

The Common Agricultural Policy post-2020: How can science help make it work for biodiversity?

Summary for Policymakers

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Background and Questions

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

As the CAP post-2020 is still under negotiation, various issues are remaining open about its final design and potential implementation. Accordingly, and following a series of meetings with members of the 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 the Member States (MSs). We thus called scientists to conduct workshops across as many MSs as possible, in order to harvest such recommendations.

Our workshops focused on 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 targets?
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 Member States?

Scientists were called 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;
- b) **implementation:** What should/must be included in the strategic plans and anticipated/monitored by the EU, and
- 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?

In response to our calls, **workshops were conducted in 13 Member States** (MSs) between October and December 2020, with over 250 scientists participants. An online survey, complementing these workshops, yielded additional 66 responses with inputs regarding the EU's initial proposal of flagship Eco-schemes, thus reaching **over 300 scientists from 22 MSs providing inputs to this report (Figure 1)**. In synthesising and summarising them, we retained the original diversity of opinions, allowing consensus to emerge.

The following summary delivers key issues and recommendations that emerge from these inputs, focusing on those that are of relevance at the EU level and should be of highest urgency to address. A full synthesis report is to be published soon.

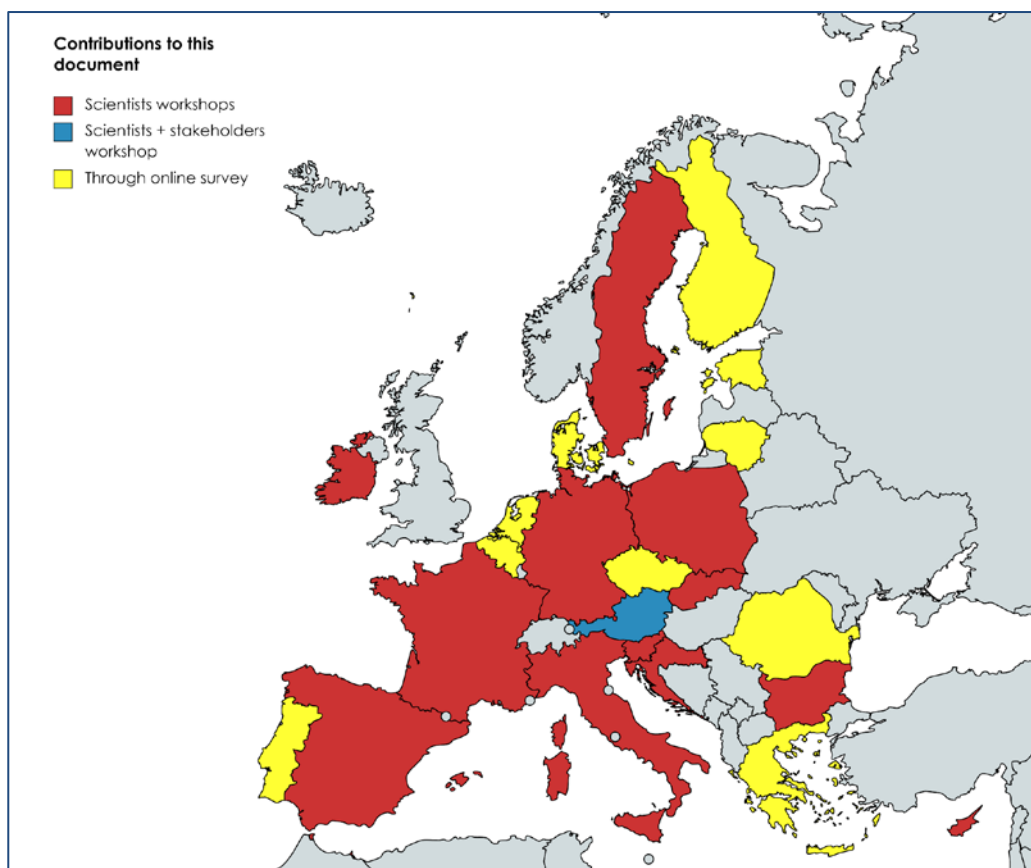


Figure 1: Countries contributing through scientists' workshops (red), scientists plus stakeholder workshop (blue) and additional inputs through individual contributing through an online survey (yellow). Map produced using MapChart (<https://mapchart.net/europe.html>)

Key principles for the success of the Green Architecture

The following three principles represent a summary of consistent key messages from the scientists' responses.

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

There is **broad consensus** across all workshops that semi-natural landscape features and extensively used permanent grasslands should be at the centre of the Green Architecture. They can, in fact, serve as the baseline for the entire Green Architecture such that conditionality, Eco-schemes and Agri-Environment-Climate Measures (AECM) add up and complement each other with respect to these elements.

The current coverage of landscape features and semi-natural areas differs dramatically among Member States, regions and farms, with some having much more than 10% cover, some much less. Thus, a consistent outcome from the workshops was that a **no-backsliding principle** must be applied to protect and reward the effective management of the features that are still in place, especially High Nature Value (HNV) regions and farming systems; and to incentivise **restoration efforts** where either coverage or quality is low.

Diversity and multifunctionality must 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 the landscape and farm levels.

At the landscape and regional levels:

- Prioritise focal areas, especially HNV farming regions, with high diversity that needs to be preserved;
- Improve spatial planning and targeting of measures, and/or the use of Auction systems
- **Support collective implementation** models.

