



Eco-schemes a core element of the new green architecture of the CAP - what can farmers and nature get out of it?

Insights from 15 countries

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Introduction

Eco-schemes are a new instrument under the Common Agriculture Policy (CAP), initially foreseen to be implemented from 2021 onwards, now postponed to 2023. The legal basis is the Strategic Plan Regulation¹, which is shaping the new green architecture of the CAP for the programming period 2023-2027. After its publication in the Official Journal of the European Union on 6th December 2021 the new CAP became official EU law. Participation in the schemes for the climate and the environment, called eco-schemes, is voluntary for farmers. Only farmers that are eligible for the basic payment under the 1st pillar, now called Basic Income Support for Sustainability (BISS) can get funding for undertaking eco-scheme measures. Those farmers that are not willing to engage in agricultural practices designed as eco-schemes at national level will have to accept that they will get lower payments from the first pillar as a quarter of the budget is dedicated to such measures designed to provide environmental and climate benefits. A further prerequisite for participation in eco-schemes is that farmers are respecting the mandatory rules under conditionality. Conditionality is replacing cross-compliance and partially the greening measures in the current programming period. The conditionality with its SMRs (Statutory Management Requirements – based on Union law) and the GAECs (Standards for good agricultural and environmental condition of land) sets the baseline for commitments that can receive financial support. Therefore, the level of ambition of the conditionality rules very much determines the framing of the eco-schemes at Member State level. Unlike the previous greening measures that were defined at EU level, Member States are free in their choice of eco-scheme measures as long as they respect the legal requirements in article 31 of the Strategic Plan Regulation.

Besides the annual eco-schemes farmers will continue to have the possibility to engage on a voluntary basis in pluri-annual agri-environmental climate measures (AECMs) as under the current CAP. These will continue to be financed under the second pillar. Member States have to make sure that there is no double funding, therefore not only the conditionality, but also the choice of future AECMs at national or regional level, strongly affects the selection of eco-scheme measures. But also, the requirements of the eco-scheme measures themselves will set limitations to what can be offered as AECMs. Furthermore, Member States begin with different starting points in terms of their experience with AECMs which will guide their choice of eco-schemes. Member States have two options to either design the payment for eco-schemes as top-ups to the BISS or to compensate for income forgone and additional cost.

The eco-scheme measures have in principle to be offered to all farmers and across the whole country which makes their design as well as definition of a unique payment level quite challenging (the more heterogenic the environmental and landscape conditions, production structure and the productivity across a country the more difficult it is). The payment level foreseen per measure will not be addressed in this paper, but its relevance has to be kept in mind as it will finally determine the efficiency of the eco-schemes.

Besides the experience gained so far with voluntary measures, the position of the eco-schemes between the conditionality as defined in article 12-13 of the Strategic Plan Regulation and the agri-environment-climate commitments as laid down in article 70 has led to a quite diverse set of eco-scheme measures planned by the Member States. This diversity is further fostered by a number of modifications that have been included in the final agreement of the Strategic Plan Regulation, giving Member States even more freedom when programming their eco-schemes. Amongst them are a learning period, options for budgetary transfers and the design of so called enhanced eco-schemes. A

¹ Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans); <https://eur-lex.europa.eu/eli/reg/2021/2115/oj> - access in all EU languages

further exception concerns the possibility to dedicate to eco-schemes less than a quarter of direct payments when complemented by a large AECM offer in the 2nd pillar. Austria as well as Finland are planning to make use of it.

Potential effects as regards the delivery towards the environmental and climate objectives as well as on the uptake by farmers will be illustrated with the help of the currently discussed eco-schemes from 15 Member States. The eco-schemes will only be approved as part of the National Strategic Plans in 2022, the assessment here is based on proposals as of November / December 2021.

Political drivers for the design of eco-schemes include not only the experiences with the current greening obligations and AECMs at national level but also the targets set in the Farm to Fork strategy² as well as the “no backsliding” rule. This explicit legal obligation has been introduced to ensure that Member States do at least maintain the level of ambition from the current CAP when designing their future CAP Strategic Plans and at best aim for a greater overall ambition on environment and climate than is the case today.

Overview over the origin of the measures and the environmental aspects targeted

For the 15 countries assessed, the number of eco-scheme measures varies between three and 21 per country (Table 1). At the same time the complexity of the individual measures is quite heterogenic. For example, in Netherlands measures focus on a single requirement regarding a particular management practice while in other countries a single measure contains a bundle of requirements to be respected. This is the case for the three measures proposed in Hungary, so that the number of measures alone does not give the full picture. In addition, there are several eco-scheme measures that do not target single field parcels, but either the whole farm or all arable land or grassland. All countries presented target arable land as well as permanent and temporary grassland with varying emphasis put on one or the other. Most Member States do also allow farmers to participate on land grown with permanent crops, some have even designed specific measures for it. In Romania this concerns green cover in vineyards, orchards, hops and nurseries, in Austria for vineyards, orchards and hops and in France for vineyards and orchards. Hungary, Italy and Spain also foresee dedicated measures for permanent crops.

Regarding the **origin of eco-scheme measures**, the majority of the proposed measures in the national eco-schemes are either built upon components from greening obligations that did not become compulsory under conditionality or are stemming from the EU co-funded voluntary AECMs, that are currently offered to farmers either at national or regional level. In some cases, like for Finland the eco-scheme measures combine elements from greening with requirements from existing AECMs, which makes the assignment difficult.

