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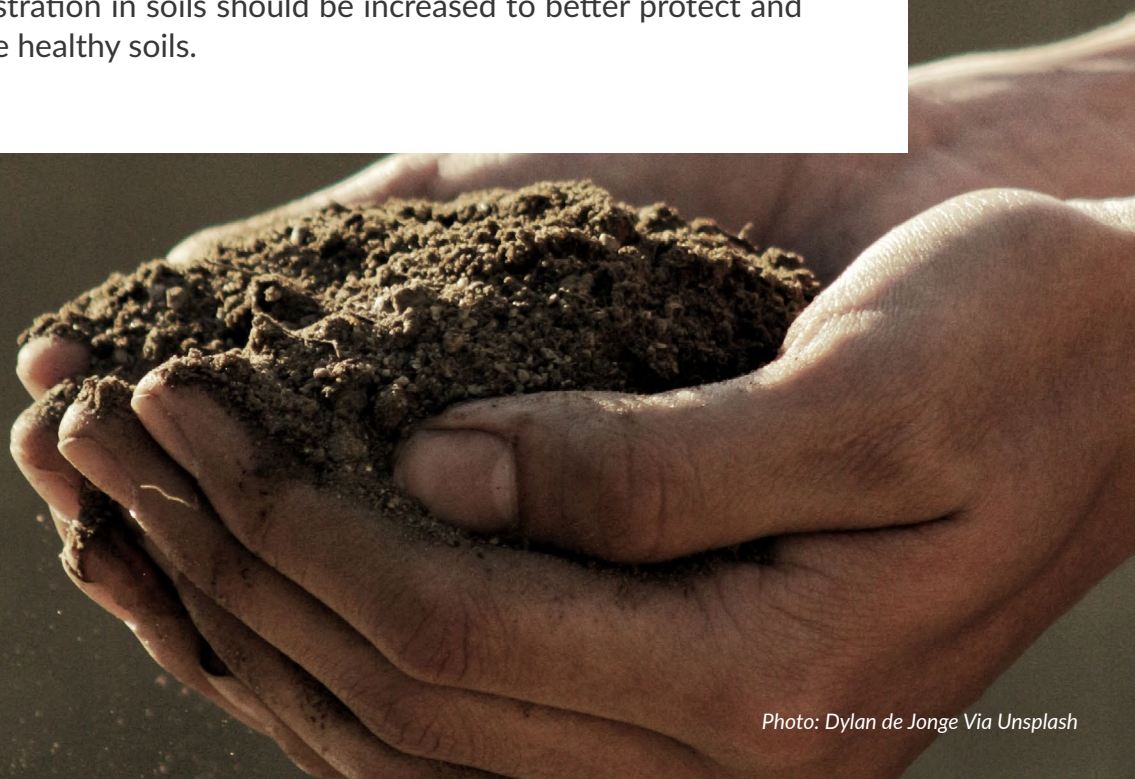

BirdLife
INTERNATIONAL
EUROPE AND CENTRAL ASIA

Soil and carbon farming in the new CAP: alarming lack of action and ambition

BirdLife Europe and European Environmental Bureau policy briefing

Key messages:

- » **Safeguarding soil health is crucial** to ensure the provision of essential ecosystem services and can be a key instrument in mitigating climate change by carbon sequestration. However, **the majority of EU soils are unhealthy and soil threats are not adequately addressed by the new CAP regulation.**
- » **Draft CAP Strategic Plans fail to sufficiently protect EU soils** and thereby fail to prevent further soil degradation and loss of soil organic matter. The **conditionality requirements relevant to soils (GAEC 5, 6 and 7) are implemented too weakly by Member States** to reduce soil threats and slow down soil degradation.
- » **Both eco-schemes and Pillar 2 measures need to be strengthened to foster sustainable soil management practices.** The quality of management schemes aimed at soil health and carbon sequestration in soils should be increased to better protect and restore healthy soils.



1. Background:

Fertile and healthy soils deliver essential ecosystem services including the provision of food and feed, nutrient cycling, water regulations and purification, supporting all terrestrial biodiversity and mitigating climate change by carbon sequestration.¹