At the farm level,

- Use a **point-based system to reward for increased delivery of public goods**, prioritising measures that address multiple environmental objective, such as permanent grasslands, management of HNV sites, and;
- **Enhance funding for bundles of joint options** (i.e. several complementary measures in the same field, farm or region) that can enhance overall success.

Workshops highlighted the importance of low-input pasture-based livestock systems as one of the only land-use forms that generates multiple benefits, i.e. for biodiversity, climate, soil etc. Such grazing systems comprise a prominent share of High-Nature Value farmland, yet they perform much below average in terms of economic indicators and are disappearing or near-extinction in many parts of the 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.

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 key to Green Architecture's success, and its contribution to the protection and restoration of Green and Blue Infrastructure in the EU. Spatial targeting should apply to Eco-schemes, AECMs 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 local good practices. It is essential particularly for maintaining resources for biodiversity and production-relevant ecosystem services, as well as restoring connectivity between natural habitats and Natura 2000 sites.

Q1: How can the different Green Architecture elements optimally complement each other?

Conditionality, AECM and Eco-schemes must be **coherent and complementary to each other**, with a clear separation in terms of objectives and targets, **a consistent intervention logic**, and for AECM and Eco-schemes, comparable payment levels to ensure that they do not compete with each other.

The three key elements of the Green Architecture should act in three tier levels: Conditionality sets the minimum requirements (e.g. 5% non-productive land), Eco-schemes serve for expansion and restoration (toward 10%), and AECM, with more targeted and longer term contracts, provides the means to extend the area beyond 10%, and to improve habitat quality. Several workshops indicated 5% as the very minimum share of land devoted to these features under baseline conditionality, applied on the entire Utilised Agricultural Area (UAA) with no exceptions.

Eco-schemes are an evolving instrument that will likely be based on 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. AECMs are a well-established instrument to address environmental goals, with wealth of knowledge and experience regarding the conditions for their success. AECMs 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 some inter-annual flexibility. Given stagnant or reducing budgets and ongoing low uptake by Member States and farmers, AECMs should receive highest priority in budgeting and efforts. They should be targeted especially for protected areas, High Nature Value farmlands, wetlands, and for restoration aims. Eco-schemes can effectively supplement AECMs in volatile business environments (e.g., due to short-term tenure contracts) or as entry points before participating in (longer term) AECMs. In addition, if Eco-schemes are the only element of the Green Architecture associated with an income component, this component should not be restricted to the promotion of non-productive areas only. A targeted and conditionalised income support for low-input grazing livestock systems can help address a key weakness of the CAP relating to farmland biodiversity.

Immediate recommendations on Enhanced conditionality

GAEC 2: The Commission's proposal to "protect" wetlands is essential to retain. Due to drainage and damage of wetlands, just 3% of the EU's agricultural land contributes 25% of the EU's agricultural greenhouse gas emissions. GAEC 2 should cover all carbon-rich soils, including fens, peatlands and wet meadows, without exceptions or limitations (e.g. to Natura 2000 sites). In the long term, payments in support of agriculture on drained organic soils should be phased out.

GAEC 9: Must secure landscape features and non-productive land, with a threshold of at least 5% of farm area, applied to all farmland (i.e., not limited to just arable land). To avoid replicating the failures of Greening, 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, and should therefore belong in **GAECs 7-8**.

GAEC 10: The ban on converting permanent grassland in Natura 2000 should be expanded also beyond them, with particular emphasis on Ecologically Sensitive Permanent Grasslands (ESPG).

- **Budgets and priorities for AECMs and Eco-schemes:**

A separation between AECM and Eco-scheme investments may help avoid competition. Flexibility should be maximised for Member States to transfer budgets to AECMs, without limitations.

Unused Eco-scheme budgets should be used to secure environmental objectives, either by shifting the budgets to AECMs in Pillar 2 or reallocating funds to Eco-scheme participants to incentivise participation.

Scientists' responses noted with concern that the Green Box criteria can create obstacles to design an ambitious and efficient Green Architecture. Therefore, we advocate against the self-commitment to the Green Box criteria for measures related to Eco schemes and AECMs¹. Two alternatives are:

Option A (if Article 10 and Annex II remain as they are): Allow unlimited transfer of payments for Eco-scheme to Pillar 2 for AECMs.

Option B (if Eco-Schemes under Art. 28 (6) are exempted from Green Box criteria): Use the funds either to aid a points-based system or to specifically promote HNV-farming systems and methods. Care should be taken that the income component is positively correlated with the level of environmental ambition.

Knowledge-support and -exchange systems are key to the GA's success

MSs should demonstrate increased ambition, including non-productive investments, with regards to knowledge-support systems including AKIS, ecological training for Farm Advisory Services, and EIP projects. Ecological training is needed for consultants, advisors, administrators and farmers. This training needs to be expanded and better funded, to enhance awareness, acceptance, uptake and good implementation of effective measures, as well as to generate ownership among farmers for the provided public goods. Farmer involvement is important, especially for horizontal exchange and rapid learning.

Non-productive Investments are important for restoration but other investments generate risks

Workshop participants highlighted the potential importance of non-productive investments in water retention, rewetting, restoration of landscape features and afforestation, as well as for supporting a transition to low-input, extensive grazing systems. Nevertheless, other investment measures are not necessarily conditionalised by 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 uses (e.g. through investments in new sheds for dairy cattle in peatland areas). Thus, agricultural investment supports should be conditioned to the respect of climatic and environmental objectives. Moreover, Eco-schemes should not replace payments that can be made through (production-oriented) investments, such as some forms of precision farming.

