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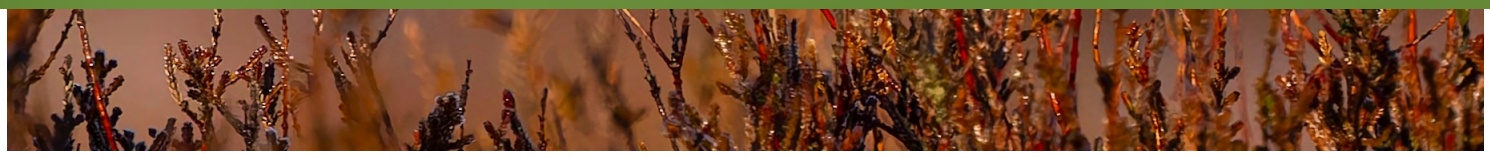
#RESTORENATURE

Rooted in restoration: rebuilding healthy farmlands

Securing and implementing strong National Nature Restoration Plans for European agricultural ecosystems



Rooted in restoration: rebuilding healthy farmlands

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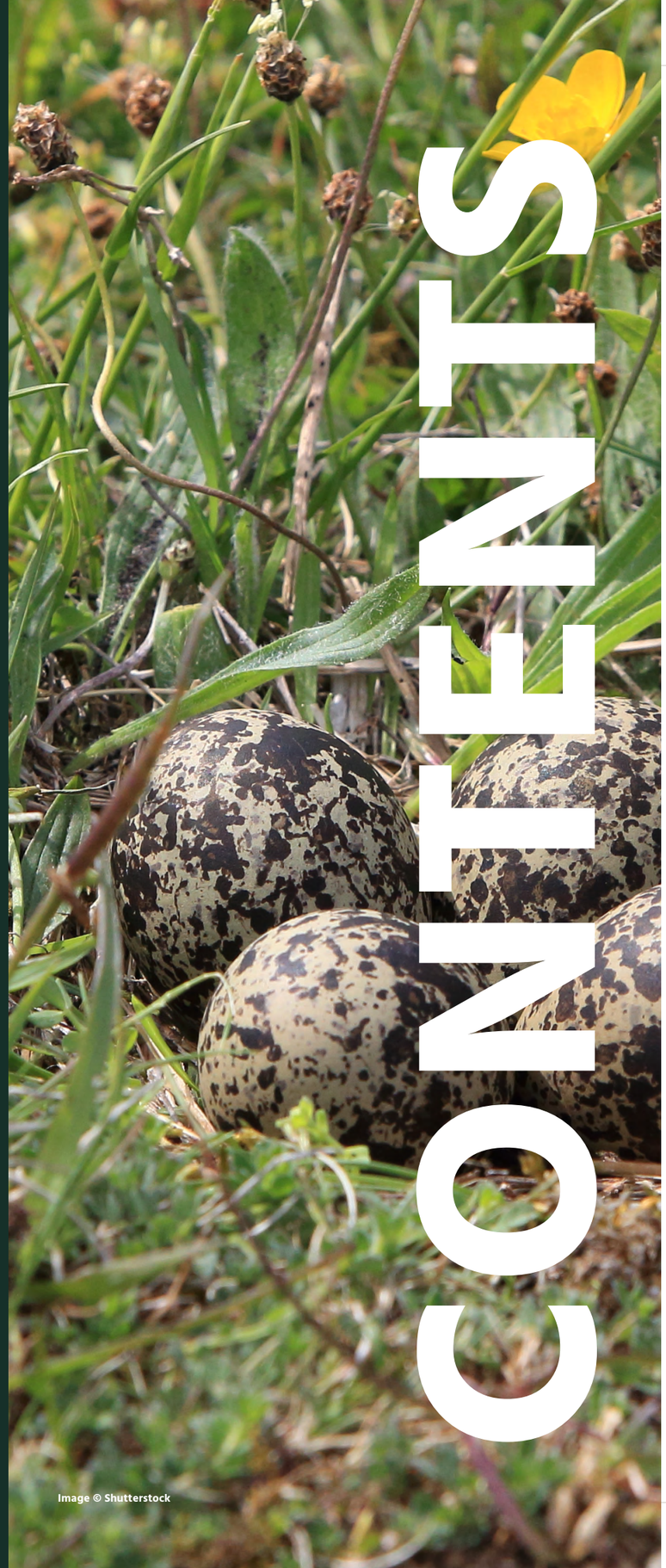

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SUMMARY

Intensive agriculture is among the leading causes of land degradation and biodiversity decline. It weakens the resilience of ecosystems, having severe consequences on food production. Food systems are dependent on the ecosystem services provided by pollination, soil health, water regulation, and carbon cycle. By restoring well-functioning ecosystems, the services they provide can also be restored.

The 2024 Nature Restoration Regulation (NRR) is the first legally binding EU framework for ecosystem restoration. It is a powerful tool that can significantly improve the status of European degraded ecosystems and hence, also restore socio-economic resilience – for farmers, as well. Under the Regulation, Member States must submit a national nature restoration plan (NRP) by September 2026, outlining how they will achieve sectoral targets, including for agricultural ecosystems, which represent 38% of EU land areas (Eurostat 2022). The NRR also plays a crucial role in addressing the farming crisis by fostering resilient natural ecosystems – from establishing nitrogen buffer zones around nature reserves, to implementing nature-based water retention systems that mitigate the water crisis. Our shared dependence on nature requires a holistic approach that brings farmers and other stakeholders that are within the same basin, or ecosystem, together.Therefore, carrying out a comprehensive nature restoration strategy in degraded agricultural ecosystems requires a good understanding of NRR requirements. NRR requirements revolve around three main strands of action: restoring agricultural habitats and ecological continuity with other connected ecosystems; rolling out scientific methodologies, monitoring tools that have proven to be effective practices; and coherence with policy and financing instruments, available by region.

This guide is intended for all stakeholders involved in developing and implementing the NRR at the national level (e.g. public authorities, farmers, land managers, conservationists, NGOs, citizens, the private sector, service providers). It aims to support the design of ambitious and coherent NRPs for European agricultural ecosystems. To that purpose, it presents a practical breakdown of the NRR requirements that are relevant to agricultural and connected ecosystems, ensuring their alignment with existing EU policy goals and instruments, with a special focus on the Common Agricultural Policy (CAP). This guide provides a toolbox for deploying adequate agricultural practices with the potential to restore biodiversity (agroecology), data collection and monitoring tools to reach restoration targets, as well as concrete examples and recommendations that ensure biodiversity protection and restoration is determinant for European food security.[1]

[1]European Commission, Safeguarding food security and reinforcing the resilience of food systems. COM (2022) 133 Final. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022DC0133

Key recommendations that emerge from this guide:

