

**The Common
Agricultural Policy
post-2020: Views and
recommendations from
scientists to improve
performance for
biodiversity**
Volume 3 – Policy Brief

Guy Pe'er, Maren Birkenstock,
Sebastian Lakner, Norbert Röder



Dr. Guy Pe'er

German Centre for Integrative Biodiversity
Research (iDiv) Halle-Jena-Leipzig and
UFZ – Helmholtz Centre for Environmental
Research, Dept. Ecosystem Services
Puschstraße 4
04103 Leipzig

Prof. Dr. Sebastian Lakner

University of Rostock
Justus-von-Liebig-Weg 7
18059 Rostock

M. Sc. Maren Birkenstock und Dr. Norbert Röder

Thünen Institute of Rural Studies

Johann Heinrich von Thünen Institute
Federal Research Institute for
Rural Areas, Forestry and Fisheries
D-38116 Braunschweig

Telefon: +49 531 596-5240

Fax: +49 531 596-5599

E-Mail: maren.birkenstock@thuenen.de

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Workshop leads

Austria: Stefan Schindler¹

Bulgaria: Yanka Kazakova²

Croatia: Sonja Karoglan Todorovic³

Cyprus: Menelaos Stavrinides⁴, Ioannis Vogiatzakis⁵

France: Herve Guyomard⁶

Germany: Guy Pe'er, Maren Birkenstock, Norbert Röder, Sebastian Lakner

Ireland: Alan Matthews⁷, John Finn⁸

Italy: Davide Viaggi⁹, Stefano Targetti⁹

Poland: Edward Majewski¹⁰

Slovakia: Peter Bezák¹¹, Jana Špulerová¹¹

Slovenia: Tanja Šumrada¹², Ilona Rac¹²

Spain: Mario Diaz¹³, Elena D. Concepción¹³, Manuel B. Morales¹⁴

Sweden: Juliana Dänhardt¹⁵, Lovisa Nilsson¹⁵

¹) Umweltbundesamt, ²) University of National and World Economy Department of Economics of Natural Resources,

³) Environmental Institute ECOLOGICA, Croatia, ⁴) Cyprus University of Technology, Department of Agricultural Sciences, Biotechnology and Food Science, ⁵) Open University of Cyprus, ⁶) Institut national de recherche pour l'agriculture, l'alimentation et l'environnement – INRAE, ⁷) Trinity College, Dublin Department of Economics,

⁸) Teagasc, Crops, Environment and Land Use Programme, ⁹) Alma Mater Studiorum Università di Bologna Department of Agricultural and Food Sciences, ¹⁰) Warsaw University of Life Sciences - SGGW Faculty of Economic Sciences, ¹¹) Slovak Academy of Science, Institute of Landscape Ecology, ¹²) University of Ljubljana Biotechnical faculty, ¹³) Museo Nacional de Ciencias Naturales (CSIC) Biogeografía y Cambio Global, ¹⁴) Department of Ecology, Facultad de Ciencias, Universidad Autónoma de Madrid, ¹⁵) University of Lund Centre for Environmental and Climate Science

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Contributions: Guy Pe'er led the initiative and developed the synthesis report. Maren Birkenstock coordinated the workshops, designed and implemented the online survey. All authors contributed to writing and editing the document. The report has also been reviewed and further edited by John Finn, Herve Guyomard, Alan Matthews, and Mario Diaz. Norbert Röder and Juliana Dänhardt contributed to the climate chapter. Workshop coordinators wrote their respective country reports, with minimum editing and interventions by the authors.

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Abstract

Despite significant efforts, investments and some local successes, the EU's Common Agricultural Policy (CAP) has not succeeded in halting the loss of farmland biodiversity. To address these weaknesses, the CAP post-2020 proposes a new "Green Architecture" comprising, *inter alia*, compulsory elements (enhanced conditionality through Good Agricultural and Environmental Conditions - GAEC), voluntary Agri-Environment-Climate Measures (AECM), and a new instrument called "Eco-schemes". Will this new Green Architecture, combined with a result-based orientation of the CAP, help address the biodiversity crisis?

To provide science-based feedback on this proposal, more than 300 scientists from 22 MSs have provided their expertise through 13 workshops that took place between October-December 2020, and a follow up online survey. The results are published in Thünen Working Paper 175¹ comprising three volumes: Volume 1 is a synthesis of the results from all workshops and expert inputs as submitted through the online survey.² Volume 2 contains the full reports from all MS Workshops as well as all expert inputs regarding their opinions on the Flagship-Eco-schemes proposed by the European Commission.³ **Thünen Working Paper 175 – Volume 3 (this document) offers a policy brief summarizing the results.**

Although the Working Paper focuses on the proposed CAP's performance for biodiversity as a core topic, benefits for climate change mitigation and other environmental aspects were highlighted by workshop participants; and economic considerations were highlighted where relevant.

Six key issues emerged as crucial for the Green Architecture to successfully address the biodiversity crisis:

- Protection and restoration of landscape features and semi-natural areas, including grasslands, should be at the core of the Green Architecture and decisive to its success.
- Habitat diversity and multifunctionality should be prioritized at both the farm and landscape levels.
- Spatial planning is needed in target-setting and implementation.
- Collaborative and result-based approaches can and should be promoted for higher effectiveness and efficiency.
- A result-based approach is highly recommended for both AECMs and Eco-schemes, with ample experience to support broader implementation.
- Communication, education and farmer engagement are key to improve acceptance of compulsory requirements (enhanced conditionality), maximize uptake of effective

¹ Thünen Working Papers cover selected subjects from the present research of the Thünen Institutes and are not peer-reviewed

² https://www.thuenen.de/media/publikationen/thuenen-workingpaper/ThuenenWorkingPaper_175_Vol1.pdf

³ https://www.thuenen.de/media/publikationen/thuenen-workingpaper/ThuenenWorkingPaper_175_Vol2.pdf

voluntary measures (AECM and Eco-schemes), enhance learning, and generate a sense of ownership and stewardship.

Simplicity in administration and broad farmer participation are central to the success of Eco-schemes. Enhanced conditionality, Eco-schemes and AECMs should be coherent and complementary to each other. In addition, a no-backsliding principle should apply across all instruments to avoid losses of existing landscape structures or habitat quality, and with them, further biodiversity loss. Enhanced conditionality should set high minimum requirements: for instance, the threshold for landscape features and non-productive land (GAEC 9) should be set to at least 5 % of farmland and applied to all agricultural areas. Eco-schemes should serve to expand ambition (e.g. in the case of landscape features, expansion towards 10 %) and improve management. AECMs should receive priority in budgeting and efforts, targeting protected areas, High Nature Value Farmlands (HNVFs), wetlands and peatlands, and long-term restoration efforts. Eco-schemes can supplement AECMs in volatile business environments and serve as entry points to AECMs.

Remuneration calculations should be clear, justifiable, and transparent. They should increase with the benefits delivered and be aligned with AECMs to avoid competition. Farmers should be permitted to top up payments from different instruments into the same parcels if these fulfil multiple objectives, following, e.g., a points-based approach. MSs should strive to achieve a proper balance between “light-green”, spatially broad options versus “dark-green”, targeted measures with high impact. Eco-schemes need to be open to all types of land-users.

A menu-based Eco-scheme approach offers the advantage of catering to a wide variety of farms and farm types, while allowing the design of evidence-based measures. However, if a menu-based approach is selected, their biodiversity objectives need to become much more explicit and strengthened.

The targets set by the EU Green Deal and associated strategies, notably the Farm to Fork Strategy (F2FS) and the EU Biodiversity Strategy for 2030, should guide target-setting by the MSs. Biodiversity targets should be as specific, ambitious, clearly formulated, and quantitative as possible. Workshops highlighted seven criteria for ambition: 1) acknowledging the problems, 2) a clear intervention logic accompanied by a breadth of proposed actions, 3) adherence to key operating principles, 4) ambition reflected in budgets, 5) Investments into knowledge, 6) Selecting suitable indicators to ensure accountability, and 7) presenting sufficiently detailed strategic plans addressing local needs and adaptive capacities.

The transition years of 2021-2022, as well as COVID-19 recovery funds, should be used to prepare for the upcoming CAP implementation period. Key issues to address are: 1) Establishment of support mechanisms for guiding and implementing Eco-schemes; 2) Engagement in mapping efforts to establish baselines, especially for Ecologically Sensitive Permanent Grasslands and

landscape features; 3) Expansion of infrastructures (including administrative structures to support Eco-schemes) and capacities for biodiversity monitoring; and 4) Habitat restoration

Keywords: CAP, Common Agricultural Policy, AECM, Eco-schemes, Green Architecture, European Union, Biodiversity

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List of Acronyms

AECM – Agri-Environment-Climate Measures

ANC – Areas facing Natural Constraints

AKIS – Agricultural Knowledge and Innovation Systems

CAP – Common Agricultural Policy

CBD – Convention for Biological Diversity

DG AGRI – Directorate-General for Agriculture and Rural Development

DG ENVI – Directorate-General for Environment

DP – Direct Payments

EFA – Ecological Focus Areas

EIP-AGRI – European Innovation Partnerships for agriculture

ESPG – Ecological Sensitive Permanent Grasslands

EU – European Union

FAS – Farm Advisory System

GA – Green Architecture

GAEC – Good Agricultural and Environmental Conditions

GBI – Green and Blue Infrastructure

GHG – Greenhouse Gas

HNV – High Nature Value

IACS – Integrated Administration and Control System

LPIS – Land Parcel Identification System

MFF – Multiannual Financial Framework

MSs – Member States

NSP – National Strategic Plan

SDG – Sustainable Development Goals (of the United Nations)

S.M.A.R.T. – Specific Measurable Achievable Reasonable Time-Bound (Targets)

SWOT – Strengths, Weaknesses, Opportunities und Threats (Analysis)

UAA – Utilized Agricultural Area

UN – United Nations

UNFCCC – United Nations Framework Convention on Climate Change

Background and Questions

Despite significant efforts, substantial investments and some local successes, **the EU's Common Agricultural Policy (CAP) has not succeeded in halting the loss of farmland biodiversity.** To address this weakness, the CAP post-2020 proposes a new "Green Architecture" comprising, *inter alia*, compulsory elements ("enhanced conditionality"), voluntary Agri-Environment-Climate Measures (AECM), and a new, voluntary instrument called "Eco-schemes".⁴ **Will the new Green Architecture, combined with a result-based approach, help address the biodiversity crisis?**

As the CAP post-2020 is still under negotiation at the time this report was finalized, various issues about its final design and implementation remain open. Following a series of meetings with members of the European Commission (especially DG AGRI), scientists have been invited to help address some outstanding questions regarding the CAP's Green Architecture, with a particular focus on how the different instruments, especially Eco-schemes, can work best to achieve the biodiversity goals.