Some Member States have designed eco-scheme measures that directly target livestock, this is the case for Bulgaria, Netherlands and Italy.

Even though only land that is eligible for the basic payment BISS is to be targeted by eco-schemes, some Member States foresee an extension of the eligible area beyond this. For example, Spain intends to include land used for grazing as a fire prevention measure in woody and nature sensitive areas.

² A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system. COM(2020) 381 final https://eur-lex.europa.eu/resource.html?uri=cellar:ea0f9f73-9ab2-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF

Table 1: Characterisation of 12 eco-schemes – land targeted, origin

Country	Number of measures	Land targeted	Stemming from greening	Stemming from AECM*
Austria	4	AL (2), GL (1), PC (1)	1	4
Bulgaria	9	AL (6), GL (3), PC (2), LS (2)	2	5
Denmark	6	AL (6), GL (2), PC (1)	1	1
Estonia	5	AL (5), GL (4), PC (3)	1	3
France	6	AL (3), GL (3), PC (3)	2	6 (at least in some regions)
Finland	4	AL (4), GL (4)	4	4
Germany	7	AL (6), GL (5), PC (2)	1	6 (at least in some regions)
Hungary	3	AL (1), GL (1), PC (1)	3	0
Latvia	7	AL (6), GL (4), PC (4)	2	1
Netherlands	21	AL (16), GL (10), PC (6), LS (1)	9	0
Ireland	5	AL (4), GL (5), PC (4), LS (2)	0	5
Italy	7	AL (5), GL (5), PC (4), LS (2)	3	2
Poland	17	AL (13), GL (7), PC (3)	3	5 (at least in some regions)
Romania	6	AL (4), GL (1), PC (1)	3	5
Spain	7	AL (3), GL (3), PC (2), rice (1)	3	3

* including organic farming

AL: arable land; GL: (permanent) grassland; PC: permanent crops; LS: Livestock the numbers in brackets indicate the number of measures – with multiple counting of measures targeting different types of land

Exceptionally, Bulgaria foresees an eco-scheme measure that may also include forested land, e.g. the management of forest borders and woodland glades to improve biodiversity and provide food for wildlife. In Ireland an afforestation measure is foreseen where farmers will have to plant a minimum number of native trees with land remaining eligible for eco-scheme payments even though it will become forest land.

In the Netherlands a points system is foreseen that allows farmers to combine the agricultural practices of the 21 measures. France intends the introduction of a points system too, but solely for a crop diversification measure. Furthermore, in some countries not all eco-scheme measures can be combined by the participating farmers as some are mutually exclusive. This is for example, the case in Denmark, Italy and France. In France, it is foreseen that farmers have to make a choice between three options, called “practices track”, “environmental certification track” or “features and surfaces favouring biodiversity track”.

When it comes to the **environmental aspects targeted**, only limited information is available currently. Member States have to ensure that their eco-schemes comply with the needs at national level and that they cover at least two of the so-called areas of actions. The eight areas of action listed in the regulation are climate mitigation, climate adaptation, water protection, soil protection, protection of biodiversity, sustainable and reduced use of pesticides and enhanced animal welfare or actions addressing antimicrobial resistance. For several measures it is stated that they contribute to the management of natural resources without further specification. In other cases, the name of the eco-scheme measure itself provides a clear indication, e.g. a measure for bees like in Estonia or regionalised indicator species in a grassland measure in Germany targeting wild flowering plants. Some countries are making determined use of the eco-scheme measures to help achieve the targets set in the Farm-

to-Fork Strategy. Having said this, it must be kept in mind that Member States have a great freedom when it comes to the content design of the eco-schemes, but it has to be demonstrated that they are beneficial for achieving at least one of the environment-climate specific targets. In the Strategic Plan Regulation, it is clearly mentioned that the measures have to be designed in a way to be beneficial for the climate and /or the environment, in addition they may target animal welfare or address antimicrobial resistance.

With the financing of the eco-schemes being dependent upon the direct payment budget, existing differences in the direct payment level will persist. Even though a maximum deviation from the EU average in direct payments has been agreed, Member States with higher basic payments per hectare will also have more budget available per hectare for eco-schemes. This may lead to a situation that countries with limited resources may either concentrate it on fewer environmental targets or alternatively may choose measures capable to provide simultaneously multiple benefits.

Table 2 gives an overview of the natural resources foreseen to benefit from the eco-scheme measures and /or with positive climate effects from the eco-schemes in the 15 countries. Crosses in bold indicate measures specifically designed to target one particular aspect.

Table 2: Areas of actions of the eco-schemes with focus on natural resources and climate

	Water	Soil	Biodiversity	Climate
Austria	x	x		x
Bulgaria	x	x	x	x
Denmark	x	x	x	x
Estonia		x	x	x
France	x	x	x	
Finland	x	x	x	x
Germany		x	x	x
Hungary	x	x	x	x
Latvia	x	x	x	x
Netherlands	x	x	x	x
Ireland	x		x	x
Italy		x	x	
Poland	x	x	x	x
Romania	x	x	x	x
Spain	x	x	x	x

In all countries except one, protection of biodiversity is an area of action, in eleven countries biodiversity is addressed as priority with dedicated measure(s). Typical measures are the maintenance or establishment of landscape features (e.g. introduction of woody landscape elements in Netherlands or native trees in Ireland) as well as non-productive arable land beyond conditionality obligation (see Table 5), extensive grazing and species diverse permanent grasslands (see Table 9), but also reduced or pollinator-friendly plant protection practices (see Table 4) are chosen options for enhanced biodiversity protection. Two countries (Germany and Italy) foresee specific requirements for agricultural land in Natura 2000 areas in dedicated eco-scheme measures.