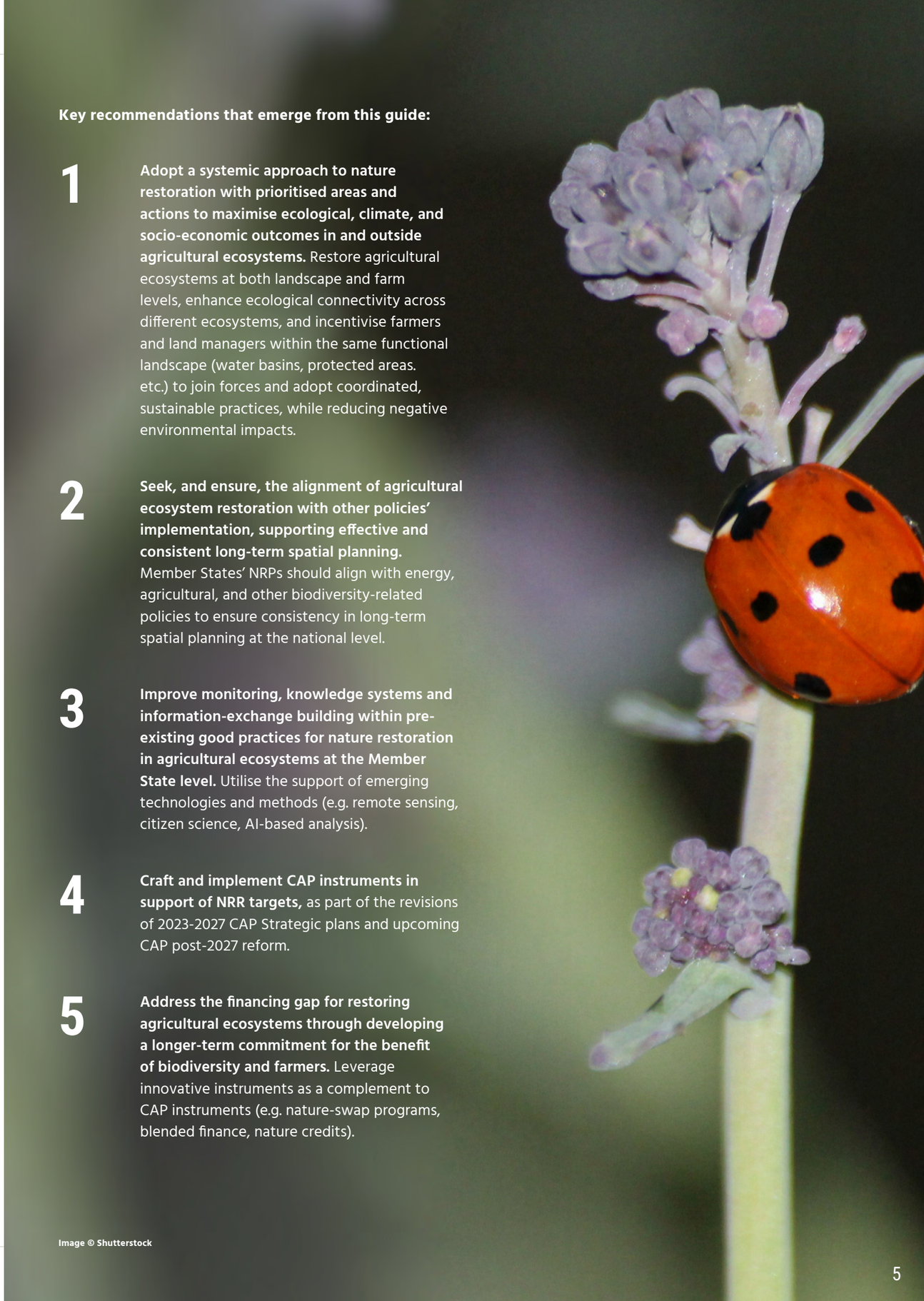
1 **Adopt a systemic approach to nature restoration with prioritised areas and actions to maximise ecological, climate, and socio-economic outcomes in and outside agricultural ecosystems.** Restore agricultural ecosystems at both landscape and farm levels, enhance ecological connectivity across different ecosystems, and incentivise farmers and land managers within the same functional landscape (water basins, protected areas. etc.) to join forces and adopt coordinated, sustainable practices, while reducing negative environmental impacts.

2 **Seek, and ensure, the alignment of agricultural ecosystem restoration with other policies' implementation, supporting effective and consistent long-term spatial planning.** Member States' NRPs should align with energy, agricultural, and other biodiversity-related policies to ensure consistency in long-term spatial planning at the national level.

3 **Improve monitoring, knowledge systems and information-exchange building within pre-existing good practices for nature restoration in agricultural ecosystems at the Member State level.** Utilise the support of emerging technologies and methods (e.g. remote sensing, citizen science, AI-based analysis).

4 **Craft and implement CAP instruments in support of NRR targets,** as part of the revisions of 2023-2027 CAP Strategic plans and upcoming CAP post-2027 reform.

5 **Address the financing gap for restoring agricultural ecosystems through developing a longer-term commitment for the benefit of biodiversity and farmers.** Leverage innovative instruments as a complement to CAP instruments (e.g. nature-swap programs, blended finance, nature credits).



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1 The Food and Nature Nexus

FAO reports[2] that 60% of human-induced degradation is estimated to occur on agricultural land, suggesting that agriculture is among the leading causes of global land degradation. A similar pattern has been observed in Europe, where an estimated 69% of degradation takes place in croplands and pastures. According to the European Environment Agency[3], nature degradation is already reducing ecosystems' capacity to support farming. Agricultural soils are deteriorating due to the overuse of chemical inputs, monocropping, insufficient replenishment of organic matter, and unsustainable soil management practices. As the EEA warns, biodiversity loss weakens the resilience of ecosystems and can have severe consequences on food production.

This loss of biodiversity poses a significant threat to Europe's food security and economic resilience (WEF, 2020). Farmland bird populations, used as a proxy for wider biodiversity health on farmland (Butler et. all, 2010), have declined by 60% since 1980[4]. Agricultural intensification—such as increased chemical use, earlier and more frequent mowing, and the loss of hedgerows and small landscape features—is considered a major driver of this decline (Donald *et al.*, 2001).

Pollinators are experiencing similar pressures. Approximately 75% of global food crops depend, at least partially, on animal pollination making pollinator health a matter of food security (Chaplin-Kramer *et al.*, 2014; Klein *et al.*, 2007). According to the IUCN (2025) Red List of Threatened Species[5], 10% of Europe's wild bees (172 of 1,928 assessed species) are at risk of extinction. Grassland butterflies show comparable trends; between 1991 and 2023, their populations declined by 50% in the EU, reflecting habitat loss and intensive agricultural practices (EEA, 2024). Overall, according to the IUCN, 15% of European butterflies (65 of 442 assessed species) are now threatened, including more than 40% of Europe's endemic species. The Madeiran large white (Pieris wollastoni) has already been declared Extinct (IUCN 2025).

Intensive agriculture remains the main driver of these declines, particularly, changes in grazing practices, including under- and over-grazing, alongside wider use of herbicides and pesticides (Figure 1). Climate change further amplifies these pressures, as more frequent and intense heatwaves, droughts, and floods reduce yields across Europe and undermine the stability of food systems (IPCC, 2022).

Intensive farming also pollutes rivers and seas. The European Environmental Agency[6] reported that 22% of EU surface waters and 28% of groundwater are significantly affected by agricultural diffuse pollution, with pesticides being detected above safety thresholds at 22% of river and lake monitoring sites. Wetlands, which naturally filter out 25% of nitrogen pollution from rivers before it reaches the sea, have been widely drained, worsening the problem of nitrogen pollution. Since rivers flow into seas, pollutants from major waterways degrade coastal ecosystems across European seas. Protecting wetlands and rivers is key to healthy seas, biodiversity, and sustainable fisheries across Europe.