An overarching aim was to develop, based on sound science, recommendations and guidelines both at the EU level (Commission and any other interested parties) and for the Member States (MSs). Because some recommendations may emerge that are relevant only for specific MSs, we issued a call for scientists to conduct workshops, across as many MSs as possible, in order to harvest such recommendations.

Our call for workshops focused on biodiversity and was structured around four questions:

- (1) How can the different Green Architecture elements optimally complement each other?
- (2) What can be the role(s) of Eco-schemes in the Green Architecture, and accordingly, how could they best be designed and implemented?
- (3) How can the EU and MSs set S.M.A.R.T (Specific, Measurable, Achievable⁵, Reasonable, and Time-bound) targets for improving farmland biodiversity?
- (4) What landscape- and biodiversity indicators could be used to strengthen the indicator-system of the CAP, i.e. are most feasible to monitor, analyse and report across MSs?

Scientists were invited to organize and conduct (online) workshops, to address these questions and develop three types of recommendations, for:

- a) **design:** What can be (still) clarified so that the overall Green Architecture is most efficient and Eco-schemes are optimally designed?

⁴ Participation in AECMs and Eco-schemes is voluntary for farmers, but MS are obliged to offer these measures to farmers.

⁵ Various interpretations exist for the term S.M.A.R.T. For instance, "A" may also stand for "Ambitious".

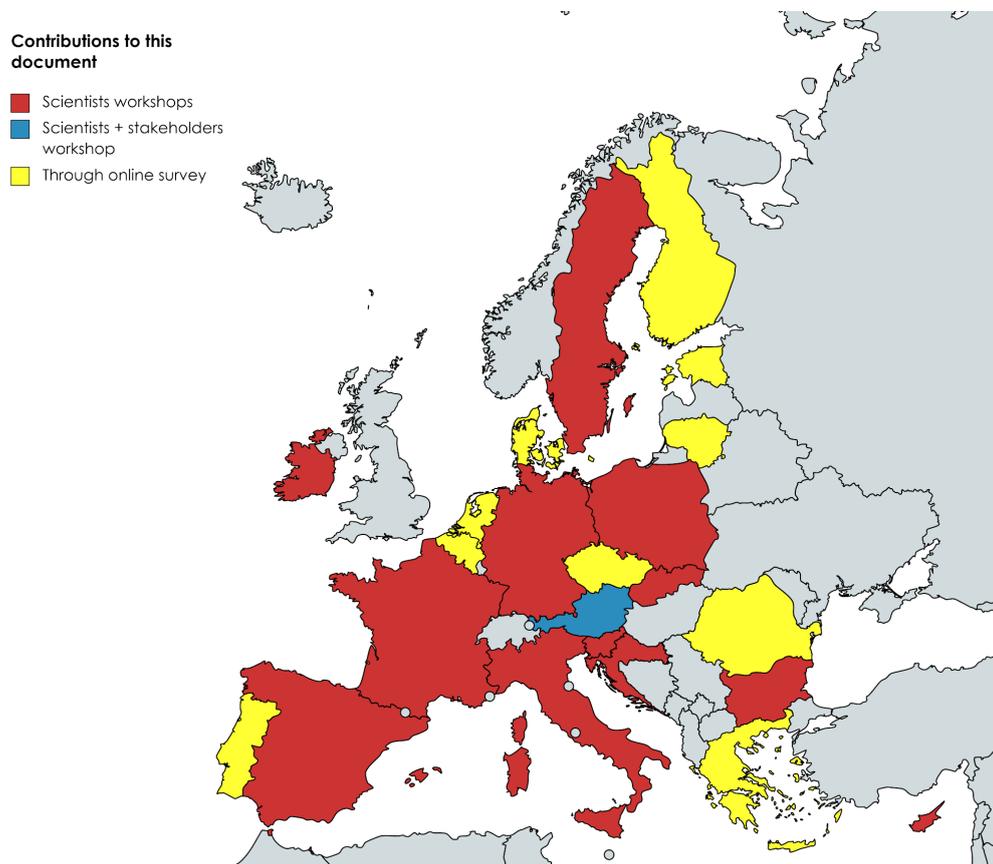
- **b) implementation:** What should be included in the strategic plans and anticipated/monitored by the EU?
- **c) interaction** between the EU and MSs: What should the Commission assess and how can it provide best guidance to MSs to ensure effective and efficient implementation?

Workshops were conducted in 13 Member States (MSs) between October and December 2020, with over 250 scientist participants. An online survey, complementing these workshops, yielded additional inputs including comments from 89 scientists regarding Eco-scheme flagships proposed by the Commission and the Council⁶. In total, this report builds on the **inputs from over 300 scientists and experts covering 22 MSs (Figure 1)**. In synthesising and summarising them, we retained the original diversity of opinions, while attempting to highlight areas of consensus.

The following policy brief presents key issues and recommendations that emerge from these inputs, focusing on those that are of relevance at the EU level. The full synthesis report is available as Thünen Working Paper 175 Vol. 1. A large number of additional inputs and recommendations by the workshop participants, that were sometimes specific for individual countries, can be found in Thünen Working Paper 175 Vol. 2 Annex I (“Full country reports”), while Annex II covers the original comments from 89 scientists regarding Eco-scheme flagships. We encourage experts, administrators and decision makers in the respective MSs to examine the full synthesis report, as well as the country reports where available.

⁶ WK 10899/2020 INIT Four Flagships Eco-schemes as announced in the Farm to Fork Strategy

Figure 1: Countries contributing through scientists' workshops (red), scientists plus stakeholder workshop (blue) and additional inputs via individual contributions through an online survey (yellow).



The map does not show countries where inputs were provided by both workshop participants and the survey.

Source: Map produced using MapChart (<https://mapchart.net/europe.html>) based on own figures.

We underline that this report focuses on the CAP's performance for biodiversity. Where relevant, synergies and trade-offs with other CAP objectives are highlighted in the report. These include benefits for climate change mitigation and other environmental aspects, as well as economic considerations that were brought up by a large number of participants. However, addressing these objectives was not the main aim of the workshops.

1 Key emerging principles that should guide the Green Architecture

The following principles summarise key messages that emerged from the scientists' responses on how to improve the CAP's performance with respect to farmland biodiversity loss.

1.1 Landscape features and semi-natural areas, including grasslands, should be at the core of the Green Architecture

There is **broad consensus that semi-natural landscape features and extensively used grasslands should be at the centre of the Green Architecture and are the most decisive elements for its success**. Enhanced conditionality, Eco-schemes and AECM should therefore add to, and complement each other, with respect to these elements.

The current coverage of landscape features and semi-natural areas varies significantly among MSs, regions and farms – in some regions, the share vastly exceeds 10% of the agricultural area, while in others it is much lower. Thus, workshop participants emphasised that a **no-backsliding principle** must be applied to protect and reward the effective management of the features that are still in place, especially in High Nature Value (HNV) regions and farming systems; and to **incentivise restoration efforts** where either coverage or quality is low. To increase the flexibility for farmers, establishing a **point-based system** could be beneficial. In addition, cooperation among farmers should be incentivised especially in priority regions.

1.2 Diversity and multifunctionality should be prioritized and rewarded

The heterogeneity of some farmland areas and agricultural landscapes, especially in areas recognized as HNV farmland, needs to be maintained, or restored where lost. This requires **actions at both the landscape and farm levels**.

At the landscape and regional levels:

- Improve spatial planning and targeting of measures.
- Prioritise focal areas, especially HNV farming regions, with high diversity that need to be preserved.

At the farm level, helping farmers retain and enhance diversity can be achieved through:

- Using a **point-based system to reward increased delivery of public goods**.
- **Prioritising win-win measures that address multiple environmental objectives**, such as extensive management of permanent grasslands and HNV sites.
- **Supporting bundles of joint options** (i.e. several complementary measures in the same field, farm or region) that can enhance overall success.
- Offering specific support for **maintaining and enhancing crop diversity over space** (beyond crop rotation, which promotes diversity over time).

Low-input pasture-based livestock systems were highlighted as particularly important since they generate multiple benefits, i.e. for biodiversity, climate, soil, etc. Such grazing systems comprise a prominent share of HNV farmland, yet they perform much below average in terms of economic indicators and are disappearing or near-extinction in many parts of the European Union (EU). Low-intensity grazing systems should therefore receive high priority for support and improved remuneration, to go beyond short-term costs or income foregone, in order to secure the survival of these systems.

Workshop participants highlighted that improving farmland biodiversity will require:

- Economic viability and stability for existing environmentally-friendly farming practices (particularly in small farms).
- Incentives for greater participation in environmentally-friendly farming.
- Reduced administrative burdens on such farms delivering high environmental output, especially in remote rural areas and in HNV regions.
- Reduced administrative burdens on MSs implementing targeted and regionalized measures to improve the CAP's environmental performance.