Soil protection is addressed in fourteen countries, in five countries a particular emphasis is given to dedicated soil measures. The eco-scheme measures mainly address soil cover with vegetation on arable land, with requirements going beyond the respective conditionality rules (see Table 8), measures to prevent erosion as well as non-ploughing requirements. Finland, Hungary, Latvia, Netherlands, Poland and Spain foresee measures with reduced or non-tillage (e.g. direct seeding or strip tillage). In Austria there is an erosion protection measure on plots with wine, hops or fruits with

year-round, area-wide planting in all tramlines. Also, in Italy and Spain commitments to ensure soil cover in permanent crops has been designed. Besides spontaneous and seeded plant covers in permanent crops, benefiting soil quality as well as biodiversity, Spain has in addition planned a practice that consists of depositing the pruning after its crushing on the ground. In Latvia liming on arable land is an eco-scheme measure with the objective to maintain an optimal soil pH. The last two measures are examples for measures benefiting soil quality while at the same time aiming at reducing GHG emissions from agricultural land.

Eleven countries target water protection via their eco-schemes. While water quality is in the focus of most of them, Hungary supports water-saving irrigation in permanent crops, while Poland designed a measure for water retention on permanent grassland. Examples for water quality measures are reduced fertiliser application, sometimes combined with the use of precision technology (see table 4), and buffer strips with grass along ditches (NL). Initially it was foreseen in the strategic plan proposal that farmers will have to make use of a Farm Sustainability Tool for Nutrients. This has been withdrawn, but Poland foresees support for a fertilisation plan based on soil sampling as an eco-scheme measure. In Spain it is planned that farmers engaging in eco-scheme measures with irrigated land need to have a fertiliser plan and have to do accounting for irrigation water and phytosanitary products.

Measures to adapt to and mitigate climate change are to be offered in thirteen countries. Measures reducing soil disturbance on arable land and limiting nutrient surpluses are considered to be climate friendly. Planting trees (Ireland), crop production adapted to wet conditions (Netherlands) or agroforestry (Germany) are further options to foster carbon sequestration. Dedicated climate measures are the site-specific maintenance of undisturbed permanent grassland (see table 7) as well as the fertilizer injection or climate friendly spreading of organic fertilizer (Latvia). Romania plans a measure to foster carbon sequestration in meadows through reduced fertilisation and a minimum of maintenance activities. In Denmark a dedicated measure targeted to soils with high organic matter foresees an extensification through the inclusion of grass mown in crop rotation combined with low fertilisation. The longer-term objective is to achieve a gradual depletion of the nutrient content in the soil in view of reducing greenhouse gas and nitrogen emissions, in particular when rising the water level at a later stage. As regards climate-friendly eco-schemes it must be noted that most measures targeting soil protection as well as those intended to enhance landscape elements are likely to be labelled as climate action and will certainly be taken into account by the Member States in order to fulfil the overall obligation of 40% of the CAP budget to be dedicated to climate measures.

The actual environmental and climate benefits that can be generated by the bundle of measures in the national eco-schemes will very much depend upon the combination of suitable agricultural practices and in particular their level of ambition compared to current farming practices as well as their uptake by farmers.

More options for the national eco-schemes as initially foreseen in the EC proposal

Compared to the initial proposal as presented in 2018 by the European Commission³, these modifications are of particular relevance:

- The scope of eco-schemes has been extended by including animal welfare and combatting antimicrobial resistance (article 31 (2))

³ Proposal - https://eur-lex.europa.eu/resource.html?uri=cellar:aa85fa9a-65a0-11e8-ab9c-01aa75ed71a1.0003.02/DOC_1&format=PDF

- An option to link dedicated eco-scheme measures on non-productive land with the conditionality rule set under GAEC8 (article 31 (5a) in combination with Annex III)
- For a maximum of two years commitments contributing to compliance with national legal obligations going beyond EU regulations can be financed as eco-schemes (article 31(5b))

Some Member States make use of the possibility to target **animal welfare** in a dedicated eco-scheme measure. Grazing is seen as being beneficial for the animal health and therefore requirements defining the minimum grazing period are set. Even though not explicitly defined as animal welfare, eco-scheme measures targeting extensive grassland management may also contribute. But as these measures are predominantly designed in view of generating biodiversity benefits they will be tackled separately (see Table 9).

Table 3: Eco-schemes targeting animal welfare

Country	Name of measure	Brief description
Austria	Animal welfare - grazing	Grazing between 01.04. and 31.10. on at least 120 days per year of all animals of one or more categories respectively. Optionally, a longer grazing period of 150 days. Grazing must take place for a substantial part of the day. Continuous documentation and monitoring of grazing periods; participation in recognised Animal Health Service
Italy	Animal welfare - grazing	Pasture grazing commitments (level 3 commitment)
Poland	Animal welfare	Specific requirements for the different animal species going beyond current standard

Two countries address antimicrobial resistance amongst those assessed here. This are Denmark and Italy. Denmark foresees to finance organic livestock with the eco-scheme budget, thus benefiting from the fact that in organic livestock production, the use of veterinary medicine is restricted. Italy plans a dedicated eco-scheme measure targeting veterinary medicine reduction.