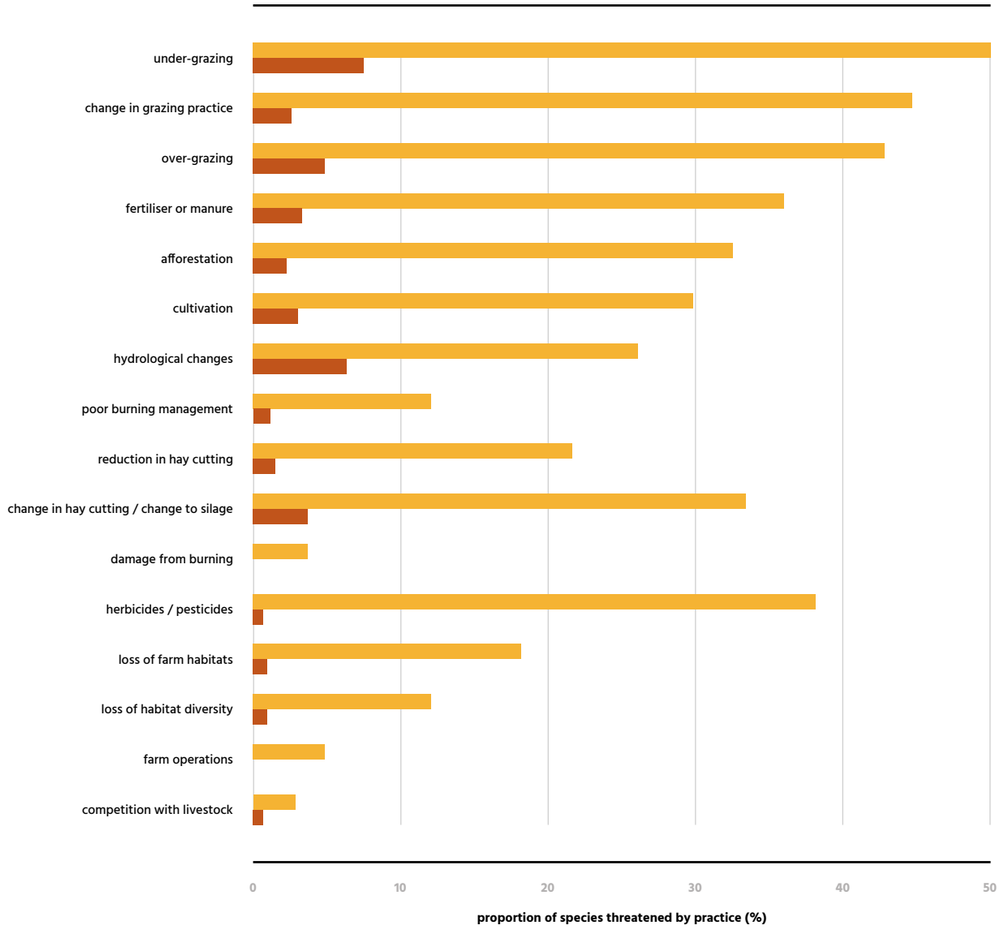


Figure 1. Key pressures on Farmland Species requiring strict protection by the Habitats Directive

Well-functioning ecosystems support food system resilience, as well as climate mitigation and adaptation, water security, and biodiversity over the long run (Leclère *et al.*, 2020). Food systems are dependent on ecosystem services provided by pollination, soil health, water regulation and carbon cycle (Figure 2). Crop production relies on pollinators such as bees, butterflies, and birds, which can, in turn, support an increase in crop yields and quality (Bartomeus *et al.*, 2014). Biodiversity also encompasses natural predators and parasites that help regulate pest populations in agricultural landscapes, therefore reducing the need for pesticides (Wyckhuys *et al.*, 2025). Also, increasing organic matter in agricultural soils can increase their health resilience and yield stability (Dainese *et al.*, 2016).

[2] https://openknowledge.fao.org/items/6c17080e-6c5d-47ae-a982-609c882bd4e7

[3] Europe's environment and climate: knowledge for resilience, prosperity and sustainability, European Environment Agency, 29 Sep 2025 (5.4 Food systems) https://www.eea.europa.eu/en/europe-environment-2025/main-report

[4] See Indicator trends: https://pecbms.info/trends-and-indicators/indicators/indicators/E_C_Fa/

[5] IUCN. 2025. The IUCN Red List of Threatened Species. Version 2025-2. https://www.iucnredlist.org

[6] EEA, 2024 Europe's state of water 2024: the need for improved water resilience, (https://www.eea.europa.eu/en/analysis/publications/europes-state-of-water-2024) EEA Report 07/2024)

Restoring agricultural ecosystems can boost competitiveness and economic resilience for agriculture. By improving soil fertility and water-holding capacity, supporting beneficial biodiversity and reducing reliance on synthetic inputs, nature restoration can help farming systems adapt to the interconnected challenges of climate change, biodiversity loss, and pollution.

Soil organisms in agricultural soils

Maintain soil productivity. Ensure the availability of air, water, and nutrients in the soil for crops.

Semi-natural habitats managed by agriculture

Provide feed for livestock, and habitat and food for pollinators and pest predators. Contribute to crop pollination and natural plant protection.

Non-agricultural ecosystems that support agriculture

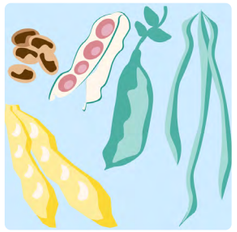
Forests and natural grasslands reduce the risk of soil erosion.
Wetlands filter and purify water, manage excess water during floods and release it in dry periods.

Landscape features in agricultural land

Can enhance pollination and natural plant protection. Can prevent soil erosion, reduce nutrient losses, filter air and water, and sequester carbon. Trees and hedges make weather conditions more favourable for crops and farm animals by reducing wind, providing shade and cooling the air on hot days.

Crop and livestock diversity

Crop diversity maintains soil health and productivity, and protects crops against pests, reducing the need for pesticides and fertilisers. Mixed use of grazing livestock species contributes to reducing wildfire risk and reduces animal health risks. Diversity increases environmental and socio-economic sustainability and the resilience of agricultural production..



Crop and livestock genetic diversity

Maintaining the diversity of crop varieties and livestock breeds adapted to specific environments supports production in diverse and harsh environments. Genetic diversity also supports resilience and adaptation to changing bioclimatic and agronomic conditions.

Figure 2. The relevant elements of biodiversity and the ecosystem services they provide within the agricultural context (EEA, 2024)

To tackle the increasing biodiversity loss in Europe and restore the benefits that nature provides, the EU Nature Restoration Regulation (NRR)[7] was developed as a key component of the 2030 EU Biodiversity Strategy. This Regulation entered into force on 18 August 2024, marking the first legally binding initiative for restoring degraded ecosystems. The overall objective is to put in place restoration measures on at least 20% of the EU's land and sea areas by 2030, and in all ecosystems in need of restoration by 2050. The NRR operationalises EU Member States' commitments to the Kunming-Montreal Global Biodiversity Framework (KM-GBF) for the terrestrial areas' restoration 2030 targets. The NRR also reinforces the objectives of other EU policies, such as the Birds and the Habitats Directives, Soil Monitoring Law, the Pollinators Initiative, the Forest Strategy for 2030, as well as the EU Climate Law.[8] This Regulation, in Articles 4 through 12, includes ecosystem-specific targets for terrestrial, coastal, freshwater, marine, urban, agricultural and forest ecosystems, as well as for populations of pollinators.

As a guiding framework towards implementing the NRR, each Member State is required to submit the first draft of their National Nature Restoration Plan (NRP) by September 2026, with their final plans to be published by September 2027. For agricultural ecosystems, the Member States' plans need to make clear how they want to achieve the specific targets and objectives in synergy with existing policies, such as the Common Agricultural Policy (CAP).

Since Article 14 (20) of the NRR makes it compulsory to involve all relevant stakeholders in a transparent and inclusive manner, this guide is designed to assist stakeholders throughout the process of drafting nature restoration plans. Through this guide, stakeholders can receive the necessary tools for making effective plans that achieve nature restoration targets.