1.3 Spatial planning is needed in target-setting and implementation

The **effectiveness and cost-efficiency of spatial targeting** has been repeatedly raised and emphasised in most workshops as one key element for the success of the Green Architecture for biodiversity. Effective spatial planning contributes to the protection, effective management and restoration of natural and semi-natural habitats forming the EU's terrestrial ("Green") and aquatic ("Blue") ecological network - known also as Green and Blue Infrastructure (GBI). Spatial targeting, i.e. focusing support instruments to specific areas or tailoring the instruments to regional specific needs, should apply to Eco-schemes, AECM and other appropriate measures of Pillar 2 (e.g. non-productive investments). All Green Architecture instruments should interact and complement each other in space, to effectively scale up good local practices. It is essential particularly for maintaining resources for biodiversity and production-relevant ecosystem services, as well as ensuring connectivity between natural areas and Natura 2000 sites.

1.4 Collaborative implementation is a valuable means for achieving biodiversity targets

Collaborative or coordinated implementation of effective measures within a local target-area has been shown to be valuable for **increasing the effectiveness and efficiency of biodiversity support programs**. Collaborative implementation models are needed that increase the benefits at the landscape level and also provide financial incentives, e.g. through agglomeration bonuses. The need for these approaches emerges from ecological considerations:

- Many species of European concern need contiguous areas that widely exceed the area that a single farm can provide. Achieving a measurable impact thus requires cooperation among several farms.
- Ecological functionality of the network of (semi-)natural habitats, namely GBI, requires coordination of adjacent land parcels to avoid isolated actions.

Collaborative approaches have also been shown to yield social benefits for the farming community, such as:

- Increased flexibility for the individual farms (swapping obligations according to capacities or needs), also in terms of management contracts and compliance with regulations.
- Enhancing the success and efficiency of result-based approaches, thus reducing the risks and improving the benefits from ecosystem services.
- More effective exchange of knowledge and relevant experience among farmers improves social cohesion, learning potentials and supports adaptive management, while assisting individuals in dealing with relevant authorities.

1.5 A result-based approach is highly recommended

Action-oriented approaches (also known as prescription-based or management-based approaches), where farmers are paid to carry out specific management practices designed to improve environmental outcomes (such as the presence of four, six or eight plant species that serve as bio-indicators for ecological performance of a predefined place), have various merits when well designed and implemented. However, they can lead to a homogenization of landscapes or to sub-optimal results, especially if one or few options are implemented too broadly. In addition, they do not provide direct information on their ecological effects, to farmers or to managing authorities.

Result-based approaches have several advantages over action-oriented ones under some circumstances:

- They empower farmers and land-users in using their knowledge and experience, and increase their flexibility with respect to land management as they are not forced to comply with externally-imposed rules.
- They can provide rapid feedback to the farmer on the impact of the management practices and therefore incentivise a continuous management optimization.
- They preferentially reward the continued provision of existing habitats and ecosystem services and can reward habitat quality; in the case of biodiversity, this maximises biodiversity protection and restoration.
- If linked to collaborative approaches, result-based approaches could generate further positive synergies with other objectives (e.g. risk sharing between farmers, easier monitoring, etc.).

Many workshop participants saw high potential for result-based approaches and payments, and recommended their increased implementation. They particularly highlighted the value of result-

based approaches in grassland environments given their diversity and heterogeneity; and noted that experience with regards to their implementation is existing, at least at a pilot-level, in many MSs.

However, result-based approaches also require appropriate AKIS (Agricultural Knowledge and Information System) support; identification of specific objectives and indicators; scoring schemes that link delivery levels to payments; and regular monitoring for feedback and assessment of progress. Furthermore, not all action-oriented measures can be replaced by result-based approaches. Depending on the objectives and context, a combination of action-oriented and result-based payments, accompanied by non-productive investments and a strong support in terms of information, training and monitoring, is considered to be most appropriate.

1.6 Communication, education and farmer engagement can improve acceptance, cooperation and uptake of voluntary measures

Farmer involvement and engagement is extremely important, to improve acceptance of compulsory requirements (Enhanced conditionality) and maximise the uptake of effective voluntary measures (AECM and Eco-schemes). Greater farmer engagement and co-design during implementation can also facilitate horizontal exchanges between farmers, rapid learning and adaptive management, and generate a sense of ownership and stewardship that can help scaling up successes and best practices. MSs should therefore invest in communication and engagement processes to ensure farmers are taking active part in planning and implementation of measures to the extent possible. This is particularly important for the implementation of result-based measures. This issue could be a priority of the AKIS, as well as EIP-AGRI (European Innovation Partnerships for agriculture) and its different instruments.

2 How different Green Architecture elements can optimally complement each other

Here we deliver views and recommendations regarding the overall design of the CAP's Green Architecture, its key components and how they should interact with each other. We place special focus on the question, which instruments should or should not be considered as part of the Green Architecture and under which conditions.

2.1 Key principles and roles of Enhanced conditionality, Eco-schemes and AECM and how they should interact to maximise the Green Architecture's success

Enhanced conditionality:

Enhanced conditionality requirements are the mandatory conditions for recipients of direct payments in Pillar 1, and therefore set the minimum standards for land management. They provide the baseline for the voluntary schemes in Pillar 1 and Pillar 2. MSs may have some discretion to specify the details of the Good Agricultural and Environmental Conditions (GAEC), but are constrained by the legislative requirements in the CAP Regulation. It is therefore important that both the legislative requirements, and national specifications of these, are sufficiently ambitious and unambiguous to avoid degraded implementations by MSs. Without strong mandatory standards, the added value of voluntary payments is eroded and "windfall gains" occur, i.e. payments for doing nothing. Concerns have been raised in particular with respect to the following GAECs:

GAEC 2 (defines appropriate protection of wetland and peatland): While covering merely 3% of the EU's agricultural land, drainage and damage of wetlands contributes 25% of the EU's agricultural greenhouse gas emissions. GAEC 2 should therefore cover all carbon-rich soils, including fens, peatlands and wet meadows, without exceptions or limitations (e.g. not restricted to Natura 2000 sites). In the long term, payments in support of agriculture on all drained carbon-rich soils should be phased out or limited only to paludiculture.

GAEC 9 (defines protection of landscape features and land devoted to non-productive areas): Several workshops recommended 5% as the very minimum share of land devoted to these features under enhanced conditionality, applied on the entire Utilised Agricultural Area (UAA) with no exceptions (i.e. not limited to just arable land). To avoid replicating the failures of the greening measures of the current CAP, no exemptions or exceptions should be made, and productive features should not be included. Catch crops and nitrogen-fixing crops do have a value for soil quality, but their frequently-intensive management yields limited or no biodiversity benefits. They should therefore belong in GAECs 7 and 8, relating to the preservation of soils.

GAEC 10 (places a ban on converting or ploughing permanent grassland in Natura 2000 sites):

The ban on converting permanent grassland in Natura 2000 should be expanded also beyond Natura 2000 sites, with particular emphasis on Ecologically Sensitive Permanent Grasslands (ESPG).

Eco-schemes:

Eco-schemes are an evolving instrument that will likely be based on annual or short-term contracts. As such, they can provide inter-annual flexibility that is in certain cases needed, but may result in discontinuity in other circumstances. Workshop participants highlighted the role of Eco-schemes as a means to expand the overall coverage of biodiversity-, climatic- and environmentally-friendly farming. To do so, Eco-schemes should...

- **Be evidence-based, clearly linked to biodiversity objectives, and coherent** with other components of the Green Architecture.
- **Go beyond enhanced conditionality**, optimally going beyond the maintenance of (high quality) habitats to allow restoration of habitats in terms of extent (e.g. in regions and farms with less than 10 % landscape features) and quality.
- Be applicable to all UAA, but measures should not try to cover all areas and farms – rather, higher-quality options should receive better priority and funding. Priority regions and areas should be identified as well, particularly HNV regions, Natura 2000 sites, and areas of relevance for the Water Framework Directive and Nitrates Directive, in a way that complements AECM.
- **Complement AECM and not compete with them.** For example, Eco-schemes can be used as an entry point for more sophisticated, longer-term AECM.
- **Be financially attractive to make them both attractive and efficient:** Remuneration should increase with the benefits delivered. This means that if payments are coupled to agricultural land, the environmental impact should scale well with the agricultural land. In order to be efficient, Eco-schemes should be used mainly as an instrument to support environmental needs and not mainly as an income support instrument.
- **Be simple** for administrators to handle and for farmers to participate in.
- **Strive for continuity over time (multi-annual implementation):** Workshop participants strongly supported multiannual interventions and commitments where possible, especially for measures that have limited benefits if implemented only for one year (e.g. reduced chemical inputs, extensive grazing management).

The inclusion of ecologically ineffective measures, which may end up dominating Eco-schemes, was repeatedly highlighted as the key risk to Eco-schemes' success.

Agri-Environment-Climate Measures (AECM):

AECM are a well-established instrument to address environmental goals, with a wealth of knowledge and experience regarding the best conditions for their success. AECM have mechanisms to address complexity and long-term commitments that are essential for many habitats and restoration efforts. They can be tailored to local specific needs, albeit at the expense of losing some

inter-annual flexibility. However, over the last decade the respective budget in many MS was stagnant or even declined. In addition, the uptake by some Member States and farming communities was low. Given their potential high effectiveness with regards to biodiversity protection, AECM should generally receive the highest priority in budgeting and efforts of the financial support instruments of the Green architecture. They should be targeted especially for protected areas, HNV farmlands, wetlands, and for restoration aims. Eco-schemes can effectively supplement AECM in volatile business environments (e.g., due to short-term tenure contracts) or as entry points before participating in (longer term and higher ambitious) AECM. In particular, an increase in targeted and conditionalized support for low-input grazing livestock systems can help address a key weakness of the CAP relating to farmland biodiversity, namely the protection and appropriate management of low-input, structurally-diverse grasslands and pastures.