Payments for Areas of Nature Constraints (ANCs) cannot be regarded as environmental instruments without a revision

The current interpretation of the Green-Box criteria prohibits the option to link ANC payments to management obligations. If ANC are to be listed as part of the Green Architecture and counted to the budget goal of 30% (for agri-environmental payments in

¹ Article 10 of the draft Strategic Plan regulation in conjunction with Annex II

Pillar 2), as proposed by the Council and Parliament, then an explicit and tight link to environmental outcomes is required. Without such a revision, ANC may become a risk rather than a benefit to the Green Architecture.

Coupled payments and forestry instruments threaten the success of the GA

Investments, forestry, and coupled payments contribute to intensive and intensifying farming practices, thus conflicting with biodiversity protection efforts. They need to be carefully revised for their impacts, to achieve their potential to be used as ambitious instruments when tightly linked to clear environmental objectives. Under these circumstances, they can help maintain low-intensity grazing, support afforestation (when well-designed to restore forests), or protect wood pastures. However, payments coupled to production are a very crude instrument which, so far, have had considerable negative environmental consequences. **Coupled payments should therefore be tied to extensive agriculture and tightly linked to environmental outputs, or otherwise phased out.**

Eligibility issues must be resolved at the earliest possible point

Many farmland landscape features and semi-natural habitats, some of which are listed under the Habitats' Directive, are not eligible for CAP support. This needs to be addressed as it reduces payments for the area owned or managed by farmers, thereby acting as a financial disincentive for habitat protection. This ineligibility also generates conflicts between the CAP and the Nature Directives (as well as inconsistencies between the management requirements in versus outside Natura 2000 areas) - affecting Conditionality, Eco-schemes, and AEEM. **Generally, eligible areas for CAP support should include all semi-natural vegetation features on farms (farmed and unfarmed).**

Key recommendations to reduce risks and barriers for the GA's success:

- **Ensure that non-environmental objectives (and budgets) do not penetrate into environmental instruments.** This is relevant for both Eco-schemes and ANCs: income- and competitiveness-benefits should be added values but should not replace coherence with biodiversity objectives that must be met. Where multiple benefits emerge, support-level should be enhanced.
- **Ensure all GA instruments, and options therein, are tightly linked to anticipated, specific environmental outcomes based on evidence of effectiveness.**
- Greater coherence is essential across policy instruments. MSs should assess, and demonstrate, how to reduce the negative impacts of instruments with other (conflicting) objectives that can partially or completely counteract environmental objectives, such as farm investments for modernisation, forestry, and coupled payments.
- Avoid excessive weighting and conversion factors, as these can dilute impacts.
- Expand advisory support and budgets allocated for ecological training.
- While double funding should be avoided (i.e. financing of the same or similar activities between the two schemes), farmers should be permitted to top up payments from different instruments into the same parcels if these fulfil multiple objectives (using, e.g., a point-based approach)
- Invest in improved acceptance of GA measures as these are often falsely perceived as limiting food security or self-sufficiency. Evidence shows that landscape features and biodiversity provide ecosystem services that assist production and provide long-term resilience that is particularly essential under the climate crisis. Moreover, where income losses occur, it is the role of the CAP to compensate for them.
- Demonstrate how GA can improve the support for small farms, incentivise greater participation in environmentally-friendly farming, and reduce administrative burdens on such farms especially in remote rural areas and in HNV regions.

Q2: What can be the role(s) of Eco-schemes in the Green Architecture, and accordingly, how could they best be designed and implemented?

As an evolving instrument, it is not yet clear if Eco-schemes can become a game-changer in transforming the CAP into a success for the environment. To achieve this, one must address structural limitations such as their annual nature, and avoid the risks of diluting them at implementation level as occurred with Greening. Here, we deliver key design principles, and recommendations for their content, remuneration and administration.

Design principles:

Eco-schemes should...

- be **clearly linked to biodiversity and climate objectives, and demonstrate an improvement against the current performance under Greening**. Priority for other objectives, or retention of ineffective measures, may pose a risk to their success. Multifunctionality, i.e. measures that support more than one objective, should be central to their design, selection and remuneration.
- be **coherent and consistent** with other components of the Green Architecture. They must go **beyond conditionality** with a **clear differentiation** among the two, and complement AECM without competing with them². Given their annual nature, Eco-schemes can become door openers for farmers to engage in AECM but should not lead to reduced-uptake of the latter.
- aim toward broad-scale implementation but aim to balance, e.g. through appropriate remuneration, for the trade-off between **scale and quality**. Eco-schemes may differentiate from Eco-schemes by focusing on global public goods such as climate mitigation, biodiversity preservation and restoration, animal welfare, or reduced GHG emissions through wetland-restoration and grassland extensification.
- **Regionally differentiated** in terms of measures and payments, to address regional challenges and to improve efficiency of the payments within Eco-Schemes.

Eco-schemes should not...

- have the effect of installing newly created habitats on existing habitats with high nature value, resulting in a net loss of biodiversity.

General, immediate recommendations for Eco-schemes:

“Competitiveness” and income objectives should not be included in Eco-schemes as this poses a critical risk to their performance. The first objective needs to be biodiversity, followed by other environmental objectives - particularly climate - as well as animal welfare. Eco-scheme options that lack a palpable benefit to biodiversity should not be included.

² As stated in COMM-proposal Article 28 (5), Eco-schemes should “(a) go beyond the relevant statutory management requirements and standards of good agricultural and environmental condition.” and “(d) are different from commitments in respect of which payments are granted under Article 65.”