[7]Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 https://eur-lex.europa.eu/eli/reg/2024/1991/oj/eng

[8]Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law') https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119

2 Nature restoration and Agriculture: the regulatory framework

2.1 Ecosystem Approach of the Nature Restoration Regulation

The Nature Restoration Regulation (NRR) establishes a comprehensive framework for restoring Europe's degraded ecosystems, setting binding targets for terrestrial, coastal, freshwater (Article 4), marine (Article 5), forest (Article 12), and agricultural ecosystems (Article 11). These ecosystems form an interconnected web, requiring integrated planning and implementation.

Agricultural lands are not isolated; they border protected areas, intersect with waterways, connect to woodlands and forests, and host critical pollinator populations and other species. This interconnectedness underscores the need to embed nature restoration within other existing European environmental and agricultural policies.

Article 11 of the NRR (Figure 3) marks a transformative shift in terminology from "agricultural lands or areas" to "agricultural ecosystems". Unlike "agricultural areas", which simply denote land used for crops or livestock, "agricultural ecosystems" encompass the entire living system and its ecological processes. This broader framing enables the NRR to support a transition in farming, promoting agroecological practices, organic agriculture, and the restoration of high-diversity landscape features and habitats.

This ecosystem-based approach is essential for achieving "good condition", a concept that draws from the Habitats Directive to designate "favourable conservation status", and is clearly defined in Article 3(4) as a state where the habitat's structure, functions, and typical species composition reflect a high level of ecological integrity, stability, and resilience. For agricultural ecosystems, "good condition" means there are management practices that sustain biodiversity, soil health, water quality, and overall ecological resilience, all of which can be monitored through specific mandated indicators and indexes. Crucially, the NRR's approach aims to integrate biodiversity and ecological health into all agricultural lands, ensuring that food production, conservation, and restoration work in tandem. This aligns with the IPBES Nexus Approach[9], fostering a sustainable balance between food production and ecosystem conservation.

To achieve the "good condition" of agricultural ecosystems, Article 11 of the NRR sets specific objectives and indicators to improve biodiversity status in agricultural ecosystems.

[9]IPBES (2024)Thematic Assessment Report on the Interlinkages among Biodiversity, Water, Food and Health https://docs.google.com/document/d/1CzXeMYKqjLgvjHlnu1Xky6XaomqUvbTj/edit

Improve 2 out of 3 key biodiversity indicators for agriculture – Article 11 (2)

Member States are required to put certain restoration measures in place in order to demonstrate an increasing trend within at least 2 out of 3 indicators between 2024 - 2030, and every 6 years.

Grassland butterfly index

This measures the abundance of butterflies in grassland habitats. Butterflies are excellent bio-indicators, meaning their population health can reflect the overall health of the ecosystem.

Stock of organic carbon in cropland mineral soils

This focuses on soil health, which is crucial for fertility and carbon sequestration. Higher organic carbon levels indicate healthier, more resilient soils.

Share of agricultural land with high-diversity landscape features

This measures the presence of natural elements like hedgerows, ponds, and patches of non-cultivated land, which provide habitats for wildlife and support ecosystem services.

Member States need to put in place restoration measures to :

Improve common farmland bird populations – Article 11 (3)

Through restoring habitats to improve the common farmland bird index. The index baseline is placed at 100 in 2025. Specific targets are set:

- For historically depleted populations: 110 by 2030, 120
- by 2040 and 130 by 2050
- For less depleted populations: 105 by 2030, 110 by 2040 and 115 by 2050

Rewet drained peatlands – Article 11 (4)

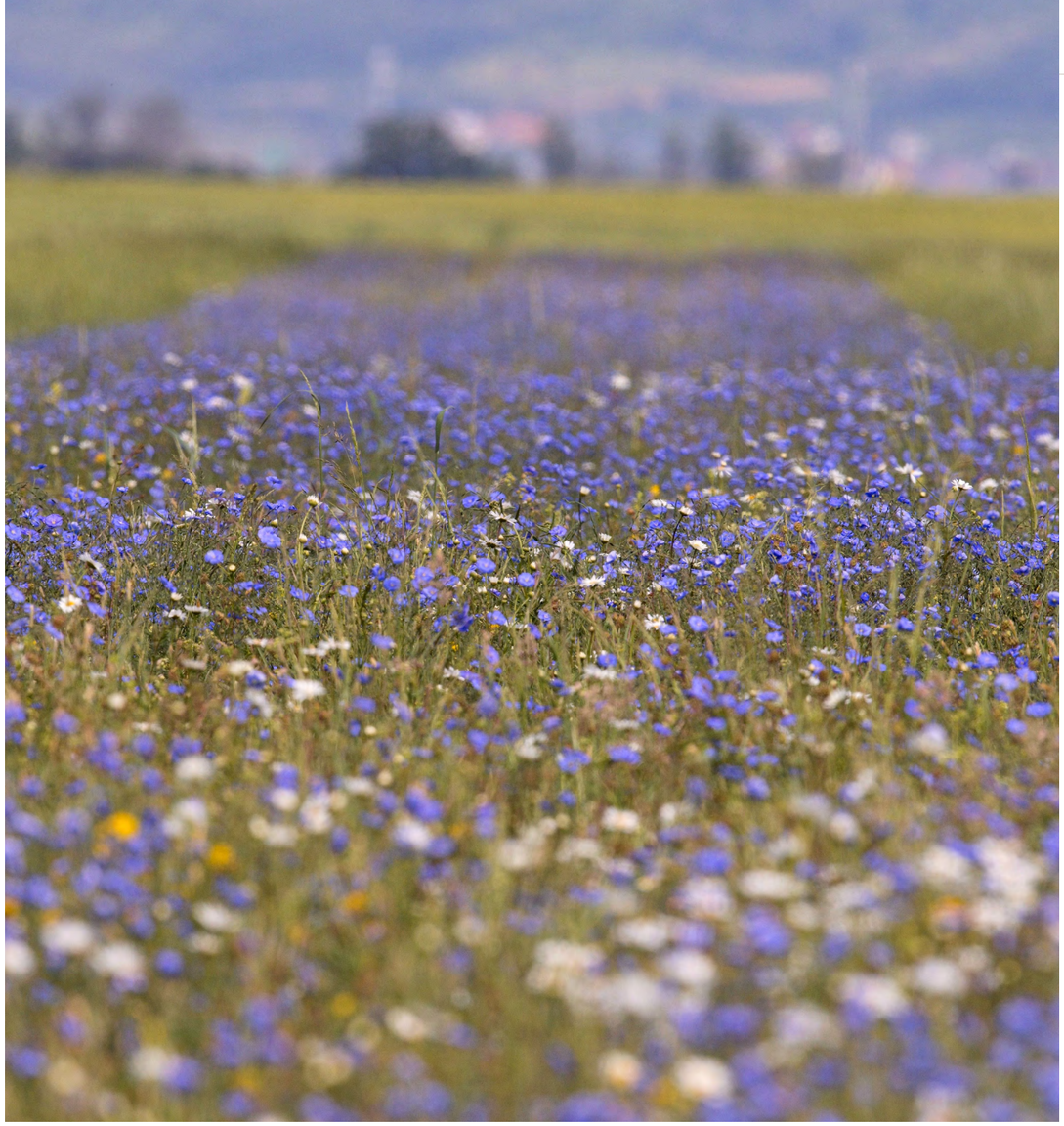
Member states must implement measures to rewet a specific percentage of drained peatlands:

- 30% by 2030
- 40% by 2040
- 50% by 2050

This obligation is not for individual farmers or private landowners, for whom rewetting remains voluntary unless the law indicates otherwise.

NRPs need to provide indications on the satisfactory national levels for each of the indicators.