Member States have the possibility to design eco-schemes to support farmers through **dedicated eco-scheme measures to comply with national regulations**, namely in the area of **fertilisation**, the use of **plant protection products** and for animal welfare, during a 2 years phase. The introduction of this option has to be seen as a result of a number of countries being obliged to adapt their national legislation in view of complying with the Nitrates Directive, but also to step up animal welfare. Furthermore, the Farm-to-fork Strategy targets for a reduction in fertilizer use by at least 20% by 2030 and nutrient losses by at least 50%, without impacting soil fertility, has given further emphasis to measures reducing nutrient surpluses. When it comes to pesticides, here as well national initiatives to further reduce their use could result in national legislation going beyond EU requirements. The Farm-to-Fork strategy calls for a reduction of 50% in the use and risk of chemical pesticides by 2030.

From the collected information it is not possible to assess if eco-scheme measures are designed to comply with mandatory national legal requirements going beyond Union law or if they are more demanding. Therefore, several measures listed in the table below are likely not to fall into the scope of the 2 years exception. In some measures the amounts of fertiliser or pesticides are reduced, in some cases up to zero, other measures target the use of precision technology. Even though organic farming also implies the renouncement from mineral fertilisers as well chemical-synthetic pesticides it will be

addressed later (see Table 10) as it is a farm system approach while the measures listed below do address single plots to be chosen by the farmers.

Table 4: Eco-schemes targeting reduced fertiliser use and/or pesticide application

Country	Name of measure	Brief description
Bulgaria	Reducing the use of pesticides	Use of science-based and suitable application technologies
Germany	Renouncing use of plant protection	No use of chemical-synthetic pesticides (except for products allowed in organic farming)
Netherlands	Conversion from temporary grassland to arable cropping without pesticides	No use when destroying and ploughing up temporary grassland
Netherlands	Natural pest control	Pest control through accommodating predators
Netherlands	Strip cropping	Pesticide reduction by growing several crops in combine-wide, long strips instead of blocks
Ireland	Use of precision technology for fertiliser application	Fertiliser to be spread with GPS-controlled spreaders
Ireland	Limiting chemical nitrogen input	Farmers will have to keep within a specified chemical nitrogen usage limit for the calendar year
Italy	Agroecological crops	Rotation with catch crops for 2 years without herbicides (level1); "bee crops" without pesticides (level2)
Italy	Vegetation cover in permanent crops	Without herbicides: natural intercrop vegetation (level 1); flower strips on borders (level 2); revegetation with plants for ecological purposes (level 3)
Italy	Vegetation cover in permanent crops	Natural intercrop vegetation without herbicides (level 1); flower strips on border s without herbicides (level 2); revegetation with plants for ecological purposes (level 3)
Latvia	Precision farming	Precision fertilizer and/or plant protection product application
Poland	Biological pest control	Use of biological options for pest control (introduce / gain experience)
Poland	Use of liquid manure injection equipment	Improved technology
Poland	Fertilization Plan	Preparing plan based on soil sampling, fertilization in accordance with the plan (as addition: support for liming, but not more often than once every 4 years)
Poland	Fast incorporation of solid manure	Ploughing under of solid manure within 12 hours after application on the field
Spain	Fertiliser plan (as a component for land under irrigation)	As an add-on for 4 eco-scheme measures when participating with irrigated land accounting for fertilization, but also for phytosanitary products and irrigation water is required

Besides those specific measures, there are also others that contain the reduction of external inputs as a component. In Bulgaria for example, in addition to the dedicated measure to reduce the use of pesticides, it is foreseen to prohibit the use of plant protection products on valuable natural grassland when receiving funding under eco-schemes. In Austria farmers can only get support for cover crops if they renounce using plant protection products while growing them and in Romania chemical fertilisers are prohibited for cover crops grown as an eco-scheme measure. In Estonia the use of precision farming methods is a voluntary component of the “Environmentally friendly practices” measure that encompasses several sub-choices. Hungary foresees to foster the use of alternatives in an eco-scheme targeting at least 30 % of the arable land by application of soil conditioning, plant conditioning products

or microbiological products. A reduced fertilisation of meadows is foreseen in Romania even though the main objective is to increase carbon sequestration.

In addition, Italy and Poland foresee to offer financial support for integrated production methods with arable land, grassland and permanent crops to be eligible.

A special position is occupied by eco-scheme measures targeting **non-productive land** as their design heavily depends upon the legal basis set in the conditionality for the “minimum share of agricultural area devoted to non-productive areas or features” (GAEC8) that includes land laying fallow. Until the end of the negotiations the percentage of arable land at farm level to be devoted to this requirement has heavily be debated and finally it has been decided to fix it at 4%. At the same time, it has been agreed that Member States can design enhanced eco-scheme commitments to complement the conditionality. When doing so, farmers may be allowed to reduce the mandatory share to 3% as long as they commit to devote at least 7% in total of their arable land to non-productive areas and features, including land lying fallow. Table 5 shows which Member States offer measures for non-productive elements and how it is intended to be combined with the GAEC obligation.