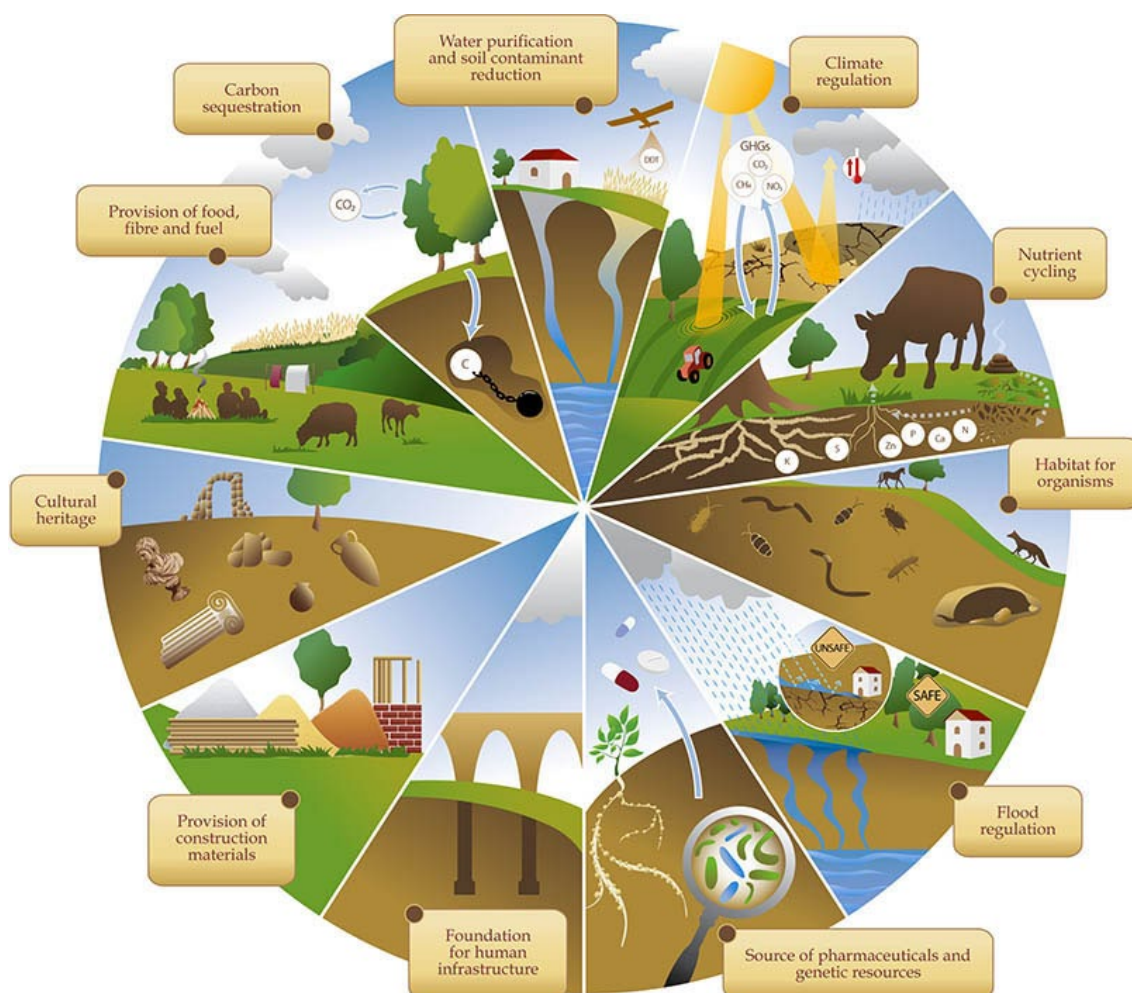


Figure 1: Soil ecosystem services; Source: FAO 2015

Yet, destructive human activities are causing soils to suffer from sealing, erosion, compaction, pollution, salinisation and carbon loss worldwide - a trend which has been accelerated by the spread of intensive agricultural practices, deforestation, overgrazing and improper land use changes and management. This widespread degradation of our soils reduces their ability to deliver their normal functions. This poses a serious threat to our future ability to produce nutritious food.

Furthermore, the excessive use of synthetic fertilisers, pesticides and manure in agricultural settings, combined with ploughing and reduced crop diversity negatively affect soil microbial functions and biochemical processes and ultimately damage soil fertility and the nutritional quality of our food. As a consequence, farmers are

1 - European Environment Agency (2019), The European environment – state and outlook 2020. Knowledge for transition to a sustainable Europe: <https://www.eea.europa.eu/publications/soer-2020/#page=113>

forced to use ever more pesticides and fertilisers to keep yields constant, while the food they grow is increasingly lacking vital micronutrients.²

Soils and carbon farming

Sustainable soil management practices which support the preservation and restoration of soil organic carbon are crucial to maintain soil health and can play an important role in mitigating climate change.³ The degradation of one-third of the world's soils has already released up to 78 Gt of carbon into the atmosphere, thereby further accelerating climate change. In this context, peatlands and wetlands - which contain high amounts of soil organic carbon - are of particular concern as their large-scale degradation and drainage in agriculture is responsible for roughly 5% of the total EU GHG emissions. As our previous [briefing on wetlands and peatlands](#) focuses on organic soils, and grasslands are covered in a separate briefing, the scope of this briefing is limited to mineral soils under arable land.