Figure 3. Agricultural ecosystem targets and requirements under Article 11 of the NRR



Blue bufferstrip © Andrej Chudý

2.2.1 Terrestrial, Marine, Coastal and Freshwater Ecosystems' Connection with Agriculture

Article 4 mandates the restoration and recovery of terrestrial, coastal, and freshwater habitats with targets for the coming three decades (Figure 4). Member States must implement targeted restoration measures to rehabilitate degraded habitats and reintroduce habitat types in areas where they have disappeared. Crucially, Member States must ensure that restored areas do not deteriorate. Many of these ecosystems, although significantly impacted or even destroyed by intensive farming practices, have a unique opportunity for renewal. Their successful restoration and re-establishment largely depend on a committed shift from intensive farming practices towards practices that support nature.

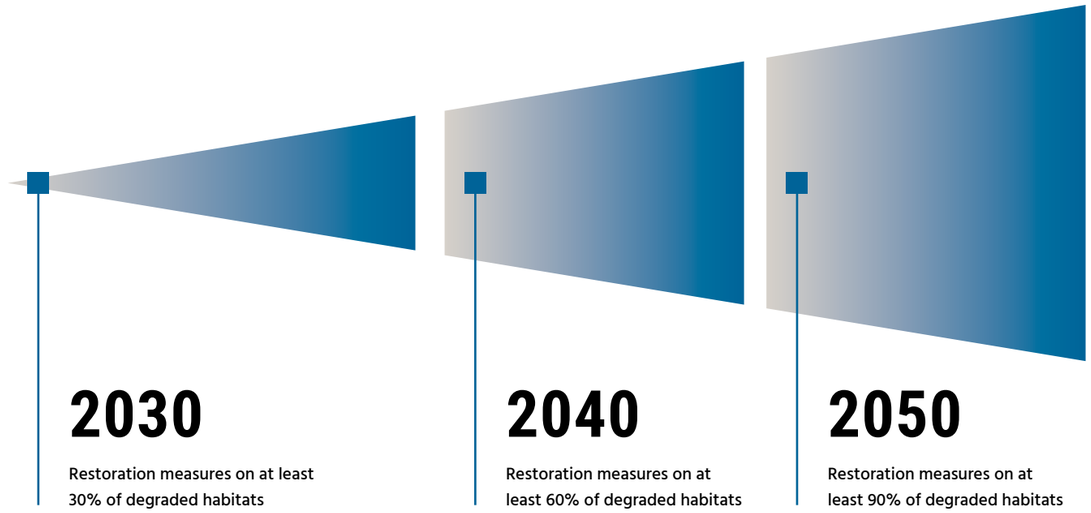


Figure 4. Main targets under Article 4 of the NRR

2.2 Restoring Ecological Connectivity at Landscape Level

Within the spatial reality of Europe's landscape, agricultural lands frequently border or intersect several ecosystem habitats. Rivers flow through farmland before reaching protected wetlands and seas. Coastal ecosystems and forests meet cultivated fields. Such proximity creates both challenges and opportunities for maintaining and restoring good ecological connectivity and for overall restoration success.

Therefore, the success of restoration efforts under Articles 4, 5, 10, and 12, fundamentally depends on how agricultural ecosystems are managed and restored, and vice versa. Therefore, the NRR implementation should strive to adopt an integrated approach, including the ecosystem's connectivity at the landscape level, in order to effectively achieve the restoration objectives.

Mirroring Article 4, **Article 5** establishes restoration targets for marine ecosystems. The relevant marine habitat types are detailed in Annex II, organised into seven distinct groups. In addition, Member States must continuously enhance the quality and quantity of marine habitats for species listed in Annex III of the NRR and in Annexes II, IV, and V of the Habitats Directive, as well as for the wild birds covered by the Birds Directive. The same exemptions for continuous improvement and non-deterioration from Article 4 apply, including plans or projects of overriding public interest (authorised under Article 6 of the Habitats Directive within Natura 2000 sites). Member States are also required to assess and report on the condition of marine habitats.

2.2.2 Pollinators and Agricultural Ecosystems

Healthy pollinator populations are essential for functional and biodiverse agricultural ecosystems. Without adequate pollinator services, many crops suffer reduced yields and quality (see section 1). When wild plant communities degrade, habitat diversity and ecosystem resilience also reduce. The relationship is reciprocal: diverse agricultural landscapes support pollinator populations, which in turn enhance agricultural productivity and biodiversity.

Article 10 mandates Member States to reverse the decline of pollinator populations by 2030 and ensures their long-term recovery. These objectives are directly linked with Article 11 targets for agricultural ecosystems. Increasing high-diversity landscape features, such as flower-rich field margins and buffer strips, or developing agroforestry practices that combine trees with agriculture or livestock, serves both pollinator recovery and agricultural biodiversity goals.

2.2.3 Forest-Agriculture Interdependence

Forests and agricultural ecosystems are often interdependent parts of the same landscape. Both forest ecosystems described under Article 12, and peatlands and agricultural soils under Article 11, serve as critical carbon sinks. Forests can provide essential habitats for pollinators and natural predators — such as beneficial insects, birds, and bats that frequent agricultural areas. These species support crop productivity through pollination and pest control, reducing farmers' dependence on chemical inputs. A landscape with healthy forests adjacent to farmlands is more productive and resilient than one where these ecosystems are degraded or isolated (Figure 5).[10]

[10]FISE Forests and trees near agricultural areas can support natural predators of crop pests, such as the parasitosis of diamondback moth (Plutella xylostella) in Brussels sprout crops Bianchi, F.J.J.A. and al. (2008). Harnessing the power of forests for resilient agriculture, SEI July 2024.

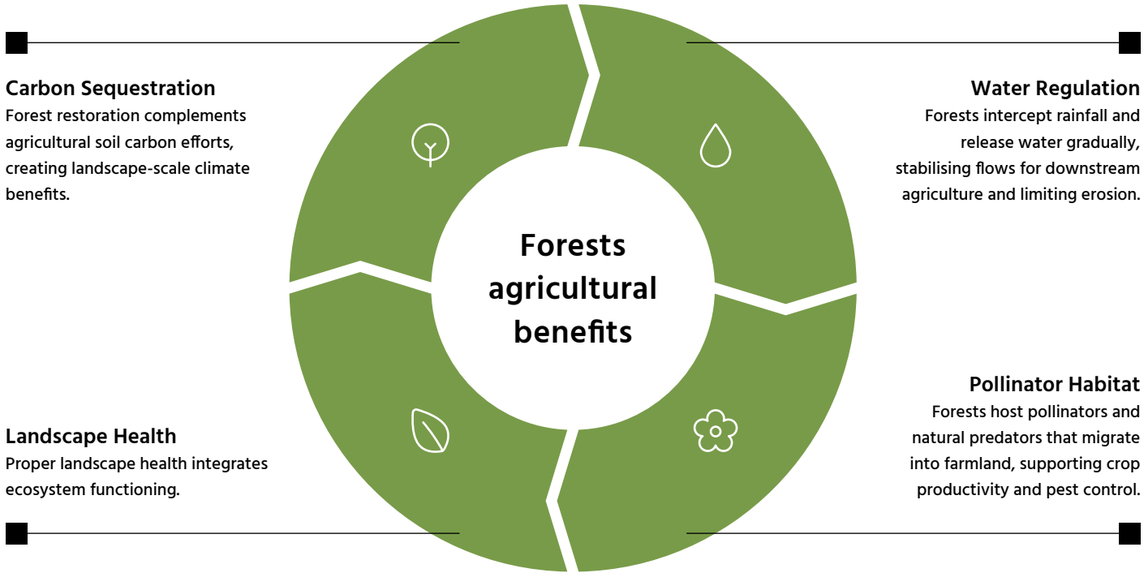


Figure 5. Expected agricultural biodiversity outcomes linked to forest restoration