Table 5: Eco-schemes targeting non-productive land and their connection to the respective conditionality

Country	Name of measure	Brief description
Bulgaria	Maintaining and improving biodiversity and ecological infrastructure	Landscape elements on arable land that include: hedges or rows of trees, individual trees, trees in a group, wood anti-erosion belts, wetlands, green areas around watercourses and terraces No information about connection to conditionality available
Denmark	Support for non-productive arable farmland (fallow land or biotopes)	Minimum 7% of arable land in total, excess of 3 % standard requirement under conditionality covered through eco-scheme payment
Estonia	Ecological focus areas and landscape elements	At least [10%] of the arable land should be maintained as ecologically functional areas (e.g. fallow, set-a-side), grassland strips or other green landscape elements (hedgerows, tree-lines, ditches etc) or N-fixing crop areas, where the use of agrochemical is forbidden and only extensive grazing allowed.
France	Non-productive features and surfaces	Basic level: maintenance of at least 7% of the UAA for non-productive elements and surfaces favouring biodiversity. Superior level: 10% of the UAA; at least 4% must be on arable land to comply with conditionality obligation
Finland	Nature management grass (on arable land)	Perennial grasses or mixed seed with no more than 20% of nitrogen-fixing plants are allowed; no soil tillage, fertilization or plant protection. If not grazed, the vegetation must be mowed annually. At maximum 25% of the agricultural land of a farm is eligible for support.
Germany	Non-productive land	Quantitative extension of non-productive areas on arable land eligible for BISS beyond the 4% share resulting from conditionality (no option to reduce it to 3% and exclusion of landscape elements subject to the removal ban). At maximum 6% of the arable land of a farm is eligible for support (summing up to 10% non-productive land). Farmers have the option to undertake a qualitative upgrading by establishing flower strips / flowering areas on the non-productive land
Hungary	Maintaining and enhancing ecosystem services for agriculture	Targeting margins of arable land, including if grown with grass and for outside habitats with higher ecosystem activities (map-based approach) No information about connection to conditionality available

Latvia	Ecological focus area	Sowing of legumes, bee meadows, catch crops, green manure No information about connection to conditionality available
Ireland	Non-productive areas	An increased proportion of land beyond conditionality where two of five actions are to be selected by farmers to maximise payment. All hectares, including those without entitlements are eligible. No further information about connection to conditionality available
Italy	Non-productive elements and areas for biodiversity conservation	Non-productive elements including no cropping on 7% UAA (arable)
Poland	Set-aside	10% of the agricultural land No detailed information about connection to conditionality available
Spain	non-productive areas on farmland (spaces for biodiversity)	In farmland, it consists of leaving a percentage of uncultivated land additional to the 3% of non-productive elements required by the application of Conditionality. In the case of rainfed areas, the additional percentage shall be 7 % and, in the case of irrigated areas, 4 %. In areas of permanent crops, in which 3 % of non-productive areas of conditionality do not apply, the percentage of area to comply with this practice shall be 4 %.

In addition to a quantitative extension of non-productive areas, measures to increase their quality are also planned. For example, flower strips or flower areas on arable land can get financial support in Estonia, Germany, Netherlands and Finland. While in Germany this measure is restricted to farmers engaging in the eco-scheme measure for unproductive land, in Netherlands all farmers can introduce flower strips along arable fields as a stand-alone measure. In Estonia the establishment of foraging areas for bees is possible as cluster of fields or as a mixture of crops.

As a special eco-scheme measure, France has designed a hedgerows bonus as a voluntary top-up. Farmers can get the bonus if at least 6% of their land is covered by hedgerows as long as they engage either in the environmental certification track or in the practices track. This means, they can either combine the hedgerows bonus with producing on high nature value land or under organic certification, or when respecting the criteria of the practices track (limitation of ploughing of permanent grasslands, arable crop diversification or interrow cover cropping of permanent crops).

Eco-schemes building upon experiences with the greening measures

The current greening where farmers have to comply with three mandatory practices defined at EU level in order to get the full direct payments will no longer exist in the next programming period. Initially it had been foreseen to fully include the three greening measures crop diversification, maintenance of permanent grassland and ecological focus areas into the new conditionality. The finally agreed conditionality rules fix minimum requirements to be respected by all farmers receiving direct payments, but give Member States quite some freedom where exactly the boundary lies between requirements to be complied with and voluntary measures that go beyond this. Therefore, several Member States decided to design eco-scheme measures complementary to the minimum conditionality rules addressing former greening measures.

In the conditionality rule for **crop rotation** it says: "Rotation shall consist in a change of crop at least once a year at land parcel level (except in case of multiannual crops, grasses and other herbaceous forage, and land lying fallow), including the appropriately managed secondary crops.". With the shift from crop diversification to rotation without a say about minimum numbers of crops to be grown every year at farm level and the very late decision to include secondary crops as a rotation option in the conditionality, Member States got much freedom to complement conditionality with an eco-scheme

measure. Eco-scheme measures going beyond mandatory crop rotation can either extend the number of crops to be grown on arable land at farm level or define minimum or maximum shares of specific crops. The following table shows the proposals for eco-scheme measures as presented by the Member States.