The EU has committed to boost carbon sequestration and storage in agricultural soil and in vegetation through its [carbon farming initiative](#). Through this agenda, the Commission wants to incentivise farmers and foresters to reduce emissions from, and increase carbon sinking on, their land. In its report [Carbon Farming for Climate, Nature and Farmers](#), the EEB defines carbon farming as “the management of land-based GHG fluxes, including carbon pools and flows in soils, materials and vegetation, with the purpose of reducing emissions and increasing carbon removal and storage”.

While organic carbon is generally a good determinant of soil health, an approach narrowly focused on carbon may promote practices with negative externalities. To remediate this, following a holistic approach considering nature restoration, climate adaptation, nutrition security, and rural livelihoods which works towards healthy soils and healthy ecosystems is crucial.

For the following assessment, the EEB and BirdLife Europe asked national experts from their networks to review the targets and measures proposed by Member States to protect mineral soils under arable land in their national CAP strategic plans. The assessment focuses on 8 Member States: France, Germany, Hungary, Ireland, Italy, Poland, Portugal, and Spain.

Photo: Tatiana Nemcova

2 - Soil Association (2021), SAVING OUR SOILS Healthy soils for our climate, nature and health: <https://www.soilassociation.org/media/22963/saving-our-soils-report.pdf>

3 - FOA website: <https://www.fao.org/global-soil-partnership/areas-of-work/soil-organic-carbon/en/>



1.1. Policy context: link between CAP, carbon farming and soil health

Despite the urgent need to protect and restore soils, the policy and legislative landscape surrounding soils still lags behind. The absence of an EU framework for soil protection means that many soil threats have remained unregulated and many soil functions unmonitored, but change is coming.

The new [EU soil strategy](#) launched in 2021 announced a new legislative framework for [soil health](#), with a proposal expected in early 2023.⁴ The forthcoming EU Nature Restoration Law which will set legally binding targets to help restore ecosystems and their soils by 2050 will be an important step forward.

Nevertheless, the Common Agricultural Policy (CAP) remains the single largest funding mechanism available to date and has the potential to support more sustainable soil management practices in the agriculture and forestry sectors. In the period 2023-27, soil protection is covered by the fifth CAP objective which aims to “foster sustainable development and efficient management of natural resources such as water, soil and air, including by reducing chemical dependency.”⁵ However, the two impact indicators linked to this objective only cover soil carbon and soil erosion: I.11 Enhancing carbon sequestration: Soil organic carbon in agricultural land and I.13 Reducing soil erosion: Percentage of agricultural land in moderate and severe soil erosion. Several other soil threats, such as compaction and salinisation, remain absent in the new CAP regulation.

2. Protection and Restoration of Soils in 8 EU Member States:

2.1 GAECs requirements not strong enough to protect soils

CAP payments are conditional upon a set of statutory management requirements (SMRs) and good agricultural and environmental conditions (GAECs). GAECs of particular relevance to soil protection and quality include:

- » Tillage management, reducing the risk of soil degradation and erosion, including consideration of the slope gradient (GAEC 5);
- » Minimum soil cover to avoid bare soil in periods that are most sensitive (GAEC 6);
- » Crop rotation in arable land, except for crops growing under water (GAEC 7).

4 - Euroactive (April 19, 2022): <https://www.euractiv.com/section/eu-india/interview/soil-conservation-must-be-priority-says-indian-leader-of-new-global-campaign/>

5 - European Commission CAP Specific Objective Brief No 5: Efficient Soil Management: https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/cap-specific-objectives-brief-5-soil_en.pdf

2.1.1 GAEC 5 - Tillage management

Although the specific requirements under GAEC 5 vary among the assessed countries, at least one or more of the following conditions for tillage management are put in place: limits on the dates of ploughing; requirements to establish green cover after ploughing; and limits on ploughing on sloped land. In theory, no-till and minimum tillage practices can provide soil stability to help reduce erosion from wind and rain, however, low requirements and exemptions under GAEC 5 pose the risk of not safeguarding agricultural soils adequately.

In **Ireland**, for instance, green cover must be ensured after land is ploughed. However, farmers are allowed to plough during the winter period which can potentially increase soil erosion (the ploughing of all grassland is only prohibited between 16th October and 30th November). **Germany** and **France** define a similar narrow “sensitive period”, prohibiting ploughing in areas threatened by water erosion from 1st December till 15th February. This time span seems too weak, considering that heavy rains can start in October/November and any ploughing in that time can lead to massive erosion. While some of the GAEC 5 measures in the **Italian** CSP seem effective, ploughing is still allowed and restrictions are applied for insufficient periods.

Poland and **Ireland** suggest a slope threshold of 20%, which is too high as parcels with a substantially lower gradient are already at risk of soil erosion. Similarly, **Portugal** only sets standards on tillage management for slopes of 15% or more and in **Spain**, areas considered to be at high or very high risk of soil erosion are not adequately covered by GAEC 5. In addition, Spain allows exemptions for ploughing on steep slopes instead of making no-till farming obligatory. The **Hungarian** CSP refers to various national regulations that require farmers to comply with several soil conservation principles and practices, although this obligation is not always supported by the necessary decree for implementation.

