Payments for management commitments (environment-climate, genetic resources, animal welfare)</p> <p>See also 'Investments' in Box 5.5</p>	See O.13 – O.17 in Box 5.3	<p>R.18 Improving soils: Share of agricultural land under management commitments beneficial for soil management</p> <p>R.19 Improving air quality: Share of agricultural land under commitments to reduce ammonia emission</p> <p>R.20 Protecting water quality: Share of agricultural land under management commitments for water quality</p> <p>R.21 Sustainable nutrient management: Share of agricultural land under commitments related to improved nutrient management</p> <p>R.22 Sustainable water use: Share of irrigated land under commitments to improve water balance</p> <p>R.23 Environment-/climate-related performance through investment: Share of farmers with support in investments related to care for the environment or climate</p> <p>R.24 Environmental/ climate performance through knowledge: Share of farmers receiving support for advice/training related to environmental- climate performance</p>	<p>I.13 Reducing soil erosion: Percentage of land in moderate and severe soil erosion on agricultural land</p> <p>I.14 Improving air quality: Reduce ammonia emissions from agriculture</p> <p>I.15 Improving water quality: Gross nutrient balance on agricultural land</p> <p>I.16 Reducing nutrient leakage: Nitrate in ground water - Percentage of ground water stations with N concentration over 50 mg/l as per the Nitrate directive</p> <p>I.17 Reducing pressure on water resource: Water Exploitation Index Plus (WEI+)</p>



SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS
Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes	<p>Payments for management commitments (environment-climate, genetic resources, animal welfare)</p> <p>See also 'Investments' in Box 5.5</p>	See O.13 – O.17 in Box 5.3	<p>R.25 Supporting sustainable forest management: Share of forest land under management commitments to support forest protection and management.</p> <p>R.26 Protecting forest ecosystems: Share of forest land under management commitments for supporting landscape, biodiversity and ecosystem services</p> <p>R.27 Preserving habitats and species: Share of agricultural land under management commitments supporting biodiversity conservation or restoration</p> <p>R.28 Supporting Natura 2000: Area in Natura 2000 sites under commitments for protection, maintenance and restoration</p> <p>R.29 Preserving landscape features: Share of agriculture land under commitments for managing landscape features, including hedgerows</p>	<p>I.18 Increasing farmland bird populations: Farmland Bird Index</p> <p>I.19 Enhanced biodiversity protection: Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends</p> <p>I.20 Enhanced provision of ecosystem services: share of UAA covered with landscape features</p>

Source: European Commission, adapted layout

BOX 5.5: PROPOSED CAP PERFORMANCE MONITORING INDICATORS –
GENERAL OBJECTIVE STRENGTHEN THE SOCIO-ECONOMIC FABRIC OF RURAL AREAS