Table 6: Eco-schemes targeting crop rotation / crop diversification

Country	Name of measure	Brief description
Bulgaria	Diversification of cultivated crops	Below 10 ha of arable land: 2 different crops (main crop <95%) For 10-30 ha: 3 crops (main crop <75%, 2 crops <95%) For over 30 ha: 4 crops (main crop <75%, 3 crops <95%)
France	Crop diversification	A points system splits crops in a high and a low scoring group to evaluate the degree of diversification on arable land over the year
Germany	Diversified crop rotation	Minimum 5 main crops (without land laying fellow), each main crop between 10-30%, maximum 66% of cereals and at least 10% legumes on arable land
Hungary	Enhanced crop diversification (part of a more complex measure)	For arable land below 10 hectares: at least 2 crops (maximum 75% of one crop) For 10-50 hectares: at least 3 crops (maximum 75% of one crop, 2 crops together not more than 95 %) For over 30 /50 hectares: at least 4 crops (maximum 75% of one crop, 2 crops together not more than 95 % (30 ha), 3 crops together shall not occupy more than 95 per cent of the arable land (50 ha))
Latvia	Crop rotation (part of a more complex measure)	Minimum 4 crops (plus fertilization plan)
Netherlands	Crop diversification	Legumes to be included in rotation and/or perennials on arable land
Italy	Crop rotation (as part of agroecological crops)	Inclusion of "bee crops" in the rotation (level2)
Poland	Diversification of cropping structure	Minimum 3 species with at least 20% of area under crops having a positive impact on the organic matter balance; maximum 65% cereals (including corn)
Spain	Crop rotation	For farms up to 10 ha: at least two different crops For farms over 10 ha: as a general rule, the change of crop each year on at least 40 % of the arable land ; may be reduced to 25 %, for justified reasons determined by the competent authority, in particular where the multiannual species represent more than 25 % of the area or in the event of adverse agroclimatic conditions.
Romania	Crop rotation	For farms with 1-10 ha: no cultivation of the same crop for 2 consecutive years For farms over 10 ha: annual crops rich in vegetable protein and / or nitrogen fixers on at least 5% of the total arable land For farms up to 30 ha: at least 2 different crops (one crop to cover a maximum of 75% of the arable land For farms over 30 ha: at least 3 different crops (one crop to cover a maximum of 75% or two crops to cover a maximum of 95% of the arable land); special rule if over 75% of arable land grown with grass

For the points system in France the crops grown on arable land are clustered into two groups depending on their diversification potential with for example temporary grasslands and leguminous crops scoring high.

As regards the conditionality rule obliging farmers to maintain **permanent grassland** on a ratio basis, the new rules are comparable with those under the current greening, this time with 2018 as reference year. Member States can decide to calculate the ratio at national, regional, sub-regional, group-of-holdings or holding level. This as well as possible national legislation going beyond minimum conditionality, affects the design of the eco-scheme measures targeting permanent grassland. Possible eco-scheme measures may address the maintenance of the ratio for permanent grassland at farm level, forbid the destruction of the present grass layer even with direct re-sowing or ensure the maintenance by appropriate use, e.g. extensive grazing.

Table 7: Eco-schemes targeting the maintenance of permanent grassland

Country	Name of measure	Brief description
Bulgaria	Extensive maintenance of permanently grassed areas	Extensive grazing to maintain and improve the condition of permanently grassed areas with grazing animals
France	Maintenance of unploughed permanent pastures	No ploughing on at least 80% of the permanent grasslands = basic level, on at least 90% = superior level
Hungary	Extensive grasslands	Maintaining grassland area at least on the previous year's level; grassland to be mowed or grazed
Latvia	Maintenance of permanent grasslands	Maintaining permanent grasslands at farm level
Netherlands	Maintenance of permanent grassland	Not breaking grass sods for multiple years

Under the previous greening, farmers have several options to comply with the ecological focus area obligation (EFA). EFAs on arable land can take various forms: e.g. fallow land, field margins, hedges and trees or buffer strips with land taken out of production. Alternatively, farmers have the option to grow legumes (without use of pesticides) or to grow catch crops (synonyms: cover crops, intermediate crops) on their arable land. With the introduction of the conditionality rule that targets non-productive areas and features in the new CAP (GAEC8) and that replaces EFAs, growing **catch crops** is no longer an option. Therefore, several Member States plan to address catch/cover crops explicitly as eco-scheme measures, initially supported under greening. But when doing so, they have to ensure that the requirements go beyond the conditionality rules for “minimum soil cover to avoid bare soil in periods that are most sensitive”.

Table 8: Eco-schemes targeting catch crops / cover crops

Country	Name of measure	Brief description
Austria	Vegetation cover on arable land - cover crops	Actively established cover crops between two main crops (no mineral N fertilization and no use of plant protection products from planting cover crops until their destruction); divided in 7 sub-measures differing in planting date and earliest destruction, seed composition
Bulgaria	Conservation and restoration of soil potential / soil fertility	Growing of appropriate types of intermediate/cover crops (with subsequent green fertilization)
Denmark	Catch crops	Establishing catch crops (a minimum share has to be achieved in catchment areas to remain voluntary)
Netherlands	Cover crops	Cover crops as intermediate / early sowing of catch crops
Finland	Plant cover on agricultural land in winter	Covers all types of vegetation maintained over winter (includes catch crops as an option)
Italy	Catch crops (as part of agroecological crops)	Rotation for 2 years with catch crops without herbicides (level1)

Here Member States can set obligations regarding the period of the cover crops to be maintained, their non-fertilisation or by naming eligible crop varieties to be grown as cover crops. In Estonia cover crops are part of the more complex eco-scheme measure called “Environmentally friendly practices” as one practice farmers may choose. Also, in Hungary, a complex measure targeting arable land describes cover crops as an option. Here, if the soil is covered by a cover crop, the soil cover shall be maintained at least until Feb 28th. In Italy farmers can chose to grow cover crops when participating in the eco-schemes “payment for agroecological crops” and “payment for vegetation cover in permanent crops”.