In sum, the practices under GAEC5 addressing soil erosion and degradation are often applied in limited circumstances and must be more ambitious. While the slope gradient is one essential aspect that needs to be taken into account, MS should ensure that the threshold is set appropriately and that other risk factors for soil erosion are addressed as well. In many of the assessed countries, the period during which ploughing is banned should be extended.



Photo: Tatiana Nemcova

2.1.2 GAEC 6 - Soil cover

Member States are given the flexibility to define the “sensitive period” over which GAEC 6 applies and the specific conditions of soil cover. Overall, many of the assessed Member States are lacking either sufficient time spans (too short or not defined) or conditions to ensure that arable, permanent crops and fallow land are adequately covered.

For instance, **Ireland’s** proposed rules do not clearly set the most sensitive period and the timespan during which farmers need to provide for soil cover (for grasslands and arable areas). Soil cover requirements in **Poland** only apply to 30% of arable land whereas **Hungary** and **Spain** lack rules on permanent crop areas. In **France**, GAEC 6 only covers arable crops in vulnerable areas that are defined by the National Nitrates Action Program, instead of covering all arable land.

Moreover, **Hungary** defines “sensitive periods” as the periods after the summer and autumn harvests, thus excluding soil cover requirements during the winter months. A similar short “sensitive period” is suggested by **Germany** (soil must be covered with either cultures or stubbles from December till mid- February), while in **Italy** it is mandatory to cover soil from 15 September to 15 May, but only for at least 60 days (compared to 90 days required under the current CAP) which our national experts deemed an incomprehensibly short period. Similarly, **Spain** lacks a clear minimum duration of green cover to avoid bare soils in the most sensitive periods.

Out of the 8 assessed countries, **Portugal** is the only country which proposes sufficient GAEC baseline requirements for winter soil cover (e.g., “sensitive period” is set between November 15th and the 1st of March).



To improve GAEC 6 rules and to ensure minimum soil cover, Member States should clearly define and extend sensitive period(s) and ensure that conditions for soil cover apply to arable, temporary grasslands, permanent crops and fallow land.

2.1.3 GAEC 7 - Crop rotation and diversification

While the CAP Strategic Plan regulation makes crop rotation mandatory under GAEC 7, it also allows for crop diversification to be implemented as an alternative in regions where “ farming methods and agro-climatic conditions” justify it. It also defines crop rotation very weakly, as “a change of crop at least once a year at parcel level [...], including the appropriately managed secondary crops”. Our analysis

Photo: Vincent Guyot Via Twitter

shows that only a few of the assessed Member States propose a good approach under this GAEC, combining practices on crop rotation and crop diversification. Instead, most Member States have either defined crop rotation very weakly, or replaced it altogether with crop diversification in the entire country, without due justification.

Both **France and Ireland**, for instance, allow farmers to apply “crop diversification” instead of crop rotation, rather than making both practices mandatory and complementary. In **Portugal**, GAEC 7 requires crop rotation, so that the main crop within a specific parcel is not cultivated for longer than one year, however, similar to Ireland and France, the possibility to apply crop diversification as an alternative is allowed for all farmers. **Poland, Spain and Hungary**, on the other hand, define crop rotation practices rather weakly and lack a clear definition of crops and secondary crops.

The implementation of GAEC 7 in **Germany** will be a slight improvement as growing wheat after wheat and maize after maize (on 50% of the area) is not allowed anymore. However, the German government has already been asking for a derogation from GAEC 7 in 2023, using the excuse of the Ukraine war.

In **Italy**, there is an obligation to rotate crops, but herbaceous forage crops (including maize for silage) and arable land of <10 Ha are excluded. Here, too many exceptions make the rule poorly effective.

2.2 Result indicators R.14 and R.19 - ensuring healthy soils beyond the baseline

The key result indicators providing information on the ambition of Member States regarding improving soil carbon storage and soil protection through voluntary commitments are indicator R.14 *Carbon storage in soils and biomass*⁶ and R.19 *Improving and protecting soils*.⁷ Although the targets set in the draft CSPs indicate how a given Member State intends its funded interventions to help achieve the CAP’s environmental and climate-related objectives, the targets should be assessed with care.

Overall, R.14 ranges from 0% to 85%, with the majority of Member States choosing target values below 50%. None of the 8 assessed countries (highlighted in light blue), for instance, chose target values for R.14 above 40% (see table below).