2.2 How Green Architecture instruments should interact

Coherence among AECM and Eco-schemes (the two key voluntary instruments), as well as overall coherence of the Green Architecture, requires a clear and consistent set of goals, a clear separation of roles, **a consistent intervention logic**, as well as comparable payment levels, to ensure AECM and Eco-schemes complement each other in terms of the solutions they offer for the diversity of environmental challenges.

A balance is required between compulsory and voluntary components, where enhanced conditionality is essential to set clear and strong basic standards. AECM and Eco-schemes could be differentiated in terms of their roles regarding local versus global public goods; or short-term (entry point) versus long-term implementation. Inputs from the workshops varied, however, on the question how Eco-schemes, combined with AECM, should complement each other (or balance within them) in terms of spatial extent, number of farmers participating into the programme or a focus on intensive versus extensive regions. The diversity of replies from workshop participants indicates a range of plausible options and context-dependency. It is clear that a balance among the “tiers” of enhanced conditionality, Eco-schemes and AECM is needed; yet, potentially Eco-schemes could (or should) cover both broad-and-simple as well as deep-and-local options. It was highlighted that being too broad might result in weak or even completely ineffective Eco-schemes.

2.3 Other important instruments for the success of Green Architecture

Knowledge-support and exchange systems: Knowledge-support instruments are key for supporting the Green Architecture, demonstrating the success of the EU’s and MSs’ investments in promoting innovation and knowledge-exchange especially through AKIS, Farm Advisory Services (FAS) and European Innovation Partnership (EIP) as key instruments. Concomitantly, participants in all workshops highlighted a need to enhance investments in order to expand knowledge support where these are linked to environmental objectives. Ecological training clearly needs to be

expanded, and better funding for such training is necessary to enhance awareness, acceptance, uptake and good implementation of effective measures.

Non-productive investments: Workshop participants highlighted the potential importance of non-productive investments in water retention, rewetting, and restoration of landscape features, as well as for supporting a transition to low-input, extensive grazing systems. This contrasts with most investment measures that are currently not necessarily (sufficiently) conditioned on environmental criteria or objectives, and productive measures may counteract environmental objectives by either supporting agricultural intensification in environmentally sensitive regions such as HNV farmlands, or maintaining unsustainable land uses (e.g. through investments in new sheds for dairy cattle in peatland areas). Thus, agricultural investment support should be conditioned to the respect of environmental objectives. Moreover, Eco-schemes should not replace payments that can be made through (production-oriented) investments, such as some forms of precision farming.

Other instruments that were mentioned by workshop participants as important include Instruments for targeted support of the Natura 2000 network, and Instruments to support cooperation for biodiversity.

2.4 Harmful or ambiguous instruments for the Green Architecture

Payments for Areas of Natural Constraints (ANC): If ANC payments are to be listed as part of the Green Architecture and counted toward the budget goal of 30% (for agri-environmental payments in Pillar 2), then an explicit and tight link to environmental outcomes is required. Without such a revision, ANC payments may pose a risk rather than a benefit to the Green Architecture.

Investment aids, support for forestry and coupled payments: These are very ambiguous instruments that need to be carefully designed and implemented if they are to achieve their potential to provide positive environmental impacts. Up to now, they **frequently supported intensive and intensifying farming practices, thus conflicting with biodiversity protection efforts.** By contrast, when they are tightly linked to clear environmental objectives, they can help maintain low-intensity grazing, support restoration of natural forests, or protect wood pastures. In particular, **coupled payments should be tied to extensive agriculture and tightly linked to environmental impacts, or otherwise phased out.**

2.5 Budget considerations and recommendations

If designed wisely, AECM and Eco-schemes combined can lead to doubling (or even more) of the overall budget allocated for biodiversity, climate and the environment compared with the current programming period. This can be achieved through a number of strategies. Key recommendations were to:

- **Increase overall budget for AECM and Eco-schemes together.** This topic was controversially discussed. In fact participants from most attending MSs proposed that Eco-scheme and AECM budgets should be ring-fenced separately, to avoid competition among the two instruments; and that within Eco-schemes, sufficient budgets should be secured for the biodiversity and climate objectives.
- **Increase transfer of funds from Pillar 1 to multiannual and effective AECM in Pillar 2:** Given the high effectiveness of AECM and their multiannual character, participants strongly recommended MSs to increase the funds transferred from Pillar 1 to AECM in Pillar 2 in comparison with the current programming. This is particularly relevant for implementing measures that require several years, since AECM contracts can be established beyond the limits of the CAP's Multiannual Financial Framework (MFF), whereas Eco-schemes will likely be bound by the MFF's limits.
- **Secure that unspent Eco-Scheme budgets go to environmental objectives,** either in AECM or through re-allocation to Eco-scheme participants to incentivise increased participation. This is important, as Eco-schemes might be particularly useful and beneficial to achieve environmental outputs in farming systems facing a highly volatile business environment. Under these conditions, planning of farmers' acceptance, and achieving an appropriate allocation of budget resources years in advance, is an extremely challenging task for national administrations.
- **Ensure that non-environmental objectives (and budgets) do not lay claim to environmental instruments or bias budget calculations.** Income- and competitiveness-benefits should be added values, but they cannot replace coherence with biodiversity objectives that must be met.
- **Invest significantly in assessing the effectiveness and cost-efficiency of alternative options** and requiring MSs to clarify decision-making with this respect in their National Strategic Plans (NSPs), bearing in mind that more targeted, and hence more effective options are often also more costly - for both farmers and administering agencies.
- **Address double-funding issues,** to reduce red-tape and allow differentiated designs. Excluding double funding should focus on the combination of measures that have some relevance for the overall budget, and can be achieved by clarifying the borders and complementarity among instruments.
- **Maximise flexibility in cost calculations** to allow the generation of benefits to participating farmers beyond recovery of income foregone - especially for selected measures that generate particular value.
- **Avoid over-simplicity of Eco-schemes and too high payments.** Choices of over-simple measures and too high payment levels in relation to expected environmental benefits, or the overuse of weighting factors, can limit the impact of effective options and dilute of the overall impact of the Green Architecture.

2.6 Top-up payment versus income foregone

While AECM payments are based on the principles of compensating for income foregone, the rules for Eco-schemes will likely allow MSs to either adopt the established AECM-method of paying for “cost incurred or income-foregone” as benchmark (Article 28, 6b COM(2018) 392 final), or to grant Eco-scheme payments as “payments additional to the basic income support” (28, 6a), often also referred to as “top-up-payment”. Workshop participants assessed the pros and cons of both approaches. In reporting them here, we propose the Commission should require a clarification from MSs as to why they choose one option or the other, and how they intend to address the weaknesses or caveats of the selected approach. Regardless of whether a top-up or income-foregone approach is adopted, workshop participants highlighted the importance of ensuring that the benchmark for calculation is clear, justifiable, and transparent for assessment and re-evaluation.

Arguments in favour of the top-up approach:

- **Simple to administer**, which will likely make it more attractive for farmers and can therefore yield relatively high uptake.
- **Could be useful if promoting participation in places or circumstances where the level of income foregone is low**, e.g. in situations where farming is less profitable from the start (e.g., small-scale, low intensity grazing, and/or part-time farming).
- **Could be used to enhance the attractiveness of evidence-based options of high value** (i.e. options that should be promoted regardless of their relation to income).
- **Allows a focus on environmental objectives** instead of complex (or even spurious) calculations of income foregone, and the system could be more easily designed in a way that the environmental impact per Euro spent is comparable across measures.

Cons of top-ups:

- **Implicit income support**: There is a high risk that Eco-schemes using payments additional to the basic-payment will become an income transfer scheme in disguise.
- **Less efficient spending of taxpayers’ money**: In the absence of a baseline to evaluate either their costs or benefits, Eco-schemes as addition to basic income support might repeat a key weakness of current Greening, which to a great extent takes the same approach. This may lead to inefficiency, inconsistency and windfall gains.
- **Underdeveloped administrative capacities** to support decision-making with regards to top-up payments (e.g. how to set payment levels, monitor the effects or adjust where need be) can result in ineffectiveness or inefficiency of the measures for the delivery of public goods.

Factors supporting income-foregone approach:

- **The existing system works** if well designed and implemented; For instance, transaction costs can be taken into account under the “income foregone” concept. It does not need to be replaced by a new payment system, but rather, further improved to benefit participant.
- **Cost-incurred as objective economic benchmark:** Calculation of costs incurred or income foregone provides an objective benchmark for the level of payment. In the absence of such an economic benchmark, the top-up payment could become a bargaining matter between the public authority and the farm organisations.
- **Consistency among funding modalities** for AECM and Eco-schemes, employing similar payment approaches and intervention logic, may reduce the risk of continuing the existing competition between Pillars or lack of comparability between the two.

2.7 Risks and weaknesses to address

Workshop participants highlighted a range of barriers which should be considered in the final stages of the CAP’s design and toward its implementation by the MSs. These included:

- **Definitions and eligibility issues:** Many farmland landscape features and semi-natural habitats are not eligible for CAP support. This should be addressed by expanding the definitions of an eligible hectare: **eligible areas for CAP support should include all semi-natural vegetation features on farms, both farmed and unfarmed.** Additionally, a differentiation between beneficiaries (farmers versus others) limits access to funding for some land-users engaged in farming, such as shepherds, farmers using commons, or NGOs engaged in farming. Participants therefore highlighted that **all types of land-users should be eligible to apply for Eco-schemes, to ensure a level-playing field for the various farmers and land-users engaged in farmland-management.** Placing barriers to participation in Eco-schemes may not only generate inequity among land-users but also potentially counteract their environmental objectives.
- **Too low minimum standards for enhanced conditionality.** The risk of setting too low standards, especially in the context of enhanced conditionality, has been mentioned in several workshops – i.e. if some GAECs are applied only to arable land, minimum requirements for landscape-feature protection is set below existing levels, or quality requirements are missing. Beyond these, some participants proposed that too abrupt changes in enhanced conditionality requirements may lead farmers to “opt out” of the CAP altogether.
- **Attempts to reduce administrative burdens of AECM** may hamper management plans if they result in over-simplified guidelines.
- **Lack of coherence with other CAP instruments** (harmful subsidies) and policy areas.