Specific grassland management measures

Given the fact that a great emphasis has been put on biodiversity protection by almost all countries assessed, there are a number of measures especially designed to maintain and enhance biodiversity on grassland. Besides requirements for grazing, often with minimum and maximum stocking rates, there are two measures that directly target species richness. While in Netherlands the sowing of legumes and herbs is supported, Germany fosters species diversity through the presence of wild indicator species in a result-oriented approach. . In the table below grassland measures that do not target biodiversity as a priority have been included as long as through the required management biodiversity co-benefits are generated. This is the case for environmental and climate-friendly grassland in Denmark where the avoidance of tillage of grass on arable land is in the focus. In Italy a measure has been designed especially targeting animal welfare that requires pasture grazing (level 3 animal welfare certification). A particular problem in some regions in the EU, e.g. in Romania, is the loss of grassland area through encroachment by forest vegetation. Here a minimum of maintenance activities is essential to preserve the grassland habitat.

Table 9: Eco-schemes targeting biodiversity on grassland

Country	Name of measure	Brief description
Bulgaria	Extensive maintenance of permanently grassed areas	Extensive grazing to maintain and improve the condition of permanently grassed areas
Denmark	Environmental and climate-friendly grassland	Maintaining grassland for more than 2 years without tillage (as long as the area is under the scheme)
Finland	Biodiversity plants	Establishment of plants beneficial for pollinators, game or field birds and for scenic on an annual basis, except for meadow plants. No tilling of soil, fertilization or plant protection is allowed. At maximum 25% of the agricultural land of a farm is eligible for support.
Germany	Grassland extensification	All permanent grassland of a farm - with defined stocking rates (0,3-1,4 roughage eating livestock units), but no obligation of grazing all grassland / mulching is possible
Germany	Unmown grass strip / grass patch	Small strips or patches on permanent grassland are left unmown, but can again be mown the next time
Germany	Grassland with 4 regional indicator species	Results-oriented extensive management of permanent grassland with evidence of at least four regional indicator species, selection out of a defined indicator list
Hungary	Extensive grasslands	Grasslands should be mowed or grazed in order to maintain their proper condition
Netherlands	Species rich grassland	Including clover and/or all kinds of herbs in grassland seed mixes
Netherlands	Grazing	Increase number of grazing days on grassland; even though designed to optimize manure management this is also benefiting biodiversity

Ireland	Extensive livestock production	A specified maximum overall stocking rate for the calendar year at farm level
Italy	areas Animal welfare with grazing	Grazing of livestock is a prerequisite for participation (certification system)
Poland	Extensive use of permanent grassland with grazing animals	Number of animals between 0,3 and 1,5 LU/ha of grassland at farm level
Spain	Extensive grazing	Grazing with own animals for a minimum period of 90 to 120 days a year, continuously or discontinuously, respecting criteria of minimum and maximum stocking rates
Spain	Sustainable mowing	A reduced number of cuts per year or, alternatively, the maintenance of margins without mowing and of landscape elements, on at least 7% of the grassland surface at farm level
Romania	Increasing capacity for carbon sequestration by meadows and drought prevention	Use of chemical fertilizers and pesticides is prohibited; use of manure is allowed up to max. 60 kg N / ha; the permanent grassland area must be mowed or grazed to a limited extent

Organic farming as an eco-scheme

In the current programming period Member States can provide financial support for conversion to and maintenance of organic farming under the second pillar of the CAP. This will continue to be possible as “commitments to convert to or maintain organic farming practices and methods” are explicitly mentioned under article 70 of the Strategic Plan Regulation. But while programming under the second pillar always requires national co-funding, Member State can also offer an eco-scheme for organic farming where 100% of the funding comes from the CAP budget.

Table 10: Conversion to and / or maintenance of organic farming

Country	Conversion	Maintenance	Brief description
Bulgaria		x	Support for arable, grassland, permanent crops and animals
Denmark	x	x	Support for arable, grassland, permanent crops and animals Will benefit climate, management of natural resources, biodiversity, reduce antimicrobial resistance
Estonia		x	Support for arable, grassland, permanent crops; possibility to engage in further eco-schemes
France	x	x	Support for arable, grassland, permanent crops; not as a separate measure; certified organic farming automatically fulfil the requirements of the environmental certification track measure
Latvia		x	Support for arable, grassland, permanent crops; flat rate payment per hectare
Netherlands		x	Support for arable, grassland, permanent crops and animals; only SKAL certified organic agriculture
Italy	x	x	Support for arable, grassland, permanent crops
Poland		x	Support for arable, grassland, permanent crops
Romania	x		Support for arable, grassland, permanent crops, including growing of vegetables, medicinal and aromatic plants

All of the countries compiled in Table 10, except for Netherlands, are currently financing organic farming under the second pillar. In the EU Farm to Fork Strategy⁴ published in May 2020 a target of

⁴ https://eur-lex.europa.eu/resource.html?uri=cellar:ea0f9f73-9ab2-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF

25% organic farming in the EU by 2030 has been set. This may be a further reason for the great interest given in supporting conversion and maintenance of organic farming as an eco-scheme measure. All Member States listed in Table 10 foresee support for organic farming on arable land, grassland as well as for permanent crops. In addition, Bulgaria and the Netherlands explicitly target livestock. France has designed a measure called “environmental certification” that allows organic farms to benefit from eco-scheme payments.