6 - R.14 represents the share of utilised agricultural area (UAA) under supported commitments to reduce emissions or to maintain or enhance carbon storage (including permanent grassland, permanent crops with permanent green cover, agricultural land in wetland and peatland)

7 - R.19 represents the share of utilised agricultural area (UAA) under supported commitments beneficial for soil management to improve soil quality and biota (such as reducing tillage, soil cover with crops, crop rotation included with leguminous crops)

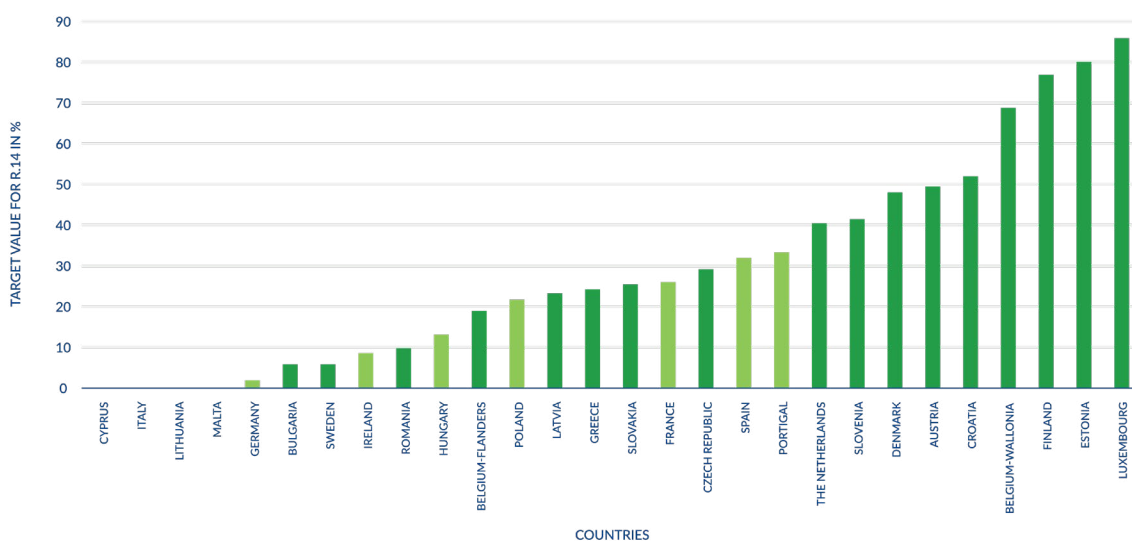


Table 1: Target Value for R.14 Carbon storage in soils and biomass

Similarly, R.19 includes values between 0% and 85%, with more than half of all EU Member States below 40%. Out of the 8 assessed countries, only one country (France) chose a target value above 50%.

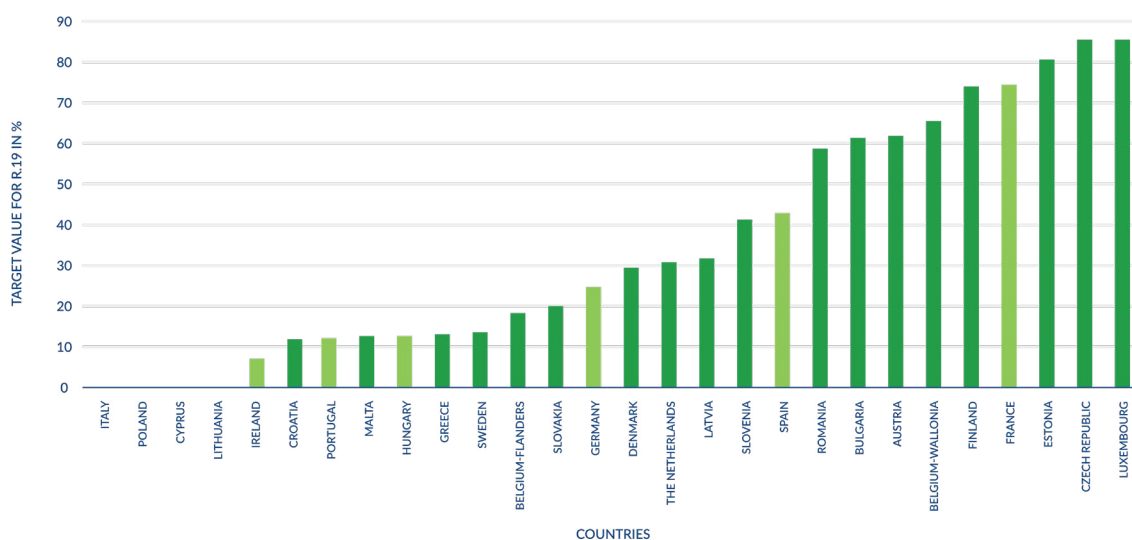


Table 2: Target value for R.19 Improving and protecting soils

However, high target values tend to come with low ambition in the measures contributing to it. For example, although the target value in **France** for R.14 and R.19 has been set at 26,2 % and 74,1% respectively, these targets have limited meaning in practice as the overall measures related to soil carbon storage and soil protection as not ambitious enough (e.g., no crop rotation is proposed).