2.8 Contribution of the Green Architecture to the climate objective

While climate-change mitigation and adaptation was not the core topic of the workshop, reducing Greenhouse Gas (GHG) emissions is a pressing environmental issue, and the contribution of the Green Architecture to it was brought up at most workshops. **Concern was raised that the current planned measures are unlikely to yield sufficient reductions in GHG emissions.**

Agriculture and land-use in the EU can play a vital role in reaching the climate objective, both directly through reducing emissions listed under agricultural production, and indirectly through reducing associated emissions relating to feedstock imports, production, processing and transportation-related emissions. By driving land-use changes, animal production and first-generation bioenergy exert further pressures, currently leading to a net increase in GHG emissions.

The **three instruments of the Green-Architecture** may **have some potential in driving GHG-emission reductions**, for instance by supporting extensive grazing systems. Supporting a variety of soil management practices that benefit soil health and reduce the current loss of soil carbon also has a great potential to increase soil carbon stocks in the EU.

Additional instruments, especially non-productive investments and AKIS, might in many cases be even more effective and efficient. They have high potential particularly in reducing the excessive use of nitrogen and consequently reducing nitrous oxide emissions as well as methane emissions from manure storage and handling. As these actions reduce the indirect N-input into semi-natural ecosystems, they can also mitigate a key pressure on biodiversity in these systems.

With respect to the preservation of the soil carbon pools, the Green Architecture can be more pivotal. Drained, agriculturally-used **peatlands** account for merely 3% of the EU's agricultural land but contribute 25% of the EU's GHG emissions related to agriculture. To tackle this source efficiently:

- **Eligibility criteria** and the **enhanced conditionality** should exclude freshly drained peatlands from receiving CAP support.
- **GAEC 2** should cover all organic soils according to GHG reporting under United Nations Framework Convention on Climate Change (UNFCCC) and exclude any new drainage or deepening of existing drainage level and the irreversible transformation of the soil profile such as deep ploughing.
- With the help of appropriate **support instruments** (especially AECM and non-productive investments), water tables should be raised close to the surface in as many peatlands as possible. Only by raising the water table, the decline in soil carbon stock can be stopped.
- **Paludiculture** should be recognized as an agricultural land-use, and eligible for CAP support; and the conversion of species-poor grasslands on organic soils into paludiculture should be exempted from the ban on converting permanent grasslands (GAEC 1)

Regarding positive synergies between biodiversity protection and climate mitigation / adaptation, it was highlighted that landscape features and biodiversity provide ecosystem services that assist production and provide long-term resilience that is particularly essential under the climate crisis.

Participants in several workshops also highlighted the role of the Green Architecture in helping farmers to adapt their land-use to achieve greater resilience to climate change. This includes better protection of the soil, water resources and quality, and the protection and restoration of landscape features.

Workshop participants also expressed concerns regarding the potential of first-generation bioenergy, generating pressure on land and potentially driving land-use changes in and beyond Europe.

3 The role, optimal design and implementation of Eco-schemes in the Green Architecture

General comments: Due to their annual nature⁷, the relatively broad list of proposed (potential) options, and the risks of diluting them at implementation level (as was with Greening), some workshop participants doubted whether Eco-schemes can achieve the extent of improvement that is needed in the CAP's environmental performance. Experts highlighted that MSs should prioritise the improvement and expansion of AECM in terms of budgets and administration, as an existing instrument that works, rather than set too high expectations from an instrument that is still evolving and bears a range of challenges. The fact that only farmers and groups of farmers may be eligible to apply to Eco-schemes, may entail another weakness of Eco-schemes which should favour the prioritization of AECM.

3.1 Basic standards of Eco-schemes: soil, water and chemical inputs

Several workshops highlighted that sustainability, and particularly the use of water and certain agro-chemicals – particularly the control of pesticides and herbicides – should be set as basic criteria for Eco-schemes, i.e. considered as horizontal minimum requirements.

Chemical inputs and water use affect soil and water quality as well as biodiversity, and nitrogen fertilizers affect water quality and serve as a major contributor of agricultural GHG emissions. The biodiversity strategy and the Farm to Fork strategy require the reduction of fertilizer and pesticide use. Yet none of them is currently monitored or reported by farmers within the CAP. Participants pointed out that the question of how the CAP addresses chemical inputs needs to be resolved at the earliest possible point. In the meantime, workshop participants proposed that all Eco-schemes should be accompanied by minimum standards or even a “no pesticide” requirement.

3.2 List-based approach (menu of options): pros, cons and risks

Eco-schemes were introduced as a measure that would be obligatory for MSs to offer, but voluntary for farmers. However, unlike the case of Greening, the EU Commission has not published a “white-list” or a menu of potential Eco-scheme options from which MSs should choose from. As the question whether to adopt a menu-based approach was open at the time when workshops were conducted, we asked scientists to explore the advantages and disadvantages of such an approach.

⁷ Since the workshops were conducted, it now seems that multi-annual Eco-scheme commitments may be possible, although the details are not yet clear. For instance, it is likely that farmers may be able to opt in and out yearly; and that contracts cannot extend beyond the MFF – effectively limiting contracts to a maximum of 5 years or less, depending on starting time.

Pros:

- **Simplicity** makes it comprehensive for MSs to implement, and hence attractive for both MSs and farmers.
- Sets minimum standards regarding environmental ambition, and helps ensure a level playing field across MSs.
- Allows linking to existing knowledge and evidence (also in countries with lower capacity), accompanied by knowledge support, and easier comparison of MSs' ambition level.

Cons:

- **Over-simplicity** limits adaptability and restricts the application of more complex, ambitious options where desired.
- Design failures may be much more detrimental, to the extent where **Eco-schemes may have negative effects if ineffective measures dominate, or high-quality habitats are replaced by low quality ones.**
- **Control levels are limited and consequently limits the capacity to plan and regionalize** (or target) actions effectively. This is because farmers may pick options that may not suit their regional settings in terms of environmental challenges and goals, landscape structure and connectivity, technological conditions, etc.

The possibility to offer **a long list of options is both a strength and a weakness**: Some options may be effective for biodiversity; however, these can be diluted by more financially attractive, but less environmentally effective options.

While some participants asserted that a menu approach may limit the application of a result-based orientation, others noted that a result-based approach is also implementable under a menu-based option.

3.3 Guidance and examples of optional practices for Eco-schemes to include or exclude

As guiding principles for the inclusion of measures in Eco-schemes, workshop participants noted that farm-scale practices should be evidence-based, effective measures that are supported by scientific literature for their effectiveness. Considering the abolition of Greening, best practice measures that are not covered under enhanced conditionality should be continued into Eco-schemes. It would be important to include regionalized schemes and result-oriented options.

Eco-schemes are defined and communicated as a key instrument to improve the CAP's performance for biodiversity. Accordingly, highest priority (and a secured budget) should be given to options that have direct benefits for biodiversity, as well as options that concomitantly address additional environmental objectives.

Examples for effective Eco-scheme that were recommended to include:

- Protection and restoration of non-productive land and landscape features.
- Protection of ecologically sensitive, extensively managed permanent grasslands; including through pastoralism and transhumance.
- Habitat restoration, e.g. when under 10 % coverage of landscape features.
- Restoration of habitat quality, especially in HNV farmland.
- Wetland protection and restoration.
- Field margins and buffer strips, including flowering crops to support pollinators and birds (nesting, winter-feeding).
- Fallow land under well-described management, especially beyond year 1 (i.e. beyond crop rotation). Fallow land (and field margins and buffer strips) generate positive environmental impacts in the first year, and their impact increases over time. Multiannual implementation should therefore be promoted and rewarded.
- Soil quality, e.g. through reduced nutrients and chemical inputs (No/less hazardous chemical pesticide use. However, a multi-year application should be implemented for nutrient and chemical management.).
- Animal welfare where linked to permanent grassland management and biodiversity.
- Organic farming where linked to biodiversity.
- Extensive grain production with a wide seeding density.
- Integrated Pest Management (IPM).
- Crop rotation and spatial crop diversity.
- Conservation tillage and no-tillage.
- Non-material support, e.g. AKIS, mapping, consultation.
- Provision of biodiversity-friendly devices.
- Support for biodiversity-friendly Land Consolidation Schemes.
- (Adaptations to achieve) coexistence with large carnivores.

Opinions on crop rotation and nitrogen-fixing crops diverged, with some experts proposing them as beneficial practices that should be supported, and others highlighting that the benefits are mostly for soil, and thus these practices should be included under enhanced conditionality (GAECs 7 and 8) rather than in Eco-schemes. Participants in several workshops proposed that the use of some agrochemicals (e.g. pesticides, herbicides) should generally be prohibited under Eco-schemes, rather than bound for payments under a specific option.

Key guiding principles to identify certain practices for exclusion from Eco-schemes should be:

- Lack of evidence of positive impacts for biodiversity, or evidence of negative or no impact on biodiversity.
- Risk of diluting other more effective measures or competing with them.
- Options that do not go beyond “good practices” that farmers should already adhere to – and are therefore more appropriate to list under enhanced conditionality.