All types of land-users should be eligible to apply for Eco-schemes, to ensure level-playing field for the various farmers and land-users engaged in farmland-management. Notably, not all small farmers are “genuine farmers”, and farmer-cooperatives and environmental associations for landscape maintenance may engage in the same management and should deserve equal funding conditions. Placing barriers to participation in Eco-schemes may not only generate inequity among land-users but also potentially counteract the objectives of Eco-schemes.

Remuneration and administration

- Must be simple - for administrators to handle and for farmers to participate in - and financially attractive to make them effective. For payments that are coupled to area, the environmental impact should scale well with the area. Notably, this excludes animal welfare and investment options: In animal welfare the relevant subject is the animal, while area is only a very rough proxy for the number of animals. For investments, there is frequently no relation with area, environmental impact and the investment costs.
- **Remuneration should increase with the benefits delivered.** This can be done in various ways, such as combining measures and instruments (e.g. topping up Eco-schemes and AECM), or through the use of a point-based system. The time component is important as well, e.g. for first-year investments (habitat restoration) or as additional bonuses for continuing a beneficial farm management over a longer time.
- **A point-based system** could help prioritise valuable measures (or bundles of measures) that offer multiple benefits, boosting support for spatially-designed operations, and improve acceptance by farmers. It is particularly beneficial for rewarding the delivery of services that are not strongly related to the size of the area.

Q2.1: List-based approach (menu of options): pros, cons & risks

Pros:

- **Simplicity** makes it comprehensive for farmers, easy for MSs to implement, and hence attractive for MSs and farmers.
- Allows linking to knowledge, evidence, knowledge-support and accordingly control for potential performance.
- The possibility to offer a long list of options is both a strength and a weakness: Among the options, some may be effective for biodiversity; but these can easily be diluted by ineffective (but attractive) options - which, as demonstrated in Greening, can dominate Eco-schemes since participants tend to choose the most financially rewarding options, which may not be the most environmentally effective.

Cons:

- **Over-simplicity** limits adaptability and restricts the application of more complex, ambitious options where desired.
- **Design failures may be much more detrimental.**
- A menu-based approach, especially for measures that are voluntarily taken up, have limited possibilities for regionalization since farmers may pick options which may not suit their regional settings in terms of environmental challenges and goals, landscape structure and

connectivity, technological conditions, etc. Moreover, appropriateness of a measure depends on both the effect of the measure and its implementation costs. The latter, however, vary significantly across Europe. A list-based approach may miss the possibility for much needed cost-benefit adaptations.

- A menu approach may limit the application of a result-based orientation. Some noted, however, that a result-based approach is implementable also under a menu-based option.

Risks:

- **Eco-schemes may have negative effects** if ineffective measures dominate, or high-quality habitats are replaced by low quality ones. Notably, the benefits of retaining existing habitats normally exceed those of creating new ones. A list-based approach, however, may not be able to accommodate the need to secure continuity of habitats and practices.

Immediate Recommendations if a list-based approach is adopted:

Both MSs (at Strategic Plan development) and the Commission (at evaluation and approval) should demonstrate a **balance between light-green and spatially broad options versus dark-green and targeted measures with high impact**, to avoid replicating the failures of Greening. Inputs from the workshops varied on the question how this can be achieved, indicating a range of possible solutions for Member States. Examples are to

- **balance between simple and complex measures** through low versus high payment levels;
- **exclude too simple measures** with only little requirements beyond GAEC (see below);
- **offer bonuses** for target areas (spatial priorities) and higher points for continuing good practices;
- **avoid over-weighting**, which may lead to broad-scale implementation of ineffective options, or limited impact of effective options;
- **align payment levels with AECMs** to avoid competition, or allow payments by both where additional services are provided;
- **accompany Eco-schemes by strong AKIS support** to aid uptake choice and implementation;
- **adapt Eco-schemes yearly** according to response levels and effectiveness.

Q2.2: What Eco-scheme measures should be included or excluded, if a menu-based approach is taken?

Principles for inclusion or exclusion of Eco-scheme options:

Include evidence-based options that are supported by scientific literature for their effectiveness for biodiversity. Another inclusion criterion should be the continuation of existing, effective agri-environmental interventions.

Selected Eco-scheme options should be able to deliver environmental effects starting in the first year of implementation.

Exclude options that do not have direct benefits to biodiversity, and particularly those that were shown to have a marginal or no benefit and can consequently dilute Eco-schemes.

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

- Protection and restoration of non-productive land and landscape features
- Habitat restoration e.g. when under 10% landscape features
- Restoration of habitat quality, especially in HNV farmland
- Fallow land under well-described management, especially beyond year 1 (crop rotation)
- Field margins and buffer strips, including flowering crops to support pollinators and birds (nesting, winter-feeding).

We note that both fallow and flower strips generate positive environmental impacts already in the first year, but their impact increases over time. With a smart design of the payment levels, a multiannual implementation could be promoted, e.g. if the installation costs are distributed over several years or a bonus for additional years is provided.

- Wetland restoration (rewetting)
- Measures to improve soil quality and soil microbiota, e.g. through reduced nutrients and chemical inputs (no/less hazardous chemical pesticide use)
- Animal welfare linked to permanent pasture management and biodiversity
- Organic farming (when generating biodiversity benefits)
- AKIS support
- Extensive grain production with low seeding density
- Integrated Pest Management
- Crop diversification in space (above a farm-level baseline. Winter and summer crops, or crop rotation, should not be considered as “diversification”).
- Preservation of existing low input systems (e.g. Dehesas / Montado, meadow orchard ‘Streuobstwiesen’, flower rich meadows, habitats of the Habitat Directive dependent on agriculture)
- Compensation for specific area-related environmental restrictions, such as Natura 2000 and areas under the Water Framework Directive.