Moreover, the targets are generally not proportional to the scale of the needs nor potential (e.g., Ireland, Poland, Hungary). In **Ireland**, for instance, the target set for result indicator R.14 (8,88%) seems low given that the country has the highest percentage of permanent grassland in the EU and peatlands cover a substantial proportion of the national land area. Similarly, the target for result indicator R.19 (7,11%) seems low compared to the scale of the needs identified on these issues in the Irish CAP Strategic Plan.

Interestingly, **Spain** set progressively higher targets on R.14 and R.19 throughout the period of implementation, reflecting the expected increasing degree of uptake over the duration of the Plan - a trend rated positively by our experts.

2.3 Eco-schemes and AECMs are doing too little to support practices for improving soil health and carbon sequestration in soils

Eco-schemes and agri-environmental climate measures represent an important support tool within the CAP with the potential to fund practices for improving soil health and carbon sequestration in soils. As already outlined in our earlier [assessment of draft eco-schemes](#), Member States propose several eco-schemes that are supposed to contribute to improved soil and nutrient management. Unfortunately, many eco-schemes only add very little value to existing conditionality standards on soils and lack overall ambition. Co-schemes could contribute to improving natural soil fertility and boosting soil carbon content through crop rotations, planting of legumes, diverse cover crops, and mulching of crop or pruning residues, reducing emissions from soils. However, increasing soil carbon sequestration requires a holistic approach to soil management, consisting of a mix of different practices, which is missing in most of the assessed countries who set up eco-schemes that reward single practices which are unlikely to deliver on their own.

Poland, for instance, is planning to pay for growing cover crops over winter. However, GAEC 6 already establishes an obligation to have a minimum soil cover to avoid bare soils in sensitive periods. Moreover, farmers are eligible for payments when developing and following a fertilisation plan, a very basic practice which should be under conditionality and should certainly not be rewarded per hectare.

France, Hungary and Poland are planning eco-schemes for crop diversification which have very little environmental benefits in the way they are applied (merely requiring farms to grow several crops, without consideration for the size and diversity of parcels), and essentially no benefit for soils if not combined with a diverse crop rotation.

On the other hand, **Italy, Spain and Germany** propose eco-schemes for enhanced crop-rotation, which is generally welcomed when they include additional requirements such as long-term rotations or the inclusion of a leguminous crop.

A similar conclusion can be drawn for the second pillar agri-environmental-climate measures (AECMs), where ambitious and beneficial voluntary measures for the

protection and maintenance of healthy soils are few and far between. Instead, many AECMs are not sufficiently focused on soil health or offer very limited added value for soil carbon sequestration.

More information on the proposed eco-schemes and AECMs in the analysed Member States can be found in Annex 1. The two tables list the eco-schemes and AECMs aimed at supporting practices for improving soil health and carbon sequestration in soils. In addition, our agri-experts have provided an evaluation of their overall level of ambition.

2.5 Other voluntary measures helping farmers to adopt agroecological farming practices to improve soil health and soil carbon sequestration

Besides voluntary measures, such as eco-schemes funded under Pillar 1 and Agri-Environment-Climate Measures funded under Pillar 2, some MS propose additional measures (e.g., advisory services or investment support) which aim to help farmers to improve soil health and soil carbon sequestration.

For instance, the **Irish** government has recently launched a soil sampling and analysis programme while in **Italy**, beneficial voluntary measures include investment support for forestation/afforestation systems and agroforestry systems on agricultural land and non-agricultural areas, as well as support for non-productive investments in rural areas. In **Portugal**, investment support to improve manure management and to promote the incorporation of muds, manures and organic byproducts in soils may be beneficial. In addition, non-productive investments to establish vegetated strips along water courses and drainage ditches (to avoid erosion) and support for the installation of agroforestry systems and the installation of biodiverse green cover on forested areas are welcome.



However, some investment support measures proposed by Member States are concerning. For example, **Italy** provides investment support for new infrastructures for agriculture and for the socio-economic development of rural areas, which are likely to increase soil sealing and compaction. Moreover, productive investment on intensive irrigated monocultures and the development of “sustainable irrigation projects” and “improvement of the sustainability of existing irrigation projects” in **Portugal** serves basically to fund the national plan for irrigation that has resulted in the industrialisation of rural areas through monocultures and factory farming.

Photo: Bits and Splits Via AdobeStock

3. Conclusions and recommendations

Healthy soils are critical for life on earth. Food security, water quality, climate change mitigation and adaptation, human health, and biological diversity all depend on this resource and therefore it is paramount to safeguard, protect and restore soils on European farms.

But as this assessment shows, Member States lack strong and appropriate action to safeguard and maintain healthy soils through their national CAP Strategic Plans. The baseline requirements to reduce the risk of soil degradation and erosion and to protect soils (GAEC 5, GAEC 6 and GAEC 7) are weakly implemented by Member States. While there are a few eco-schemes and Pillar 2 measures supporting the sustainable management of soils, many of the proposed management measures need further improvement to adequately support soil carbon sequestration and improve soil health.