Examples of ineffective options that should be excluded from Eco-schemes:

- **Boost schemes** aim at promoting competitiveness rather than environmental goals. They do not serve the primary ecological objectives of Eco-schemes and may even conflict with them.
- **Precision farming** without a link to clearly defined biodiversity benefits may dilute Eco-schemes and can be more efficiently supported by investment support.
- **Nitrogen-fixing crops, catch crops and green cover** can have benefits for soil quality if managed well. However, they generate only marginal benefits for above-ground biodiversity. They fit better in GAECs 7 and 8.
- **Intensive grazing of animals** that lacks specific biodiversity objectives.
- **Prescribed fire or mechanical clearing of scrubland** in montane pasture areas.
- **Forestry and non-sustainable afforestation** that do not follow ecological principles of natural forest management and restoration.
- Nutrient management options (if applied only for a single year).
- Fallow land, landscape elements and flower strips below existing levels (e.g. minimum 5 %).

3.4 Experts’ comments on the Eco-scheme flagships

Workshop participants, as well as 89 contributors to our online survey, provided detailed comments on the initial EU’s proposal of Eco-scheme flagships launched as a Non-paper by the Commission in November 2020⁸.

A dedicated flagship Eco-scheme on Biodiversity is currently not included, but is essential for maintaining and improving biodiversity. Such a flagship might be the most appropriate means for incorporating biodiversity into Eco-schemes while also ensuring co-benefits for climate and water. It could be used to pay for additional landscape features beyond minimum requirements implemented due to enhanced conditionality. Such an option seems necessary and especially relevant for HNV farming systems. For such a flagship, experts recommended:

⁸ EC WK 10899/2020 INIT, Proposal for a Regulation on CAP Strategic Plans –four flagship Eco-schemes as announced in the Farm to Fork Strategy.

- A focus on specific biodiversity targets and actions, potentially taking a result-based approach.
- Landscape targeting.
- Additional bonuses for collective implementation.

The Agro-ecology flagship includes a large number of options that are relevant and effective from a scientific perspective. Some may even generate joint benefits in terms of social, economic, cultural, traditional and educational aspects. However, not all the proposed options are achievable or plausible under the context of Eco-schemes given their design (likely based on annual payments) and implementation capacities. For many options, a long-term commitment is needed that can be achieved either through multiannual contracts in Eco-schemes or AECM. Experts proposed four main recommendations:

- **The biodiversity objectives of the Agro-ecology flagship** need to be made much more explicit, elaborated, and considerably strengthened. This is imperative if a dedicated biodiversity-oriented flagship is not established.
- It is imperative to recognise the **need for multiannual commitments** for effective biodiversity practices and benefits.
- **For other environmental objectives** (air quality, water quality/quantity, nutrient management, carbon storage, etc.) that relate to biodiversity, directly and indirectly, there should be a clear assessment of measures to ensure that Eco-schemes are a) appropriate and b) effective as annual practices or only under multiannual contracts.
- **Grassland and pasture management** should be elaborated, to include clear criteria for habitat quality (potentially to be achieved through a result-based approach).

Agroforestry measures could have positive environmental and climate effects if carefully designed. Despite significant investment costs, their potential positive effects (economic and environmental) occur after a significant time delay. Establishing new agroforestry systems using Eco-schemes, within the 5-year limit of the next CAP, may therefore pose serious challenges. Agroforestry that is inappropriately designed or located could also have negative environmental effects. Experts proposed two main recommendations:

- **For the establishment of new agroforestry systems, a tight link to biodiversity**, as well as to Pillar 2 AECM, is needed.
- **Eco-schemes should focus on preserving existing (biodiversity-friendly) agroforestry systems and improve their quality.**

Precision farming flagship: As proposed, this flagship Eco-scheme seems targeted toward increasing efficiency of current farming production systems. It might help reduce overuse of nutrients, pesticides and antibiotics, but the proposed measure makes no explicit reference to biodiversity. Moreover, biodiversity-oriented options or technologies that can help deliver ecosystem services seem to be implicitly excluded. This can lead to negative environmental impacts

of this flagship. Additionally, the costs of the technology needed for precision farming do not scale up with the farmed area. This means that if payment is linked to the farmed area, there will be tremendous overcompensation for larger farms, while they may employ precision farming anyway due to its labour-saving effects and greater efficiency. In addition, precision farming may bring marginal or no environmental and economic benefits under some conditions, e.g. for small farms where site heterogeneity is low. Given the voluntary nature of Eco-schemes, uptake of precision farming may compete with other measures with much higher environmental potentials. Experts proposed that **it seems more suitable to support biodiversity-friendly precision farming under investment support measures.**

Carbon farming flagship: Many actions undertaken by farmers or land managers to lock up carbon, either in biomass or the soil, require multiannual contracts to be effective. Rewetting also requires additional planning, consultation and investment, all of which are already in place for Pillar 2, but seem so far lacking for Eco-schemes. Some carbon farming measures need to be supported by deeper research and monitoring, and should be regarded as a pilot or an experiment. Sequestration and benefits of conservation agriculture are not likely to be uniform across soil types and areas within and across MSs. There is also a bias toward carbon sequestration instead of carbon storage (protection of existing old-growth forests and other habitats). These factors suggest that carbon farming can be beneficial only when regionalized and linked to clear management requirements to avoid negative environmental impacts, e.g. if used to support intensive forestry operations. For some of the proposed measures, Pillar 2 instruments such as non-productive investments and longer-term management contracts (AECM) are more appropriate. Expert recommendations were:

- Carbon farming should be **linked to biodiversity benefits** and tied to no-backsliding principles to avoid losses of natural habitats, especially native forests.
- Carbon farming Eco-schemes should **focus on maintaining (good practice) carbon farming** and improving its management, or be used as a first-year measure before entering a longer commitment (under AECM). Alternatively, it would be more efficient to establish a (multi-annual) carbon farming system in Pillar 2.
- A tight **link to AKIS and for knowledge-support, and monitoring of outcomes**, is particularly important for this flagship.
- Some individuals also mentioned it would be interesting to explore the opportunity of including agriculture in the carbon market.
- More generally, **biomass production** in general (e.g. for fuel, biomass energy and fibre) should be **carefully assessed** regarding its efficiency and effectiveness to tackle climate change issues.

Animal welfare flagship: From a biodiversity perspective, the most beneficial measures in the animal welfare flagship are those linked to extensive grasslands, pasture-feeding animals, wood pastures and other good practices that generate concomitant benefits for biodiversity, climate, soil and animals therein. However, the animal welfare flagship does not officially link either to the

biodiversity or the agro-ecology flagship. This raises the more general question to which extent Eco-schemes should include measures that address climate- or animal-welfare objectives but are not linked to biodiversity (or may even have negative effects on biodiversity). This question is beyond the scope of this study. However, if such measures are included, then clarity is needed regarding how MSs can ring-fence sufficient Eco-scheme budgets to address the different objectives. For monogastrics (e.g. pigs, poultry), improving animal welfare is mainly linked to the modernisation of livestock buildings, and will likely be more efficiently addressed through investment aids (in order to compensate for increased fixed costs) and market differentiation (to cover increased variable costs), possibly supplemented by AECM. Experts therefore generally recommended linking the Animal welfare flagship, to the extent possible, to the biodiversity- and agro-ecology flagships and particularly to good management practices in permanent grasslands and pastures.

4 Target setting and implementation

4.1 Target setting

MSs need to set Specific, Measurable, Achievable⁹, Reasonable, and Time-bound (S.M.A.R.T) targets to help translate the CAP's objectives into concrete actions, and facilitate monitoring and evaluation.

A key message across workshops is that **the targets set by the EU Green Deal and Farm to Fork strategy need to be reflected in the CAP, even though they are not legally binding**. All workshops highlighted that the EU's Green Deal and associated strategies for climate, soil, biodiversity and sustainability, offer clear and concrete targets with which the CAP can – and should – align. Key commitments that should be reflected in target-setting include those related to the Convention for Biological Diversity (CBD, and with it, the Nature Directives), the UNFCCC, the Ramsar convention (and with it, the Water Framework Directive) and the UN's Sustainable Development Goals (SDGs)¹⁰.

Given the ongoing loss of biodiversity, and failure of the CAP to halt it, the **overarching target should be to halt and reverse farmland biodiversity declines**. To this end, targets with respect to biodiversity must be concrete, clearly formulated and quantitative (or at least quantifiable), while suiting the baseline conditions per MS. The targets need to go beyond those of the current (2014-2020) CAP objectives given the failure of the latter to halt biodiversity losses.

Clear targets are necessary for the extent and management of landscape features and semi-natural areas, as the core elements for the performance of the Green Architecture as a whole. **Targets should be differentiated according to national and regional characteristics of agricultural systems and landscapes**. Interim targets are needed, which should be accompanied by close monitoring to ensure adaptive policy management and adaptation of Eco-schemes.

With respect to the targets of the different Green Architecture elements, Strategic Plans should be differentiated between MSs and within them in order to explain how they support different objectives, habitats and farming practices; in all cases, they should focus on supporting effective measures (with evidence of impact) and avoid supporting unnecessary actions. One key issue in the landscape context is how to differentiate lowlands from highlands.

⁹ There are various interpretations of the term S.M.A.R.T. For instance, "A" may also stand for "Ambitious"

¹⁰ As also reflected in the EP's amendment proposals to Articles 10 and 58, albeit missing some SDGs.

4.2 How to assess the level of ambition in Strategic Plans

Beyond the requirement to set ambitious targets, inputs from the workshops build towards the following seven criteria as a means to assess ambition in MSs' Strategic Plans, and plausibility of meeting the targets:

1) Acknowledging the problems: MSs cannot resolve challenges without acknowledging them. This needs to be reflected in the SWOT analysis (analysis of Strengths, Weaknesses, Opportunities and Threats) and accompanied by proposals for concrete solutions.