Opinions on crop rotation diverged, with some experts proposing it is a beneficial practice that should be promoted, and others highlighting that the benefits are mostly for soil, and thus this practice should be included under conditionality (GAEC) rather than Eco-schemes. Experts also highlighted that it is not clear how crop rotation could be implemented under an annual payment system.

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 objectives of Eco-schemes and may even conflict with them.
- **Precision farming** without a link to clearly defined biodiversity benefits. It may dilute Eco-schemes and would be more efficiently supported by investment support.
- **Nitrogen-fixing crops, catch crops and winter catch crops:** these measures can have benefits for soil quality (including soil microbiota) if managed well. However, they generate marginal benefits for above-ground biodiversity, and have been shown to dilute Greening. They fit better in GAECs 7 and 8.
- **Organic farming** where it is used to support intensive-production options that lack palpable biodiversity benefits.
- **Intensive animal grazing** where it is used to support intensive-production options that lack specific biodiversity benefits.

Further comments on the Eco-scheme Flagships:

Workshop participants provided detailed comments on the initial EU's proposal of Eco-scheme flagships.

- **Agro-ecology:** The flagship option “agro-ecology“ includes the largest number of appropriate 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 (based on annual payments) and implementation capacities. For example, enhanced crop rotation requires monitoring of farm management at the individual field level, and it can be implemented under short-term lease contracts or in an annual form; establishment of landscape features such as hedgerows also requires a longer term commitment, in order to achieve value for money from investments and ensure continuity of the features over time. Another example is nutrient management: if the goal is to reduce nutrient levels, then a one-year restriction brings limited or no benefits. A long term commitment is needed that can be achieved either through AECM or an implementation of Eco-schemes that mimics AECMs (i.e. multiannual contracts). **A dedicated biodiversity flagship Eco-scheme is, however, missing and critically needed.** Such an option 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 not paid through GAEC. Such an option seems necessary and especially relevant for High Nature Value farming systems that might be a) reduced in nature value by agroforestry, b) already implementing agroecology practices that are at risk of being replaced by new (and less effective) practices currently proposed for Eco-schemes, or c) not a relevant target for precision farming, at least not in the envisaged flagship Eco-scheme.
 - **We recommend establishing a ‘biodiversity’ flagship.**
 - The biodiversity objective of the Agro-ecology flagship needs to be made much more explicit, elaborated, and considerably strengthened.
 - There needs to be a strong recognition of the need for multiannual commitments for effective biodiversity practices.
 - 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, b) effective as annual practices, or c) whether they are *only* effective as multiannual practices (and thus belong to AECM).
- **Agroforestry:** Although the establishment of an agroforestry system requires significant investment costs, their potential positive effects (economic and environmental) occur only 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. First, an annual payment may be needed that exceeds the investment cost - implying an extremely high payment per hectare. The non-productive investments measure in Pillar 2 is much better suited to achieve this goal. Second, it is unclear how Eco-schemes can ensure the maintenance of newly created features after 2027. Third, agroforestry that is inappropriately located could also have negative environmental effects, especially for species linked to open habitats (steppe, meadows or scrublands) or for the conservation of organic soils. For example, in the case of steppe, agroforestry (as well as carbon farming) could generate negative impacts if they introduce too much woody vegetation into the ecosystem.

- For establishing new agroforestry systems, a tight link to biodiversity, as well as to Pillar 2 AECM, is needed. Alternatively (and preferably),
- **Eco-schemes should focus on preserving existing (biodiversity-friendly) agroforestry systems and improve their quality.**
- **Precision farming:** This measure, as proposed, seems quite targeted toward improving the production efficiency of market products from agriculture, yet it makes no reference to biodiversity or even requires addressing it. In fact, biodiversity-oriented options, or technologies that can help delivering ecosystem services, are implicitly excluded. This can lead to negative environmental impacts of this flagship. Notably, 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 because of 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. Finally, given the voluntary nature of Eco-schemes, uptake of precision farming may compete with other measures with much higher environmental potentials.
 - **It seems more sensible to support biodiversity-friendly precision farming under Pillar 2 AECMs, and otherwise through investments.**
- **Carbon farming:** for many actions undertaken by farmers or land managers that help to lock up carbon either in biomass or the soil (conservation agriculture, cover crops, afforestation, rewetting, conversion to grassland, etc), the efficacy of annual payments is questionable. The same arguments apply to afforestation as applied to agroforestry discussed above. In the case of rewetting of organic soils, there is no benefit if the water level is elevated for just one year. Also, rewetting requires in most cases planning, consultation, and investment, all of which are already in place for Pillar 2 but largely lack for Eco-schemes. Furthermore, carbon farming needs to be supported by more research and monitoring. EU-Member States have very diverse geology (among MSs, but also within MSs) and sequestration is not likely to be uniform across soil types. The conversion of arable land to grassland also only makes sense if the plot remains a grassland for several years, thus requiring a long-term commitment to have an effect. Finally, the effects of conservation agriculture (at least in the humid zone of west-central Europe) on GHG mitigation can be very mixed, requiring a careful delineation of eligible areas. These factors, combined with a bias toward carbon sequestration instead of carbon storage (protection of existing old-growth forests and other habitats), suggests that carbon farming - especially without a link to palpable biodiversity benefits and/or means to achieve them - may support intense forestry operations and should not be a first-choice option for Eco-schemes. Pillar 2 instruments such as non-productive investments and longer-term management contracts (AECM) are more appropriate.
 - **We recommend Eco-schemes to be used as a first-year measure before entering a longer commitment under AECM; or focus on maintaining (good practice) carbon farming and improving its management.**
- **Animal welfare** flagship does not link either to biodiversity or to the Agro-Ecology flagship. This may pose a risk that this flagship may be used merely for altering housing conditions, with limited real benefits for the environment or climate.
 - **It is essential for the Animal welfare flagship to link to extensive grasslands, pasture-feeding animals, wood pastures and other good practices for biodiversity and climate, in order to achieve the win-win potential for relevant grazed ecosystems and animals therein.**