Therefore, the EU and Member States must urgently scale up action on soils on EU farms to save them from further degradation:

- » In order to become climate neutral, meet its zero pollution commitment, and achieve a circular economy, the EU must protect, restore and sustainably use its soils. **CAP Strategic Plans must be brought fully in line with existing legislation** (e.g. on water, pesticides, birds and habitats, climate targets) which contains provisions relevant for soils **and with new legislation** as soon as it comes into force (e.g. Nature Restoration Law and Soil Health Law).
- » **Better indicators and more ambitious targets are needed to ensure the CAP addresses all soil threats:** Member States should urgently act to improve their soil monitoring and to set clear targets to halt soil degradation and restore soils, without waiting for the new EU Soil Health Law which will only come into force in the second half of this decade.
- » **More ambitious baseline requirements to ensure better soil protection:** Conditionality requirements under GAEC 5, GAEC 6 and GAEC 7 should be strengthened and Member States must set stricter rules to prevent further soil deterioration. Implementing crop rotation practices is crucial for soil protection and Member States should apply it in addition to crop diversification instead of proposing it as an alternative.
- » **Incentives through eco-schemes and second pillar AECMs** should be increased and aimed at safeguarding and maintaining health soils in the long-term. Member States should design more ambitious and holistic soil management practices, such as regenerative farming in line with agro-ecological principles (and taking into account the diversity of soil ecosystems and types). Basic measures which fall under conditionality (e.g. soil cover in winter) should not be included in voluntary subsidy schemes.

ANNEX

1. Overview of proposed eco-schemes by assessed member states

Country	Eco-scheme(s) aimed at supporting practices for improving soil health and carbon sequestration in soils	Comment/Evaluation
France	<ul style="list-style-type: none"> • Crop diversification • Eco-scheme for permanent pastures 	Both eco-schemes lack ambition
Germany	<ul style="list-style-type: none"> • Extensive grassland use • Enhanced crop rotation (requiring 5 crops + 10% legumes, max. 66% cereals) 	<ul style="list-style-type: none"> • Eco-scheme for extensive grassland use requires stocking density between 0,3 and 1,4 LU per ha and no pesticides and is deemed good • Eco-scheme on enhanced crop rotation needs further improvement to be effective
Hungary	<ul style="list-style-type: none"> • Soil cover during winter • No-till soil management • Application of soil conditioners, nitrogen-inhibitors and microbiological products • Covering the interspaces between rows • Crop diversification • Sustaining a greater ratio of non-productive areas (e.g. fallow, growing nitrogen-fixing plants and green manure). <p>For Natura 2000 areas:</p> <ul style="list-style-type: none"> • Protecting permanent grasslands on farm level • Maximising the area of a farmland • Limiting the use of harmful insecticides • Use of ecological plant protection • Applying soil cover and growing grass between the rows 	Eco-schemes could contribute to protection and restoration of soil biodiversity
Ireland	<ul style="list-style-type: none"> • Future organic farming scheme to improve soil organic matter 	<ul style="list-style-type: none"> • Potential scope for strengthening the scheme in relation to reducing nutrient use and improving soil quality • Important issues, such as the need to deal with monocultures of scots pine being grown by commercial forestry (extremely bad for biodiversity and the soil, making it acidic), the runoff and soil damage from expanding dairy industry and the drainage of peatlands, remain unaddressed
Italy	<ul style="list-style-type: none"> • Eco-scheme focused on antimicrobial reduction • Animal welfare payment for keeping cattle out to pasture • Green soil cover of permanent crops (focus on vines, olive and fruit orchards) • Crop rotations with legumes 	<ul style="list-style-type: none"> • In general, the eco-schemes are not sufficiently focused on soil health • Eco-schemes on antimicrobial reduction could reduce the impact of antibiotics (carried by animal waste) on soil biodiversity, but it appears too unambitious • Animal welfare payment for keeping cattle out to pasture, could increase the grazing meadows, but it is more likely to be ineffective or, worse, to favour overgrazing, because management measures for grazing animals are not required • Green soil cover and crop rotation scheme appears potentially effective to counteract erosion and increase the soil organic matter content • What is needed: an eco-scheme on agroforestry, and also measures aimed at reducing nutrients (and livestock density) to counter the serious state of eutrophication that is found in the soils and waters of the areas characterised by high livestock density