2) clear intervention logics accompanied by a breadth of proposed actions to address challenges: A clear link must be established between the relevant challenges and how the proposed actions address them. An ambitious plan requires demonstrating a clear link between objectives, breadth of measures taken to achieve them, and anticipated outcomes – based on scientific evidence.

3) Adherence to key operating principles: Two critical principles are no dilution and no backsliding. The former relates to the risk of implementing measures that are unnecessary because they correspond to practices that are implemented anyway regardless of CAP support, or practices with little or no environmental benefit. The no backsliding principle requires MSs to provide robust information, which should include methods for measuring and monitoring, to demonstrate progress.

4) Ambition reflected in budget: The level of ambition within environmental measures should be related to the ring-fenced CAP budget shares.

5) Enhanced investments into knowledge and administration: Acknowledging the success of AKIS and EIP-AGRI in promoting innovation and the expansion of best practices, concrete plans should be laid out by MSs on how to further expand and improve knowledge transfer, advisory services, technical support and monitoring as means to assure quality criterion of the CAP's implementation.

6) Selecting suitable indicators to ensure accountability: MSs should justify their selection of indicators and their monitoring procedures, demonstrating transparency and accountability (see also section 5).

7) Strategic Plans sufficiently detailed to address local needs and demonstrate adaptive management capacities: Detailed plans are critical for effective implementation. In their Strategic Plans, MSs should place particular focus on a) avoiding a selection bias toward simpler but ineffective measures, b) adjusting measures to local conditions, and c) clarifying how adaptive management will be employed, to ensure rapid learning and response where improvements are needed.

4.3 Setting a proper baseline for measuring ambition and progress toward targets

To halt the decline of agricultural related biodiversity in the EU, both the area of biodiversity-friendly farming practices (quantity) and the quality of these areas need to increase. Therefore, the Green Architecture needs to strike a balance between light-green, spatially-broad options that can reach low to medium impact, and dark-green, targeted measures with high impact. Both MSs (at the stage of developing their Strategic Plans) and the Commission (at evaluation and approval stages) should demonstrate how this balance is achieved, to avoid repeating the failures of Greening.

When setting targets for biodiversity and landscapes (landscape features, semi-natural areas and land management), it is imperative to set proper baselines. The choice of inadequate baselines can hamper biodiversity protection and restoration efforts even if objectives and targets seem to reflect ambition.

In that perspective, workshop participants provided a broad range of proposals on how baselines should be defined, referring usually to the last year before the start of the new CAP, or to the performance of the current CAP (MFF period 2014-2020). For biodiversity, it is recommended to refer to the last available report(s), in particular Article 17 of the Habitats Directive that requires MSs to report on the status and trend of habitats and species of conservation interest. In the same way, recent mapping efforts should be used to define baselines for landscape features and other relevant habitats.

Additional implementation challenges raised by workshop participants include:

1) Challenges for small farms: Small farms face specific challenges for the implementation of environmental measures. Administration and controls can be problematic due to the small scale, so the proportion of administrative costs might be higher for small farms than for large ones. Reducing administrative burdens and barriers, as well as digressivity, capping and redistributive payments of first Pillar's direct payments, have been raised by some workshop participants as means that can support small farms. This topic, however, was not discussed comprehensively in workshops.

2) Administrative burdens can be reduced by allowing whole-farm applications: Implementation and planning at the whole farm level could generate a more coherent picture of farm operations and reduce administrative burdens on farmers. For instance, auditing schemes ("Farm sustainability audit") could improve data collection and control, and allow farmers to submit one single application for their farm as a means to simplify administrative burdens on farmers.

3) Achieving a proper balance between incentives and sanctions: The design of incentives and sanctions remains challenging. Sanctions are necessary to secure effectiveness of measures. However, the higher the requirements and potential sanctions, the lower the willingness of farmers

to participate. Neither a highly targeted and specific measure with zero participants nor a measure with low requirements and no targeting but high participation will achieve an environmental impact. MSs would therefore need to find the right balance between sanctions and incentives.

4) Insufficient coordination between agricultural and environmental management/ministries:

The shared objectives between the Green Architecture instruments and those of the Birds and Habitats Directives (as well as other environmental directives) necessitate better collaboration, communication and cooperation between the agricultural and environmental authorities.

5) Land-ownership as a barrier for the implementation: Land-ownership might be a barrier for the implementation of environmental measures for many farmers and land-users who are not the land owners. In this sense, annual contracts under Eco-schemes offer an opportunity to promote some measures that can be beneficial even if implemented for one year.

6) Seasonal mismatches between administration - and on-farm operation: Given their annual nature, Eco-schemes pose logistical challenges relating to mismatches between farming operations and administrative timing. A menu-based approach may reduce this barrier by removing uncertainties regarding eligible measures. Closer communication with administrations and/or Farm Advisory Systems (FAS) may provide another solution.

4.4 EC support for Member States in target-setting and implementation

The Commission should closely monitor performance and progress toward stated objectives.

Experts recommended that the Commission should support and accompany MSs in target setting, evaluation of Strategic Plans and setting their implementation on the right path; assist and guide MSs in the development of targets; and offer technical support and funding toward monitoring and evaluation throughout the implementation period. In that perspective, workshops highlighted the central role of the continuous interaction between the Commission and the MSs.

Incentives and sanctions for MSs need to be clarified. MSs should be incentivised when performing well – but sanctions should be clarified. Specifically, the focus of existing sanctions is on the accuracy of meeting budgetary goals, but not on compliance with environmental standards or the likelihood of reaching environmental impacts. While it is important to ensure that MSs are not sanctioned for setting (over-)ambitious targets, sanctions to MSs need to be considered if actions are judged by the EC to be insufficient to meet their objectives.

Examples of **incentives for MSs showing ambition** could be to provide support to cover administrative burdens of ambitious implementation plans, to allow more flexible use of budgets or to ease reporting requirements.

4.5 Preparation for CAP implementation by MSs

Several workshop participants mentioned that preparation for the upcoming CAP will be essential, especially due to the novelty of Eco-schemes, the lack of sufficient mapping efforts to establish a

proper baseline, and an urgent need to expand monitoring efforts. Particularly, the implementation of ambitious Eco-schemes will require investments in expanding administrative capacities.

The two-year transition period, as well as the COVID-19 recovery funds, can be an opportunity to do so, but should be used wisely and effectively. This requires a targeted use of available (short term) funds toward:

- Non-productive investments.
- Habitat restoration.
- Mapping.
- Administrative updates to support Eco-schemes, including training of FFAS).

The transition time during the years 2021-2022 allows such adjustments, but needs to be effectively used in preparation for the CAP's implementation starting 2023.

To improve knowledge on biodiversity and policy effects, MSs should **close existing mapping and monitoring gaps**. There is in particular an urgent need to extend biodiversity monitoring in some MSs, in terms of spatial extent and/or taxonomic group(s) monitored, and in some MSs both.

In terms of **mapping**, key features to map include: on-farm landscape features (terraces, stone walls, hedges, trees, ponds etc.), the number and the area of patches of (semi-natural) habitats and non-production parcels (including woody vegetation and land laid fallow where possible). Considering the importance of landscape connectivity and heterogeneity, it is important to map field/parcel sizes, assess crop diversity and structural complexity, and assess connectivity among (semi-natural) habitats in and around farmlands.

Mapping of both habitat extent and quality is achievable, but remains a challenge that must be resolved. It is also important to develop the capacity to monitor soil health, and processes that improve or degrade it.

In terms of **biodiversity monitoring**, workshop participants emphasized that systematic and comprehensive *in situ* biodiversity monitoring in agricultural landscapes is essential for assessing whether the CAP is on track for achieving biodiversity protection and restoration. This requires filling a range of gaps in biodiversity monitoring, especially to achieve sufficient detail to allow the evaluation of the impacts of (all) CAP instruments. Furthermore, monitoring design needs to be explicitly linked to targets. Workshop participants systematically highlighted the need of sufficient information and expertise to accomplish a proper design and implementation of such monitoring efforts in terms of organisms, methods and spatial distribution once targets are explicit.

Information on water use and chemical input needs to improve: Reducing pressure on ecosystems through water-use, as well as meeting Green Deal target of reducing pesticide use and

their impacts by 50 %, cannot be met without sufficient monitoring. Yet water use and chemical input data are missing at the relevant scales. This forms a major barrier not only to the implementation of the biodiversity strategy, but also for reducing negative impacts on soil, water and public health.

The EU's Land Parcel Identification System (LPIS) needs to be improved: To cover all habitats and land cover within farmland, not only eligible land needs to be mapped. Otherwise, data flow is incomplete and depends on specific interests regarding CAP funding – which may differ between farmers, regions and MSs according to needs and regulations (see also section 5.2).

5 Monitoring and reporting by Member States

By comparing actual performance with intended objectives and targets, monitoring (the process of data collection) provides the information with which to evaluate policy performance. When objectives are being attained, monitoring underpins the provision of positive feedback and reassurance that financial investments are effective and represent value-for-money. If objectives are not being attained, then timely monitoring and evaluation is crucial to identify this, and to rapidly implement changes to improve performance. Rapid learning and adaptive management requires effective monitoring and evaluation, and is particularly important for new initiatives and instruments, such as, in the case of this CAP reform, Eco-schemes. Workshops highlighted the insufficiency of monitoring information on environmental performance of the CAP in general, and with respect to biodiversity in particular. Monitoring efforts in many MSs need to urgently expand – to fill taxonomic, thematic and geographic gaps. Even in countries with well-established monitoring schemes, farmland monitoring (especially on arable land) lags behind. **There are well-established methodologies for data collection, analysis and sharing among scientific disciplines that could be used to implement improved monitoring in CAP.** In addition, the layout of the CAP's output and result indicators do not allow converting the amount of financial resources that is spent into an indicator, for informing policymakers and the public on the ambition level of MSs or the likely environmental impact. With a proportion of CAP expenditure, **effective monitoring is a relatively small investment that could significantly improve CAP's cost efficiency.**

5.1 Reporting by Member States

Broad **consensus emerged across workshops that yearly monitoring and reporting is essential** – especially if the CAP post-2020 is to employ a result-oriented delivery model allowing more flexibility to MSs regarding how they meet the stated objectives. This implementation model requires a significant expansion and improvement of the system for monitoring, reporting and performance evaluation, both at the EU and MSs' level.