SPECIFIC OBJECTIVES	INTERVENTION	OUTPUT INDICATORS	RESULT INDICATORS	IMPACT INDICATORS	
See above environmental objectives and Attract young farmers and facilitate business development in rural areas And Promote employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry And Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, as well as animal welfare	Investments	O.18 Number of supported on-farm productive investments	R.31 Growth and jobs in rural areas: New jobs in supported projects	I.22 Contributing to jobs in rural areas: Evolution of the employment rate in predominantly rural areas I.23 Contributing to growth in rural areas: Evolution of GDP per head in predominantly rural areas 1.24 A fairer CAP: Improve the distribution of CAP support I.25 Promoting rural inclusion: Evolution of poverty index in rural areas I.26 Limiting antibiotic use in agriculture: sales/use in food producing animals I.27 Sustainable use of pesticides: Reduce risks and impacts of pesticides** 1.28 Responding to consumer demand for quality food: Value of production under EU quality schemes (incl. organics)	
		O.19 Number of supported local infrastructures	R.32 Developing the rural bioeconomy: Number of bio-economy businesses developed with support		
		O.20 Number of supported non-productive investments	R.33 Digitising the rural economy: Rural population covered by a supported Smart Villages strategy		
		O.21 Number of off-farm productive investments	R.34 Connecting rural Europe: Share of rural population benefitting from improved access to services and infrastructure through CAP support		
	Installation grants	O.22 Number of farmers receiving installation grants	R.35 Promoting social inclusion: Number of people from minority and/or vulnerable groups benefitting from supported social inclusion projects R.36 Limiting antibiotic use: Share of livestock units concerned by supported actions to limit the use of antibiotics (prevention/reduction) R.37 Sustainable pesticide use: Share of agricultural land concerned by supported specific actions which lead to a sustainable use of pesticides in order to reduce risks and impacts of pesticides R.38 Improving animal welfare: Share of livestock units covered by supported action to improve animal welfare		
		O.23 Number of rural entrepreneurs receiving installation grants			
		Cooperation			O.24 Number of supported producer groups/ organisations
					O.25 Number of farmers receiving support to participate in EU quality schemes
	O.26 Number of generational renewal projects (young/non-young farmers)				
	O.27 Number of local development strategies (LEADER)				
	Sectorial programmes	O.28 Number of other cooperation groups (excluding EIP reported under O.1)			
		O.33 Number of producer organisations setting up an operational fund/ program			
		O.34 Number of promotion and information actions, and market monitoring			
		O.35 Number of actions for beekeeping preservation/ improvement			

Source: European Commission, adapted layout

6. RECOMMENDATIONS: POLICY PRIORITIES AND OPPORTUNITIES

The latest reform of the EU's Common Agricultural Policy for 2021-2027 presents new opportunities for policymakers to confront some of the key environmental and climate challenges facing farmers and land managers in the EU and globally^{106,107}. While earlier reforms have reduced some of the undesirable environmental and economic side effects of EU agricultural policy, the CAP has not yet sufficiently resolved the environmental and climate problems of the EU agriculture, nor adequately promoted a genuine transition towards more sustainable agricultural systems and land management^{1,12}.

The "new Delivery Model" for the CAP proposed by the European Commission in 2018² aims to deliver more public goods through a results-orientated approach and a reinforced subsidiarity principle, which provides Member States (MS) the opportunity to plan and implement their own interventions in order to meet key EU and national environment and climate goals. Under the umbrella of the national CAP Strategic Plans, the new CAP Green Architecture is seen as a cornerstone for achieving the EU's environment and climate ambition.

The key innovation in this new CAP Green Architecture is the Eco-scheme, which aims to incentivise more sustainable farm and land management through Pillar 1 direct payments. The Eco-scheme, mandatory for MS and voluntary for farmers, offers MS more flexible payment options for remunerating farmers' delivery of public goods and is 100% financed by the EU. As the Pillar 1 direct payments constitute the largest proportion of EU CAP spending, MS can mobilise more EU funds to invest in environment- and climate-friendly agriculture. Eco-schemes thus represent a more ambitious and wide-ranging way to refocus direct payments to actively contribute to environment and climate objectives, rather than simply provide income support as in the past.

In December 2019, the new Commission communicated "The European Green Deal"¹⁰⁸ which reaffirms the Commission's commitment to tackling environmental and climate-related challenges that are this generation's defining task. Farming and food systems play an important role in delivering the European Green Deal, which recommends that the CAP needs to pursue higher environmental and climate ambition in the light of the Paris Agreement and the UN Sustainable Development Goals¹⁰⁹. Further details will be set out in the EU's forthcoming Farm to Fork Strategy.