Poland	<ul style="list-style-type: none"> • Winter catch crops or legume intercrops • Developing and following a fertilisation plan using the FaST (Farm Sustainability Tool) for nutrients • Crop diversification (minimum 3 crops); -simplified cultivation systems • The use of an Integrated Plant Production System • Water retention on permanent grasslands 	<ul style="list-style-type: none"> • Only one eco-scheme with the aim to retain water on permanent grassland supports soil carbon sequestration to some extent
Portugal	<ul style="list-style-type: none"> • Soil management: management of permanent pasture • Soil management: promotion of organic fertilisation • Organic farming (Conversion and Maintenance) • Integrated Pest Management for crops 	<ul style="list-style-type: none"> • Eco-scheme on soil management aims to increase soil carbon sink capacity and protect soil against erosion. For this intervention, farmers are required to have a grazing and fertilisation management plan, to use agricultural advisory service and to ensure direct seeding in case of reseeding. Support is granted per area and animal density • Eco-schemes supporting the promotion of organic fertilisation, organic agriculture and Integrated Pest Management for crops are somewhat related to soil management but deemed concerning and need further improvement
Spain	<ul style="list-style-type: none"> • Extensive grazing for increased carbon sequestration • - Crop rotation in arable land (with sustainable input management in irrigated areas) • Conservation agriculture and direct seeding (with sustainable input management in irrigated areas) • Live plant cover in permanent crops and inert plant cover (mulching) in permanent crops 	<p>The eco-scheme on crop rotation must go beyond the requirements of GAEC 7, increase from 40% of arable land in rotation to the totality, in this case not allowing intermediate crops (already allowed in GAEC 7). With regards to conservation agriculture, the stubble has to cover the soil throughout the year and it is necessary to limit herbicide treatments to ensure coherence with biodiversity objectives, which also involve soil fertility</p>

2. Overview of proposed AECMs by assessed member states

Country	AECM(s)	Comment/Evaluation
France	<ul style="list-style-type: none"> • AECM for soil protection and quality • AECM for quality and quantitative water management • AECM for maintaining sustainable agro-ecological infrastructure 	AECMs are not sufficient to promote agro-ecological transition
Germany	<ul style="list-style-type: none"> • AECMs to increase the water level on organic soils, winter soil cover and erosion prevention strips 	
Hungary	<p><u>AECMS for soil carbon sequestration:</u></p> <ul style="list-style-type: none"> • Afforestation and improved/sustainable management of existing forests • Increasing organic matter in farmland soils • Protecting wetlands • Applying soil cover 	<p><u>Beneficial AECMs/voluntary measures include:</u> supporting non-productive investments; afforestation; nature-conserving practices (protecting biodiversity natural habitats); protecting forests and related ecosystem-services; coordinated 'community-planning and implementation' in forestry (among relevant stakeholder groups); increasing the number of trained AKIS advisors</p> <ul style="list-style-type: none"> • Establishing voluntary cooperation through creating 'irrigation communities' for more effective water management is considered as a potentially harmful investment support

Ireland	<ul style="list-style-type: none"> • “Straw incorporation measure” to encourage tillage farmers to increase soil organic carbon levels by chopping and incorporating straw from cereal crops and oilseed rape • “Soil sampling and liming measure” 	<ul style="list-style-type: none"> • Unclear how this would lead to an overall increase in carbon sequestration when compared to the current standard practices, especially given the fact that the minimum length of this commitment is only one year and not linked to result indicator R.19 • Soil sampling has little additional value (does not differ much from the pilot soil sampling programme currently run by the Irish agricultural authorities)
Italy	<ul style="list-style-type: none"> • Reduced tillage (no tillage / minimum tillage / strip tillage), with chopping and reuse (mulching) of crop residues • Supply of organic substance to the soil (manure, compost) • Grassing of tree permanent crops, on the total area or on a minimum area of 70%, with prohibition of chemical weeding • Cover crops and/or overseeding of legumes on cereal crops • Conversion of arable land to meadows or pastures • Management of permanent grasslands and pastures (without pesticides and mineral fertilisers) • Support for the management of non-productive investments (hedges, buffer strips, rows...) • Active management of green infrastructures (hedges, rows, buffer strips, wetlands, wet meadows, riparian areas...) • Sustainable use of nutrients • Management of crop residues and pruning (composting and mulching) • Management of afforestation and agroforestry systems • Adoption and maintenance of organic production practices and methods 	
Poland	<ul style="list-style-type: none"> • Protection of valuable habitats and endangered bird species in and outside Natura 2000 sites • The extensive use of meadows and pastures in those areas 	Both measures can support soil carbon sequestration to some extent
Portugal	<ul style="list-style-type: none"> • Soil conservation (direct sowing; grass strips; biodiverse pastures) • Monitoring of organic matter (every three years) • Soil analysis (unspecified method and period) • Measure to have at least 6 different species or varieties in the pasture, with at least 25% of leguminous plants 	
Spain	<ul style="list-style-type: none"> • AECMS promoting practices for the improvement of the soil and the fight against erosion • AECMS focused on agri-environmental commitments for organic farming 	

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With the support of the European Climate Foundation, MAVA Foundation and the LIFE Programme of the European Union. This communication reflects the author's view and does not commit the donors.