Q2.3: Top-up payment or income foregone?

Workshops indicated pros and cons for both approaches. By indicating them here, we propose the Commission should require a clarification from Member States as to why they choose one option or the other, and how they intend to address the weaknesses or caveats of the selected approach.

Factors favouring top-ups:

- **Simple to administer**, which will likely make it more attractive for farmers and can therefore yield relatively high uptake.
- **May be useful to promote 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).
- **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.

Cons of top-ups:

- There is a high risk that Eco-schemes using this formula will become income transfer schemes in disguise.
- In the absence of a baseline to evaluate either their costs or benefits, top-ups might repeat a key weakness of Greening, which to a great extent takes the same approach. This may lead to inefficiency, inconsistency and windfall gains.
- The instruments to support decision-making are currently underdeveloped to ensure that the effectiveness of the measures for providing public goods is appropriately taken into account using a top-up approach.

Factors supporting income-foregone approach

- The existing system works if well designed. It does not need to be replaced by a new payment system, but rather, improved, e.g. to account for transaction costs.
- Calculation of costs incurred or income foregone provides some kind of objective benchmark for the level of payment. In the absence of such a benchmark, the top-up payment becomes a bargaining matter between the public authority and the farm organisations.
- **Consistency among instruments** (AECM and Eco-schemes) in terms of payment approaches and intervention logic, may reduce the risk of continued competition between Pillars or lack of comparability between the two.

Immediate recommendations for payment approach:

Regardless of whether a top-up or income-foregone approach is adopted, it is critical to ensure that the benchmark for calculation is clear, justifiable, and transparent for assessment and re-evaluation.

In their Strategic Plans, MSs should be requested to clarify how they address the above-mentioned weaknesses or risks.

Q3: How can the EU and MSs set S.M.A.R.T targets that are coherent both with the CAP objectives and relevant strategies?

Q3.1: What should count as “ambitious” targets?

The legislative CAP proposal of June 2018 requires MSs to provide support for voluntary schemes for climate and the environment. Accordingly, Eco-schemes should have the overarching target of maintaining good agricultural practices and expanding and restoring them beyond the current baseline, to reach a measurable improvement of the extent and quality of landscapes that serve biodiversity as well as the soil, water and climate objectives of the CAP.

The EU has the role to clarify the exact aims and expectations from MSs. One way to do so is by setting Specific, Measurable, Ambitious, Reasonable, and Time-bound (S.M.A.R.T) targets that MSs should meet, and then monitor MSs’ performance and progress over the implementation period.

A key message across workshops is that **the targets set by the EU Green Deal and Farm to Fork are ambitious but achievable**; and the indicators used for these strategies and others (including international agreements) can be used to measure if this ambition is reached. Key commitments that should be reflected in target-setting include those related to the CBD (and with it, the Nature Directives), the UNFCCC, Ramsar convention (and with it, Water Framework Directive) and the UN’s SDGs³.

Given the ongoing loss of biodiversity, and failure of the CAP to halt it, the **overarching target must be to halt or reverse farmland biodiversity declines**. Therefore, targets with respect to biodiversity must be concrete, ambitious, clearly formulated, and quantitative where possible. They should be set against the baseline conditions in the different MSs, considering variability in terms of their context (e.g. extent of remaining natural habitats) and history of ambition, e.g. if close to achievement of former ambitious targets.

Member States need to **set clear targets for the extent and management of landscape features and semi-natural areas, as core elements for the performance of the Green Architecture as a whole**. A point-based system can be easily developed centralizing around these elements.

Sub-targets are needed, that should be accompanied by close monitoring to ensure adaptive policy management and, particularly, adaptation of Eco-schemes. It was also suggested to gradually raise the requirement level over the programming period.

Q3.2: How should baselines be defined?

Workshop participants provided a range of approaches and sources as to the setting of baselines at the MS level, to ensure progress against these baselines. The reference year would relate to either the timing of recent reports (e.g. Article 17 reporting), or the end of the current CAP’s MFF (2020). Recent historical baselines should be used where restoration is sought.

Landscape baselines: Land-use and land-use-change targets must relate to current cover, and changes in cover and quality, depending on the relevant farming systems, crop-types and conditions. A no-backsliding principle should be applied, both at MS and farm (or even field) level. For instance, targets should be set with respect to existing grassland coverage or diversification levels (or current

³ as also reflected in the EP’s amendment proposals to Articles 10 and 58, albeit missing some SDGs

speed of changes), to avoid losing habitats or their quality. A target for landscape features may refer to 2008 as the year of set-aside abolishment. Central landscape indicators are landscape features, grasslands, HNV farmland, chemical input use and farm diversity levels (See also question 4.1 (indicators)). Mapping efforts and data-transparency are required to establish the baseline and evaluate performance.