To seize the opportunities as outlined in the European Green Deal and the innovative Eco-scheme instrument of the post-2020 CAP proposal, and to make a meaningful contribution to EU and national environment and climate goals, managing authorities need to be empowered to develop ambitions and innovative schemes. The following issues need to be considered both in the final policy negotiations and in the implementation phase:

Prioritise individual CAP objectives: The European Commission introduced nine new CAP objectives covering the economic, social and ecological dimensions of sustainability. However, the CAP objectives are placed on an equal footing alongside each other and the Commission provides neither priorities between the objectives nor recommendations on how MS should deal with potential trade-offs. Effective and efficient CAP implementation however requires a clear link between CAP objectives, spending and policy instruments. Thus, CAP objectives should be given a clear weighting based on both EU and national/regional needs.

¹⁰⁶ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES, Bonn.

¹⁰⁷ Intergovernmental Panel on Climate Change. (2019). IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems: Summary for policymakers / IPCC, Intergovernmental Panel on Climate Change.

¹⁰⁸ European Commission 2019. The European Green Deal. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. Brussels.

¹⁰⁹ Allan Matthews 2019. Agriculture in the European Green Deal. <http://capreform.eu/agriculture-in-the-european-green-deal/>

In the long run, this weighting of CAP objectives could be done by dedicating to each objective defined baselines, expectations (targets) and a clear budget and thus overcome the constraints of the current two-Pillar funding through the EAGF and EAFRD to a transparent funding by priorities. The European Green Deal's Farm to Fork Strategy should be the blueprint for which the Commission set the expectation for how Member States must make a quantifiable contribution to EU environmental and climate policy goals and targets.

CAP Strategic Plans are key: The central basis for the programming are the national CAP Strategic Plans (CSP), which are a welcome new departure bringing together both Pillar 1 and 2 instruments and measures under one common strategic planning framework. This has the potential to create a more integrated and coordinated approach to agricultural policy-making. However, despite their relevance, the Commission is less clear in its legislative proposal about the requirements to get CSPs approved¹⁴. To ensure a level playing field for all MS, the Commission should outline clear rules for the approval of their CAP Strategic plans, set out robust environmental and climate criteria for assessing CSPs, provide guidance on setting baseline levels, and define minimum requirements and minimum ambition levels for the environmental and climate goals to be achieved. The pre-requisite for effective and efficient Eco-Schemes is the specification of clear minimum environmental and climate ambition levels.

The CSPs should provide an opportunity to be more specific about overall impact indicators. The inclusion of national targets and indicators, e.g. for GHG emissions and pollution reduction, is relevant. Output and result indicators assigned to each intervention should measure the actual contribution or impacts of the interventions towards achieving the CAP Specific objectives or Member States' own operational objectives set out in their CSP rather than just the area or number of farms under certain commitments.

The European Green Deal claims that the *"Strategic Plans will need to reflect an increased level of ambition to reduce significantly the use and risk of chemical pesticides, as well as the use of fertilisers and antibiotics"*. This is a clear call to MS for strong ambitions to reduce environment and climate impacts of EU agriculture, including the reduction of agrochemical inputs.

Use Eco-schemes to drive transition to more sustainable farming systems: As the Pillar 1 direct payments constitute the largest proportion of CAP spending, Eco-schemes can be an ambitious way to refocus EU Pillar 1 funds from income support to supporting the transition towards more sustainable farming systems. Therefore, an initial minimum proportion of Pillar 1 direct payments for Eco-schemes should be defined, increasing to 100% during the 2021-2027 period.

System-based, agro-ecological approaches such as conservation agriculture, circular agriculture, agro-forestry or organic farming usually integrate a variety of different management practices that impact on multiple sustainability objectives. In most cases the characteristics of these approaches are well-defined and supported by certification systems. Eco-schemes could focus mainly or entirely on such multi-functional, system-based/certified schemes, using Pillar 2 to top-up with targeted measures to ensure that relevant CAP Specific objectives are fully achieved in practice. This would make Eco-schemes an important catalyst for a broad transition of EU agriculture towards sustainable farming.

In 2018, the European Court of Auditors found that MS currently make limited use of the CAP tools to address animal welfare objectives and recommended that animal welfare should be better addressed in the CAP¹¹⁰. Eco-Schemes should be not only open for environment and climate measures but also for non-investment animal welfare measures¹⁴.