Yearly monitoring, rapid evaluation and effective response is needed for the CAP as a whole rather than merely for the Green Architecture. However, it is particularly essential for Eco-schemes as a novel instrument, which will undoubtedly require **adaptive policy management** and rapid adjustments, to address implementation weaknesses and inefficiencies that are likely to occur, especially in the first years.

Further, it is **advisable to ensure that monitoring efforts are proportional to the investments made in a given instrument**, or proportionally to the breadth of anticipated and desired impacts. Accordingly, monitoring efforts need to be significantly expanded with respect to the enhanced conditionality requirements and Direct Payments, to achieve sufficient monitoring of the impacts of the CAP as a whole.

5.2 Transparency, accountability and data accessibility

Biodiversity monitoring is quite well advanced, also in terms of available assessment methods and tools. A key challenge is, however, in relating the impacts on biodiversity directly to the various CAP instruments (including beyond the Green Architecture measures). Here, **inaccessibility of CAP implementation data forms the main barrier**. For instance, Integrated Administration and Control System (IACS) data owned by MSs are poorly standardized, and sharing policies differ between MSs and even regions (e.g. Federal States).

Workshops highlighted that key barriers to overcome for data analyses are consequently inclusion of scientists, transparency and data accessibility/sharing, harmonization of standards for reporting, as well as increased long-term funding to conduct such analyses – not just as part of projects, but as a long-term investment in infrastructure and human resources to provide support to policymakers.

Standardized data reporting and availability as preconditions for transparency: Ensuring that CAP spending is transparent requires MSs to deposit implementation data in a standardized way, and make it available for public (including scientific) scrutiny. Effective evaluation of Strategic Plans, and monitoring of implementation, would strongly benefit from external evaluation (auditing) by an independent body.

Inclusion of scientists and other experts in monitoring, analysis and performance evaluation: Scientists should be seen as partners in the process of performance evaluation, to ensure effective use of knowledge, (cost-)efficient use of funding, as well as improved capacities to employ adaptive management. For example, evaluating each of the CAP's instruments could be designed in a more systematic form to achieve cost-efficiency of investments. Similarly, to implement the Complementary Result Indicator for biodiversity (see Section 6 below), it will be essential to establish a data collection system and an assessment methodology. This could be done jointly with scientists. Funding is needed to allow scientific support for monitoring, analyses and performance evaluation. Agreements with research organizations and/or monitoring centres should be established to aid in data gathering, harmonization and analyses. Dependency on short-term and unpredictable project-based funding should be reduced by long-term funding for such efforts.

Defining and completing common reporting standards across EU MSs: Major inconsistencies remain with respect to reporting needs by MSs regarding environmental performance. Considering that only CAP Result indicators need to be reported yearly (and even this is still under negotiation), workshop participants supported the European Parliament's proposal to insert a new Result Indicator R29b *"Fostering high nature value farming: share of agricultural area under management commitments to generate high nature value"*.

6 Selection and best use of indicators

Key criteria for good indicators are that they are feasible to collect and analyse in multiple MSs, they are supported by a running monitoring system and available data, they rely on existing analysis methods, and the outcomes can be clearly used to interlink CAP interventions with observable biodiversity impacts. Participants in the workshops provided a breadth of recommendations on the selection of indicators for the status of biodiversity and ecosystem services, particularly focusing on a) Impact Indicator I.19: (*“Enhanced biodiversity protection: Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends”*); b) Impact Indicator I.20: (*“Enhanced provision of ecosystem services: share of UAA covered with landscape features”*); and c) Complementary Result Indicator FA 4A (*“Restoring, preserving and enhancing biodiversity, including in NATURA 2000 areas, and in areas facing natural or other specific constraints, and high nature value farming, as well as the state of European landscapes”*¹¹).

It was proposed by the workshop participants that the Complementary Result Indicator **FA 4A** should be divided into two sub-indicators:

- One sub-indicator (or set of sub-indicators) based on monitoring of specified **taxonomic groups (animals and plants)**, to inform directly on the state of biodiversity. It should focus on the local level (parcel, field or farm) and reflect on-farm structure and management.
- A second sub-indicator should focus on **landscape parameters (habitat extent and quality)**, as well-established proxies for the (anticipated) impacts on biodiversity, especially at the landscape scale.

In terms of feasible **biodiversity indicators**, examples of taxonomic groups that are broadly monitored are:

- **Birds:** Monitored across the EU, and the Farmland Bird Index is readily available for more detailed use.
- **Butterflies:** Butterfly Monitoring Schemes (BMSs) running in most MSs and efforts are made for expansion to all MSs. The European Grassland Butterfly Indicator is well established.
- **Flowering plants:** Methods are well established, and the existence and abundance of specific species (e.g., of the Habitats Directive) is feasible to monitor
- **Pollinators:** Included in the EU Biodiversity Strategy to 2030. The status of a key pollinator species in agricultural lands can be established based on the “EU Pollinator Monitoring Scheme”.
- The **populations of endangered and critically endangered species** (Article 17) is monitored and reported by MSs.

¹¹ <https://bit.ly/3o52RZm>

- **Alien species.**

Examples of indicators for habitats and landscapes that are feasible to install:

- The extent and distribution of **HNV farmland**. This is an important indicator that is feasible to harmonize and apply. While listed as an Impact Indicator in the current CAP (2014-2020), and likely to be excluded in the post-2020 CAP, several workshops noted that confusion about its definition can be readily resolved and that methods can be easily harmonized, to include it as a Context Result Indicator in the future CAP. Key barriers are rather inaccessibility of IACS data in some MSs, with which to conduct analyses based on well-established protocols. This needs to be better regulated.
- The **proportion of semi-natural vegetation on farms**. This can be evaluated, e.g. through its total coverage, the number and frequency of landscape elements, or coverage of trees and scrubs in pastures, and is a good proxy for a biodiversity relevant assessment.
- Other landscape features and landscape characteristics that were proposed by workshop participants were the extent of specific, biodiversity-relevant habitats; habitat quality (e.g. of grasslands); cover of trees and shrubs in pastures; use and rest time in grazed lands (at the farm scale); landscape heterogeneity, crop diversity and field size(s); connectivity index; use of agrochemicals / input reduction; water consumption; bare ground; and distance to nature (hemeroby).

6.1 Technical recommendations

Remote sensing can reduce the required efforts for *in-situ* monitoring but cannot replace it fully. It is further advisable not to rely solely on remote-sensing / GIS-based assessments for reporting. Remote sensing methods are advanced enough for effective monitoring of landscape features and semi-natural areas (e.g. using Copernicus data), but challenges remain regarding linear or small features, as well as grassland mapping and habitat quality. *In situ* validation and expanded monitoring over time are highly essential. Practical examples were provided by workshop participants how this could be done on the ground.

Adaptations are needed for LPIS and how it is used: The EU's LPIS is a key instrument for monitoring farm structure, but it must be improved to allow (and include) full mapping of farmland with regards to land ownership instead of fragmented mapping for funded-purposes only. Mapping must include both eligible and ineligible structures and habitats, partly because this may help overcoming current gaps where the prevalence of such structures generates disadvantages for farmers. Overcoming such disadvantages, to ensure the CAP supports the EU's GBI, can only be achieved through a **coherent mapping and monitoring system. Facilitating the availability of LPIS data for research is highly important as well.**

Aggregated (“Composite”) indicators: There are several relevant taxonomic groups or landscape characteristics that can (and should) be monitored, as well as several scales of relevance; and considering the variability among MSs in terms of running monitoring schemes (including capacities and experience to support data collection and analysis), it is recommended to use aggregated indicators, i.e. a combination of several sub-indicators that complement each other to achieve a coherent picture, even if the exact set of such sub-indicators may somewhat differ among MSs.

6.2 Options for Complementary Result Indicators

The way in which Complementary Result Indicators are formulated will affect their final use, as well as their relevance. Proposals were therefore made on specific **formulations of how biodiversity could be linked with the CAP and its instruments**.

For example, for a taxonomic Complementary Result Indicator, possible formulations can be:

“Increase in the abundance and richness of indicator species (e.g. butterflies, flowering plants and/or other monitored species under the Habitats Directives’ Article 17) in farmland areas under CAP, including Natura 2000 sites and their vicinity, in permanent grasslands and in high nature value farmlands.”, or “An increase in butterflies/pollinators’ abundance and the richness of grassland indicator species.”

For a landscape-level indicator, a possible formulation can be:

“An increase in extent and improvement in quality of habitats in farmland areas under the CAP (especially under AECM, Eco-schemes and Areas of Nature Constraints) including High Nature Value farmland, permanent grasslands, as defined by prevalence of landscape features, extent of well-managed grasslands, use of pesticides and herbicides”.

Workshop participants proposed to give MSs several options to select from, but require MSs to select at least one taxonomic indicator and at least one landscape-level indicator.

MSs should select indicators that are feasible, i.e. where monitoring schemes (and data) exist. The selection of bio-indicators can, and should, go beyond the species and habitats listed in the Birds and Habitats Directives. This may be particularly beneficial when taking a result-based approach, to reduce dependence on overly specific measures of success.

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thuenen-working-paper@thuenen.de
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