Recommendation 1: Adopt a systemic approach to nature restoration - a key nature-based solution, with prioritised areas and actions so as to maximise ecological, climate, and socio-economic outcomes in and outside of agriculture ecosystems, through:

- Focusing systemic efforts on priority areas where the most meaningful environmental impacts can be achieved with well-designed delivery mechanisms and good governance
- Restoring agricultural ecosystems at both the landscape and farm levels, with the aim to recover key ecosystem functions and ensure buffering from intensive farming impact
- Supporting pollinator-friendly agricultural practices through agroforestry and habitat rehabilitation
- Enhancing good ecosystem connectivity by coordinating restoration efforts across terrestrial, coastal, and freshwater areas, implementing restoration actions in agricultural ecosystems
- Promote agricultural ecosystems restoration by coordinating and incentivising farmers within the same functional landscape (water basin, protected area, etc.) to join forces and adopt common sustainable practices, while also reducing negative environmental impacts

2.3 Policy Coherence and Synergies

By mandating the restoration of agricultural ecosystems, the NRR appeals to other important policy frameworks that intend to protect biodiversity, improve water and soil quality, protect carbon sinks, and promote sustainable food systems. To develop meaningful NRPs, it is therefore important to ensure coherence across EU policies for agriculture and food production, climate resilience, pollution reduction, and long-term ecological health. This is especially important for the EU policies mentioned in Article 14 of the NRR.

The NRR operationalises and enforces the goals of other EU environmental policies (see Annex I), requiring Member States to implement concrete nature restoration measures, monitor progress, and report results. As stated above, the NRR requires an integrated approach to ecosystem recovery, directly linking its implementation with other key environmental policies. In Articles 14 and 15, the NRR requires the NRPs to cohere with a wide array of existing environmental, climate, energy, water, marine, agricultural, and forestry policies and strategies, including the national energy and climate plans (NECPs), Natura 2000 conservation plans, river basin management plans, and CAP strategic plans.

Recommendation 2: Seek, and ensure, alignment of agricultural ecosystem restoration with other policies' implementation

- Member States should align their NRPs with already existing, and new, agricultural planning exercises and describe the interplay with CAP strategic plans (as requested in Article 15 (5)) (see section 4). This should be done at the national level and vice versa to maximise synergies and use of available resources.
- Coherence with climate and energy planning exercises can provide cost-effective synergies and benefits. For example, well-developed renewable energy projects (solar or wind) can help maintain agricultural lands in a minimal good condition[11], while also being environmentally beneficial (Griscom *et al.*, 2017).
- Cross-sectoral governance mechanisms could help align restoration actions with climate, biodiversity, and socio-economic policies,enabling adaptive management that maximises co-benefits.

[11]Recital 30 (d) of the Soil Monitoring and Resilience Directive states that "solar panels are not considered soil sealing if the soil can still sustain an ecosystem sufficiently" (last version agreed at EU level before publication).

3 Good Practices for Achieving Nature Restoration Targets in Agricultural Ecosystems

As explained in the previous sections, we need to adopt a more systemic approach to nature restoration. This can be done by implementing practices that restore the natural functions of agricultural ecosystems and their surroundings. A number of such win-win practices are illustrated in Figure 6. These practices are rooted in agroecology, which applies a combination of ecological principles to agriculture in order to ensure a regenerative use of natural resources and ecosystem services (R. Bezner Kerr and al. 2023).

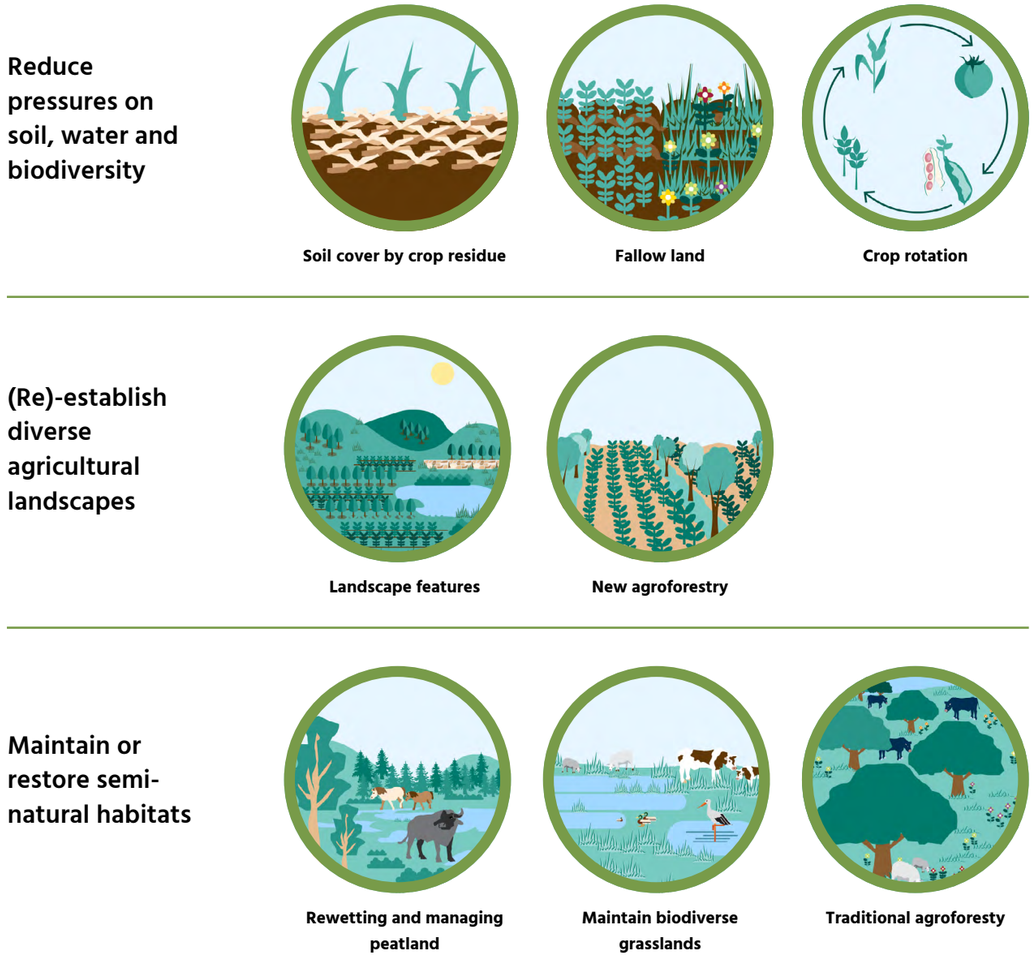


Figure 6. Win-win practices for biodiversity, climate, and reducing the need for pesticides and fertilisers (EEA 2024)

This section translates the NRR obligations under Article 11 and Article 10 into practical and evidence-based restoration measures that draw on agroecological practices, and links them to existing EU policy levers (see Annex I). In response to each NRR target, this section provides examples of restoration measures and monitoring approaches, as well as case studies of successful schemes (including CAP instruments, explained further in section 4) that are already being deployed across the EU.