The Swiss animal welfare schemes¹¹¹ for animal-friendly housing systems (BTS) and regular access to open air or grazing areas (RAUS), as well as the German, Danish and UK examples described in Section 4.2.6, illustrate how system approaches could be combined with animal welfare schemes.

¹¹⁰ European Court of Auditors 2018. Animal welfare in the EU: closing the gap between ambitious goals and practical implementation. Special Report No 31. Luxembourg. www.eca.europa.eu/Lists/ECADocuments/SR18_31/SR_ANIMAL_WELFARE_EN.pdf

¹¹¹ Bundesamt für Landwirtschaft 2019. Tierwohlbeiträge (BTS/RAUS). www.blw.admin.ch/blw/de/home/instrumente/direktzahlungen/produktionssystembeitraege/tierwohlbeitraege.html

Take result-orientation one step further – Points-based systems covering all dimensions of sustainability:

Using sustainability assessments on farms presents a significant opportunity to make use of the benefits of results-oriented approaches, such as the potential for innovation by farmers, motivating farmers, fair remuneration, and context-specific adaptation. Farmers would be free to specifically decide the overall portfolio of food and societal services they would like to provide, whether to markets or society, based on actual assessments of the situation on their own farm. Points-based systems could reward farmers according to the degree of achieving CAP sustainability objectives and could be weighted according to the priorities of EU or national sustainability objectives. Goal achievement and sustainability performance, and the prioritization of specific actions, could be determined by using sustainability assessment tools. The weighting of different sustainability performances, in terms of importance, and ultimately in allocation of payments could be based on national and regional priorities. Such an approach would unlock farmers' potential as "sustainable entrepreneurs".

A point-based approach for Eco-Schemes has the potential for a more targeted CAP which links payments to measurable environment and climate performance (a quasi-market approach)⁴². By shifting the focus from compliance to performance, payments are granted on the environment and climate value for society rather than on the costs incurred.

Importance of AKIS, FAS and EIP to inform farmers:

Information and advisory services are key for the uptake of sustainable farming practices, and sustainability should be put in the centre of these developments. There are many techniques and systems available for increasing agricultural sustainability, the main barrier is ensuring farmers know about all these available technologies and techniques. Hence knowledge sharing, including farmer-to-farmer exchange, well-trained environmental and agricultural advisors and the use of digital technologies will be of the uttermost importance for the achievement of CAP objectives.

Coordination and institutional capacity building are important:

The three policy tools of the new Green Architecture - Conditionality, Eco-Schemes and Environment and climate measures - leave MS more room for manoeuvre to achieve environmental and climate

goals. However, to make full use of this opportunity, coherent and consistent design across all the three policy tools is needed. Thus, coordinated programming of Pillar 1 and Pillar 2 measures is important, with MS CSPs playing an important function.

This requires much greater collaboration between Pillar 1 and Pillar 2 managing authorities. In MS with strong regional policy responsibilities, such as in France, Germany and Spain, there also needs to be increased co-ordination between regional and national managing authorities.

The need for greater coordination is also a reminder that designing and implementing an effective and efficient portfolio of agri-environment-climate commitments to address different needs and priorities can be a very complex and resource-intensive process for managing authorities. While many MS officials have extensive knowledge of scheme design and implementation, bringing together the majority of CAP interventions under one CSP in each MS with a greater emphasis on delivering results, may present significant challenges for MS officials. It is therefore critical that managing authorities are given sufficient resources and political support to fully realise the potential of the new delivery model. This includes the use of technical assistance in order to build capacities and knowhow both in-house and amongst key stakeholder groups.