Biodiversity baselines should relate to the status and trend of bioindicators, i.e. farmland species as established by the Nature Directives and published in relevant assessments. The target needs to be linked to scientific evidence and monitoring efforts (see also Question 4.2), aiming to “bend the curve” toward a positive trajectory (“growth target”). In some MSs, biodiversity surveys must be urgently performed, and systematic in situ monitoring efforts established. Such surveys should also reflect ‘biodiversity in the wider countryside’, i.e. farmland outside of Natura 2000 and nature reserves.

Budget baselines: Performance can be projected from MS investments, compared to the previous programmatic period. Improvements in performance can only be anticipated under an improvement in total investment (compared to now), a significant improvement in effectiveness (choice of measures), as well as higher investment in effective measures (i.e., higher efficiency) e.g. through budget redistribution.

Immediate recommendations for the setting of baselines:

Although MSs need to set their targets, **the Commission should predefine baseline criteria and key reference documents and maps.**

The definition of the reference year is critical, and should be justified by MSs. It is important that baselines should consider historical or ongoing losses, as well as recent restoration efforts and successes.

Q3.3: What should the EU demand from MSs to clarify in their Strategic Plans?

Assessment of ambition in Strategic Plans, and plausibility of meeting the goals, can be based on the following criteria:

- 1) **Acknowledging the problems:** Member States must demonstrate that they acknowledge the challenges, identify causes of failure and justify how they attempt to resolve them. This needs to be reflected in the SWOT analysis and accompanied by proposals for remedial actions.
- 2) **Breadth of the actions to address the problems:** Compared to the current CAP, expansion should be achieved in both the area of farmland, and number of farmers, under commitments to improve the conservation status of farmland (and farmland-affected) habitats and species.
- 3) **A clear intervention logic** which corresponds with the relevant environmental policies and strategies, and demonstrates a **clear link between objectives, measures and anticipated outcomes** based on scientific evidence. This issue has been brought by virtually all workshops and marked as a key weakness of the current CAP.
- 4) **Adherence to key operating principles:** No backsliding, application of high standards to the whole agricultural area (no exemption/exception), and no dilution should be key guiding principles.

- 5) **Ambition must be reflected in budgets:** allocated budgets should be sufficient to fund the required actions to improve the conservation status of (clearly defined) habitats and species. An ambitious funding plan should demonstrate an increased budget compared to current CAP, high allocation to Eco-scheme and AECM, and allocation of unspent Eco-scheme budget to environmental aims ONLY. An increase in budget allocation to AECM and Natura 2000 payments is a reliable indication of ambition. Funding to ANC should not be considered unless tightly linked to environmental ambition. Finally, investments should be proportional to the anticipated effectiveness of measures.
- 6) **Significant investment in knowledge-transfer, advisory services, technical support and monitoring for the delivery of biodiversity and other environmental objectives:** Member States should demonstrate how they intend to enhance knowledge generation and transfer, through proof of planned investments in expanded advisory and technical support to farmers and land managers, including training of new staff. Knowledge generation requires enhanced investments also in monitoring schemes and data evaluation.
- 7) **The choice of Indicators and targets** (see also Q4 below): Ambition should be demonstrated by the choice of targets to achieve and choice of output and result indicators (i.e. not only impact indicators) to assess progress toward these targets, compared to the current state.
- 8) **Detailed implementation plans and demonstration of adaptive management capacities:** A key issue for both Eco-schemes and AECMs is to demonstrate how MSs intend to **address selection biases for simpler but less effective options**. MSs should present a clear procedure for adapting measures or schemes if it turns out that the proposed actions need to be adapted - e.g. to enhance uptake, alter the proposed options, or adjust payment levels to attract farmers toward the best measures to reach the stated biodiversity objectives.

Implementation challenges, risks and solutions

Given the annual nature of Eco-schemes, a logistical challenge relates to potential mismatches between farming operations and administrative timing.

For the protection and restoration of landscape features, an issue relates to land ownership, e.g. if land owners do not accept changes.

It was proposed that **planning at the farm level could generate a coherent picture of farm operations and reduce administrative burdens on farmers**. To this end, auditing schemes could be used to improve data collection and control and allow farmers to **submit just one application for their farm** as a means to simplify administrative burdens on farmers.

How should the Commission support and accompany Member States in implementation, to ensure best performance?

The Commission needs to oversee the development of targets, and offer technical support and funding toward monitoring and evaluation throughout the implementation period to ensure success.

Especially because Eco-schemes are a new policy instrument, adaptive policy management is imperative. This requires **yearly monitoring, rapid evaluation and effective response**. MSs should be incentivised where demonstrating ambition and high performance, but sanctions are lacking and must be clarified. It is important, however, to ensure MSs are not sanctioned for setting (over-)ambitious targets, but rather when MSs are clearly not on track to meet their objectives.

Incentives for MSs can include: enhanced EU support for the administrative burdens of countries with ambitious implementation plans, or reduced co-funding requirements for MSs that maximise their budget shifts to relevant Pillar 2 instruments (AECMs, Natura-2000 payments, non-productive investments).

Experts also proposed that monitoring efforts should be proportional to the budgets allocated to a given instrument. **Key gaps were listed in terms of monitoring and mapping that must be urgently addressed. These include:**

- Improved monitoring efforts with regards to conditionality
- **Urgent need to extend biodiversity monitoring in some MSs**, in terms of spatial extent and/or taxonomic group(s), or both
- **Reporting on, and monitoring of, chemical inputs** needs to be significantly improved
- Regular monitoring and reporting of implementation of the schemes and their impacts should be timely and transparent, i.e., open to the wider public
- Technical support to the implementation of the strategic plan must include sufficient funds for adequate monitoring and evaluation of measures. This is also crucial for ensuring adequate data for implementing result-oriented and spatially-targeted biodiversity schemes.