Figure 7. Map of sustainable practices in an agricultural context based on NRR Articles 10 and 11

Legend: Restoration measure related to NRR Article 11 and 10 indicators:

- **Grassland Butterfly Index** (Art 11)
- **SOC in cropland mineral soils** (Art 11)
- **Share of agricultural land with HDLFs** (Art 11)
- **Common Farmland Bird Index** (Art 11)
- **Rewetting Drained Peatlands** (Art. 11)
- **Restoration of pollinator populations** (Art. 10)

Breizh Bocage
France

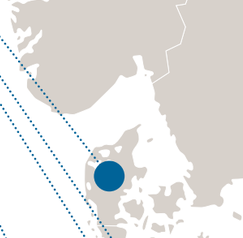
PARTRIDGE Project
Belgium, Denmark, Germany, UK, The Netherlands

Tallinn –
The Pollinator Highway
Estonia

LIFE Carbon Farming
France, Germany, Belgium, Italy, Ireland and Spain

Honey Highway
Netherlands

Butterfly highway
Czechia



Project Grasslife
Latvia

LIFE Peat Restore restoration
Estonia, Latvia, Lithuania and Poland

Image © Shutterstock

[12]This indicator is composed of species considered to be characteristic of European grasslands and which occur in a large part of Europe, covered by the majority of the Butterfly Monitoring Schemes. It is based on the geometric mean of species trends. As developed and used by Butterfly Conservation Europe, Van Swaay, C.A.M, Assessing Butterflies in Europe - Butterfly Indicators 1990-2018, Technical report, Butterfly Conservation Europe, 2020. https://zenodo.org/records/16367397

[13]More information on Member States Butterflies Schemes contributing to the eDMS available here.

[14]More information on the German indicator species list here.

3.1 Grassland Butterfly Index

Restoration measures that intend to reverse the declining trend of the grassland butterfly index (see Figure 8) at farm level may include reducing chemical pressures and improving insects' survival. This could consist of delayed mowing, creation of flower strips and field margins, reduced pesticides, and fertiliser use. Landscape-level measures could focus on maintaining semi-natural grasslands, restoring wetlands, and integrating agroforestry mosaics and hedgerows to improve habitat connectivity (see Annex II).

Monitoring system: EU-monitoring relies on the European Butterfly Monitoring Scheme (eBMS)[12] for 17 grassland species, which aggregates transect data from over 6,200 sites across the EU to calculate the Grassland Butterfly Index every year. Member States, through national coordinators, compile data[13] from their own national schemes such as DKBMS (Denmark), Viel-Falter (Austria), Vlinderstichting (Netherlands), and Catalan BMS (Spain). An eBMS app is also available for volunteers to record butterflies throughout Europe. Member States with no established schemes are advised to coordinate with Butterfly Conservation Europe for guidance (cf. Annex IV NRR).

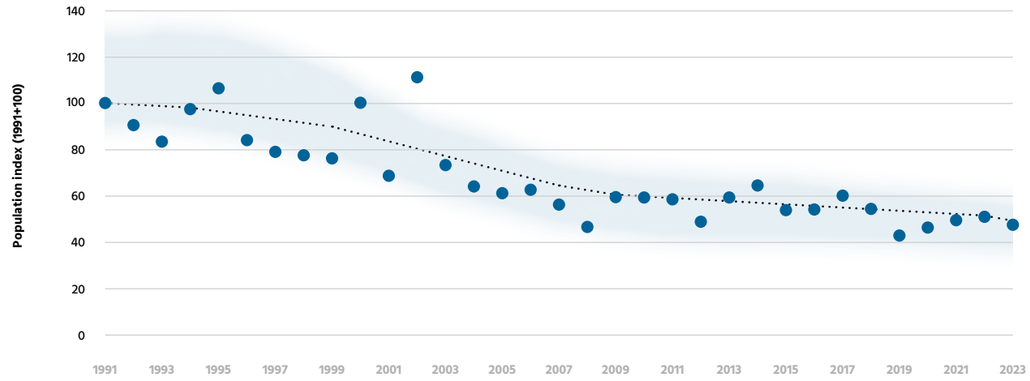


Figure 8. EU Grassland Butterflies Index (eBMS), (1991 - 2023)

Incentives: Agri-environment schemes and eco-schemes, specific to semi-natural grasslands' or non-productive areas' restoration, are useful for butterflies' habitats. Existing German results-based schemes, such as in Baden-Württemberg or in Rheinland-Pfalz, incentivise farmers with species-rich grasslands by paying for between four to eight indicator plant species[14], usually covering all grassland types in the region (Keenleyside *et al.*, 2014, p.10).

Project examples: The Butterfly Highways project in an agricultural landscape near the White Carpathian Mountain in Czechia, aimed to connect fragmented meadows by increasing pollen and nectar availability for pollinators, including butterflies. The GrassLIFE project in Latvia supported the conservation status of 5 EU priority grasslands in Natura 2000 sites, while the Honey Highway initiative in the Netherlands has built a 'motorway system' of flower strips for supporting butterflies and other pollinator populations since 2018.

3.2 Soil Organic Carbon in Cropland Mineral Soils

Restoration measures at the farm level could aim to reduce soil disturbance and increase carbon inputs through practices such as **reduced or no-tillage, use of cover crops and perennials, crop diversification, and incorporation of compost or manure to stimulate soil biodiversity and reduce chemical inputs**. Restoring organic soils under agriculture does not necessarily imply taking agricultural land out of production (e.g. paludiculture, low-intensity grazing)[15]. **Agroforestry** and the establishment of **riparian and field buffers** could also enhance above and below-ground biomass and contribute to an overall increase in the SOC (IEEP, 2022) (see Annex II). Member States could use voluntary schemes under the CAP to target improved rotations, erosion control, and diversification of crops.

Monitoring system: While there is currently no EU-wide monitoring scheme for soil organic carbon, the recently-adopted Soil Monitoring Directive seeks to fill this void. This Directive has initiated an EU Soil Monitoring Scheme by requiring Member States to establish relevant soil descriptors and soil indicators of soil sealing and soil removal, as well as for assessing soil health. It will require sampling a determined number of farmed soils at Member State level (see Annex III). SOC monitoring and measurement can currently rely on the LUCAS topsoil Survey[16] (JRC, 2022) and the CAP Context Indicator for arable land[17]. It provides harmonised EU soil data including Soil Organic Content, pH, and nutrients. The latest data point is 2018, but samples collected in 2022 are currently being analysed, and an update at the EU-level will be available in 2026. At the national level, Member States can combine direct soil measurements with modelling under the land use, land use change, and forestry (LULUCF) framework and the 2006 IPCC guidelines for National Greenhouse Gas Inventories. On-farm monitoring platforms, such as Regen10, support farmers in tracking soil health using multiple indicators. In addition, the Carbon Removal and Carbon Farming Regulation recommends Copernicus satellite system for setting up baseline, and remote sensing, monitoring tools to assess carbon farming and soil emission reduction in a cost-effective manner.

Financial incentives: CAP instruments can help farmers adopt practices that improve soil carbon. For example, Spain is dedicating over €200 million between 2023 and 2027 to eco-schemes focused on increasing carbon sink capacity in grasslands areas. In addition, Germany has developed a specific eco-scheme focused on the diversification of crops, with a certain percentage of legumes (at least 10% of leguminous crops), to reduce disturbance and sequester carbon[18]. Further, the Umbria Rural Development Plan (RDP)[19] in Italy aims to demonstrate measurable Soil Organic Carbon improvement through targeted sub-measured, baseline sampling, and outcome reporting[20]. Market-based instruments for soil carbon can also be developed to complement CAP's traditional subsidies, linking farmers with public and private buyers of carbon credits to reward measurable climate benefits. For instance, the French Label Bas-Carbone, established by the Ministry for Ecological Transition, has developed the "Carbon Agri" methodology, specifically designed for the agricultural sector (both livestock farming and arable-crops). This framework supports the certification of verified emission reductions and carbon sequestration, ultimately allowing farmers to generate carbon credits once results are independently validated, with an average impact of 1tCO2/ha/year for an average carbon price of EUR35/tCO2.[21]

Project examples: The LIFE Carbon Farming (2021-2027) project aims to encourage farmers to reduce their direct carbon footprint through an increase in carbon storage in vegetation, as well as in soils using a harmonised Monitoring, Reporting, and Verification systems. The expected impact will be to reduce the carbon footprint of 700 farms across 6 countries by 15%, by 2027.