Support for eco-scheme measures shall take the form of an annual payment, this is easy to be put in practice for maintenance of organic farming as it is unlikely that farmers being certified organic would claim eco-scheme payments for one year and not for the following ones. But when it comes to conversion, here a multi-annual engagement from farmer’s side as well as for the paying agency would be more appropriate as in the first two years farmers can’t sell their products as organic while they have to respect the organic obligations making the conversion period particularly challenging.

Conclusions

When looking at the proposed measures, the diversity among the assessed eco-schemes of the 15 countries is quite impressive. In January 2021 the EU Commission published a list of potential agricultural practices that eco-schemes could support⁵ and most of them can be found in one or another eco-scheme of the countries looked at. At the same time, it becomes obvious that to a great extent the eco-scheme measures are derived from existing greening measures designed at EU level and / or AECMs. The Member States are free to decide what measures to be offered on a voluntary basis as eco-scheme measure or as AECM, this has led to a situation where similar measures are programmed as eco-scheme in one country while another includes it in the list of AECMs with pillar II financing.

For some of the proposed measures, in particular when it comes to catch crops or the maintenance of permanent grassland without soil disturbance, the practices required are likely to only slightly go beyond the current greening or AECM measures if at all. Here it becomes apparent that Member States are in a delicate situation. On one side, they have to ensure that there is no backsliding compared to the environmental and climate achievements under the current CAP programming period, on the other side the measures must be sufficiently attractive for farmers to engage on a voluntary basis. A further difficulty to overcome is the planning uncertainty for the administration resulting from the annuity of the eco-schemes. Farmers will have the possibility to opt in or out from these voluntary schemes on an annual basis – even though there is the option to extend eco-schemes to several years where suitable. At the same time this flexibility for farmers as regards the choice of measures as well as the farmland concerned may lower the hurdle for participation, in particular for those farmers not yet participating in AECMs. It allows experiences with environmental and climate-friendly agricultural practices to be gained without a multi-annual engagement (and a reduced sanction risk going along with it). If the eco-schemes are well accepted by farmers and adequately complemented by 2nd pillar measures this may kick-start the agro-ecological transition as desired by parts of civil society in the EU, and needed to achieve the sustainable development goals (SDGs). At the same time there is little time for learning in this 5-year programming period until 2027.

The intention to enable all farmers to get access to eco-scheme payments by offering some measures that can be easily implemented by a large majority of farmers, be it on arable land or grassland, finds

⁵ https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/factsheet-agri-practices-under-ecoscheme_en.pdf

its resonance in the considerably reduced details as regards the requirements compared to what is the case for AECMs. Still, not all details are known yet and none of the eco-scheme measures has been approved yet. Furthermore, it can be expected that there will be modifications and adaptations during the programming period in the eco-scheme measures to balance out supply and demand which makes any attempt to evaluate the ecological effectiveness at this time challenging.

Regardless the overall not too high a level of ambition, if a sense of ownership amongst farmers can be reached - after all, a quarter of direct payments goes into eco-schemes – this could lead to a significant increase in the areas under commitment. With this and the probability of reaching also more productive regions with the eco-scheme measures, it can be assumed that at least some positive environmental effects can be achieved. Interestingly, all Member States foresee dedicated measures for arable land and do also include land grown with permanent crops. This emphasis on arable land is new compared to the current AECMs where measures for grassland, usually permanent grassland, dominate in many countries. This provides new opportunities for arable farms to participate, particularly to improve their production environment such as soil. The uptake of eco-schemes could be further facilitated if well supported by the agricultural knowledge and innovation system (AKIS), a mandatory element of the new CAP in view of fostering training and advice as well as the uptake of novel practices by farmers.

Even though a majority of the eco-scheme measures finds their correspondence in existing schemes, there are also examples for novel measures as well as novel combinations of requirements. One example is the strip cropping proposed for Netherlands where several crops are grown side by side in wide long strips instead of blocks with the aim of fostering diversity through a diverse micro-landscape or soil management and to reduce pesticide application. Also, the Austrian the measure called system “always green” requires a comprehensive vegetation cover of at least 85% of arable land at any time throughout the year. Such a measure targeting the whole arable land is quite innovative with farmers being free to decide what crops they grow including cover and undersown crops. In Poland, use of photos with geo-referenced location information as proof making use of new technologies is explicitly foreseen for a fertilisation measure making use of an application provided by the paying agency other countries are planning to make use of remote-sensing technologies to facilitate monitoring.

It is probable that with the introduction of eco-schemes that do not require national co-funding the Member States will extend the set of voluntary agri-environmental practices compared to the current situation. Besides the eco-schemes in the first pillar, 30% of the budget in the second pillar have to be earmarked for environment and climate. Even though Member States are free to decide how much of this budget is used for AECMs or for other measures qualifying for support, including non-productive investments, it is likely that a significant share will be used for the multi-annual commitments foreseen to complement the eco-schemes.

While the level of ambition of the single measure provides some indications about the potential to raise the bar compared to the current programming period, it would be necessary to look into the full set of instruments to be offered under the new CAP.