Immediate recommendations in preparation for the coming CAP:

The transition time of 2021-2022, as well as the COVID-19 recovery funds, should be used wisely in preparation for the upcoming CAP implementation period. Key issues are to i) establish the support mechanisms for guiding and implementing Eco-schemes (e.g. defining payment levels, addressing mismatches between administrative time and farming operations, etc); ii) engage in mapping efforts to establish a baseline, especially for Ecologically Sensitive Permanent Grasslands and landscape features, iii) a need to expand infrastructure and capacities for biodiversity monitoring efforts, and to iv) engage in habitat restoration. The **COVID-19 recovery funds** could be used to this end.

Q4: How can landscape- and biodiversity indicators strengthen the indicator-system of the CAP?

General comments on monitoring and indicators:

The selection of indicators, their monitoring and reporting, is exceptionally important for effective implementation and assessment of progress (or improvements) against the targets. Workshop participants delivered comments beyond the selection of indicators, pointing at major inconsistencies regarding the monitoring and reporting needs by Member States with respect to environmental performance.

- Several workshops raised an **urgent necessity to engage in mapping of relevant habitats and their quality, especially existing landscape features and grasslands** (including their quality). This is essential for establishing clear baselines and evaluating performance over time.
- Particular gaps emerge from partial farm-mapping, since farmers only map and report payment-relevant sections of their farms. It is thus urgently needed to **improve the application of the EU's Land Parcel Identification System (LPIS)**, to achieve comprehensive and systematic mapping of entire-farm structure and management, including areas that are not for agricultural use e.g. 'ineligible areas'.
- Furthermore, **yearly reporting of indicators is necessary**. Biodiversity responses to land-use changes often lag behind implementation, with varied responses depending on multiple factors. Consequently, it is essential that monitoring and reporting with respect to biodiversity includes relevant Output and Result indicators, as these are reported yearly⁴. Relevant indicators should relate to areas under effective commitments (Eco-schemes, AECM, Natura 2000 and non-productive investments), landscape features and (extensive) permanent grasslands. These would strengthen the capacity to perform annual performance evaluation and respond rapidly to needs.
- Several workshops also highlighted insufficient monitoring of chemical inputs; or otherwise, lack of transparency i.e. accessibility to data (even if reported by farmers) for external (e.g. scientific) analysis and evaluation.

Immediate recommendations

- Adopt the EP's proposal to insert a **Result Indicator R29b** "*Fostering high nature value farming: share of agricultural area under management commitments to generate high nature value*".
- Result Indicators should be reported yearly by MSs.
- *In situ* monitoring needs to be significantly expanded by MSs
- MSs should engage in urgent mapping efforts in preparation of the next MFF.

⁴ though even this is under negotiation

Q4.1 How can landscape features be best mapped?

Landscape mapping: Remote sensing can reduce but not replace in situ monitoring efforts

- Remote sensing methods are advanced enough for effective monitoring of landscape features and semi-natural areas e.g. using Copernicus data. However, challenges remain regarding linear or small features as well as grassland mapping especially with regards to habitat quality. *In situ* validation and expanded monitoring over time are imperative.
- LPIS needs to be improved to include full mapping of farmland with regards to land ownership instead of fragmented mapping for funded-purposes only.
- **Practical indicators may include**, e.g., the number and frequency of occurrence of landscape elements, or share of areas of High Natural Value.

Q4.2 What are the best indicators for biodiversity? Inputs for Complementary Result Indicator FA 4A

The next CAP should comprise Output, Result and Impact indicators as well as Complementary Result Indicators (CRI). It is proposed that one indicator (FA 4A) will be devoted to biodiversity:

“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” ([Link](#)).

Workshop participants proposed that **CRI FA 4A should divide into two types of indicators**.

One indicator (or set of indicators) should be 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. The second should focus on **landscape parameters (habitat extent and quality)**, as well-established proxies for the (anticipated) impacts on biodiversity, especially at the landscape scale.

Taxonomic groups that are broadly monitored:

- **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. Butterfly Grassland 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** (Art. 17) is monitored and reported by MSs
- **Alien species**

Possible formulations for a taxonomic Complementary Result Indicator 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”.

Proposed 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, several workshops noted that confusion about its definition can be readily resolved, and methods harmonized, to include it as a Context Result Indicator. 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.

A possible formulation for a landscape-level Complementary Result Indicator 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” (composite indicator)

Aggregated (“Composite”) indicators

Considering there are several relevant taxonomic groups or landscape characteristics that can (and should) be monitored, as well as several relevant scales of relevance; and considering the variability among MSs in terms of running monitoring schemes (including capacities and experience to support data collection and analyses), it is strongly recommended to use aggregated indicators.

Recommendation on the selection of indicators:

We recommend the Commission to offer Member States several options to select from, but require them to select at least one taxonomic indicator and at least one landscape-level indicator. The use of a composite indicator is strongly recommended.

To establish an effective monitoring and reporting system, we further recommend the establishment of agreements with research organizations and/or monitoring centres to aid data gathering, harmonization and analyses. Dependency on (short-term, volatile) project-based funding should be reduced by long-term funding for such efforts.

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