Reinforce interventions with other policies: The EU is developing several policies and initiatives in the field of agriculture that need to inform and support the implementation of the CAP objectives. The Farm to Fork strategy for sustainable food provides a relevant political framework to push forward the ambition of the CAP goals. In particular, interventions must make a meaningful contribution to addressing key environmental and climate objectives and targets set out in EU law and accompany national planning tools. Other EU Strategies and action plans including the forthcoming EU plan to increase the EU's 2030 climate target as well as the EU Strategy for Biodiversity for 2030 and circular economy plan and an EU Organic Action Plan post-2020 can further increase the societal ambition for a more sustainable food systems. Similar strategies and action plans at national and regional levels are also highly relevant. The national CSPs and the Eco-schemes must be planned in conjunction with the development of these new initiatives and not as isolated tools.

ANNEX: ABBREVIATIONS AND ACRONYMS

AEC	Agri-environment-climate
AECM	Agri-environment-climate measures
AKIS	Agricultural Knowledge and Innovation System
AMR	Antimicrobial resistance
BTS	Particularly Animal-Friendly Stable Systems – Swiss animal welfare system
CAP	Common Agricultural Policy
COM	Commission
CSP	CAP Strategic Plan
DG	Directorate General
DP	Direct payments
EAFRD	European Agricultural Fund for Rural Development
EAGF	European Agricultural Guarantee Fund
EC	European Commission
EEA	European Environment Agency
EEC	European Economic Community
EFA	Ecological Focus Areas
EIP	European Innovation Partnership
EIP-Agri	EIP for Agricultural Productivity and Sustainability
ELS	Entry level scheme
Env	Environment(al)
EP	European Parliament
EU	European Union
FADN	Farm Accountancy Data Network
FAS	Farm Advisory Service
FaST	Farm Sustainability Tool
FiBL	Research Institute of Organic Agriculture
FR	France
FSS	Farm Structure Survey
FST	Farm Sustainability Tool
GAEC	Good agricultural and environmental condition
GDP	Gross domestic product
GHG	Greenhouse gas
GMO	Genetically modified organism
H2020	Horizon 2020 Framework Programme for Research and Development
HNV	High Nature Value
HU	Hungary
IACS	Integrated Administration and Control System
IEEP	Institute for European Environmental Policy

IFOAM	International Federation of Organic Agriculture Movements
IM	Integrated Management
Interreg	Interreg Europe
IP	Integrated Production
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
JRC	Joint Research Centre
LE	Landscape Elements
LEADER	Links between actions for the development of the rural economy
LEAF	Linking Environment and Farming
LPIS	Land Parcel Identification System
LULUCF	Land Use, Land-Use Change and Forestry
MEKA	Marktentlastungs- und Kulturlandschaftsausgleich Programm
MS	Member State(s)
MW	Mega Watt
N	Nitrogen
NO₃	Nitrate
NECP	National energy and climate plan
NGO	Non-governmental organisation
NL	Netherlands
PAF	Prioritised Action Framework
PMEF	Performance Monitoring and Evaluation Framework
PPP	Plant Protection Products
RAUS	Regular Time in the Open Air for Animals – Swiss animal welfare system
RBPS	Results-based Payment Schemes
RDP	Rural Development Programme
SDGs	Sustainable Development Goals of the United Nations
SFT	Sustainable Food Trust
SMR	Statutory Management Requirement
SO	CAP Specific Objective
SQNPI	Sistema di qualità nazionale produzione integrata (Italy)
SUP	Sustainable Use of Pesticides (Directive 2009/128/EC)
SWOT	Strengths, Weaknesses, Opportunities and Threats
UAA	Utilised agricultural area
UN	United Nations
WEI+	Water Exploitation Index Plus
WTO	World Trade Organisation
WWF	World Wide Fund For Nature





This publication is co-financed by the LIFE programme of the European Union, under the Executive Agency for Small and Medium-sized Enterprises (EASME). This publication only reflects the views of the authors and its sole responsibility lies with IFOAM EU. The EASME is not responsible for any use that may be made of the information provided.

EKHAGASTIFTELSEN