[15]Biodiversity Information System for Europe here, accessed on 29 October 2025.

[16]This indicator describes the stock of organic carbon in cropland mineral soils at a depth of 0 to 30 cm, as set out in Annex V to Regulation (EU) 2018/1999 in accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, and as supported by the Land Use and Coverage Area frame Survey (LUCAS) Soil, Jones A. *et al.*, LUCAS Soil 2022, JRC technical report, Publications Office of the European Union, 2021.

[17]CAP Context Indicator for arable land.

[18]Federal Ministry of Food and Agriculture, Germany (2023). EU CAP Network – Thematic Group on Eco-Schemes – The case of Germany.

[19]Rural Development Programme (RDP) of Umbria, Italy (2013).

[20]The estimated increase in soil organic carbon (SOC) resulting from the new commitments is 5,587,827 kg/year, corresponding to 6.9 % of the pre-existing level and bringing the total SOC stock to 86,861,576 kg/year.

3.3 Share of Agricultural Land with High-Diversity Landscapes Features (HDLFs)

Restoration measures at the farm level include planting includes planting and maintaining hedgerows, field trees, flower-rich margins, or strips that divide large field blocks, ponds, terraces, riparian buffers, and small wetlands which support biodiversity, improve water quality, and enhance ecological connectivity (Albrecht et al, 2020; Holland et al, 2016). Landscape-level measures involve coordinating the placement of HDLFs across farms to strengthen ecological corridors, as well as integrating features with Natura 2000 and other protected areas (see Annex II).

Monitoring system: The NRR (Article 14(7)) mandates Member States to develop a methodology to complement the methodology referred to in Annex IV of the NRR (LUCAS). The share of agricultural land with HDLF monitoring combines the following at the EU level:[22]

- The Land Use and Coverage Area Frame Survey (LUCAS) for Landscape Features, which refers to the I.21 indicator under Regulation (EU) 2021/2115 on Strategic Plans under the CAP for the landscape features and areas
- Land Laying Fallow following the Integrated Farm Statistic Survey
- In addition, for other high-diversity features, **Member States are requested to use** the Guidance adopted by the European Commission for productive trees part of sustainable agroforestry systems, trees in extensive old orchards on permanent grassland, and productive elements in hedges.[23] Member States are encouraged to use the European Monitoring of Biodiversity in Agricultural Landscapes (EMBAL) to check the biodiversity value of the landscape features.

Financial incentives: CAP eco-schemes and AECC are the primary incentive to restore HDLFs, beyond the GAEC 8 (Retention of Landscape Features) requirements to maintain landscape features and ban cutting hedges and trees during the bird breeding and rearing season. Since 2024, Member States have had to offer farmers an eco-scheme for keeping a share of arable land devoted to non-productive areas, including land lying fallow, and for the establishment of landscape features.

Project examples: Breizh Bocage 2[24] (France), is a project that aims to restore an extensive hedgerow network via the CAP-funded regional Rural Development Program. It has resulted in 6,000 kilometres of hedge restoration and conservation since 2008, with 47% of them contributing to tackling erosion, while 26% preventing runoff. A **Swedish pilot**[25] in the Falbygden region, used results- and value-based payments for landscape elements, based on specific indicators. The 2017-2019 project was co-financed by the Swedish Farmers Federation and WWF Sweden. Payments were tied to object-level indicators, providing economic incentives to maintain high-quality features, which failed to demonstrate tangible positive results due to the selected indicators' monitoring.

[20]More information available here.

[22]Indicator I.21, Annex I to Regulation (EU) 2021/2115, as based on latest updated version of LUCAS for landscape elements, Ballin M. *et al.*, Redesign sample for Land Use/Cover Area frame Survey (LUCAS), Eurostat 2018, and for land laying fallow, Farm Structure, Reference Metadata in Single Integrated Metadata Structure, online publication, Eurostat and, where applicable, for high diversity landscape features not covered by the methodology above, methodology developed by Member States in accordance with Article 14(7) of this Regulation.

[23]Regulation (EU) 2024/1991. Guidance on a framework for developing methodologies to monitor high-diversity landscape pursuant to Article 14(7) of the Nature Restoration Regulation. C/2025/980.

[24]Breizh Bocage 2 Project in France.

[25]Sweden Result and Value-based Agri environmental payments to landscape elements and forest edges.

3.2 Common Farmland Bird Index

Restoration measures to restore common farmland bird populations at the farm level focus on increasing food availability and breeding habitats. This can be done by reducing grazing intensity, delaying mowing, establishing hedgerows and field margins, retaining stubbles and seed-bearing crops, and limiting pesticides and fertiliser use (Umweltbundesamt, 2003; Donald *et al.*, 2006). Studies show small woody features (i.e., woodlots) and scattered woodland shrub vegetation constitute one of the main landscape characteristics supporting bird diversity in rural landscapes (Dvořáková and al. 2023, Donald *et al.*, 2006). Landscape-level actions include restoring wetlands, reed bands, small interactive elements, mosaic habitats, and protecting key breeding or stopover sites (see Annex II). Some results suggest that landscape-scale grassland restoration can locally reverse regional farmland bird declines and thus is a promising tool for farmland biodiversity conservation (Lengyel *et al.*, 2023).

Monitoring system: Currently, annual monitoring occurs through national bird schemes feeding into the Pan-European Common Bird Monitoring Scheme (PECBMS), including Farmland Bird Index. Database examples at the national level include STOC (France), MITO2000 (Italy), SACRE and Catalan Surveys (Spain) and DDA programs (Germany). A national Common Farmland Bird Index is produced in all EU Member States annually, although only 13 Member States have made theirs publicly available. Annual indices are calculated at the national level, and aggregated at the EU level, providing comparable trends and informing NRR reporting.[26]

Financial incentives: Targeted AECC and eco-schemes can offer payments per hectare, per nest, or per breeding pair, along with top ups for landscape aggregation **of fragmented patches of habitats**. Examples highlighting Member States use of hybrid management or result-based payments include the Scheswig-Holstein Grassaléndˆ Bird Protection Scheme (Germany)[27]. Although not impacting the Farmland Bird Index per se, it is worth mentioning that the sustainable agricultural practices put in place by Slovenia in its CAP Strategic Plan for corncrake (Crex crex) protection had positive impacts on other birds meadows species.[28]

Project examples: The Interreg PARTRIDGE Project[29] was deployed in the North Sea region across 5 Member States (Belgium, Denmark, Germany, UK, The Netherlands) for 7 years (ending in 2023). With a budget of €7,79 million (EARDF), this project helped demonstrate a 30-70% improvement of the breeding territories of iconic farmland birds such as Yellowhammer (Emberiza citrinella), Skylark (Alauda arvensis), and Grey partridge (Perdix perdix) throughout the demonstration sites. The project mobilised over 1,200 farmers across the North Sea Region who created 2,900 hectares of new habitat by planting flower mix. Since the end of the project in 2023, hundreds of additional hectares of the PARTRIDGE flower mix have been planted across the North Sea Region, especially in England and Germany. In the Netherlands, where 36 km of new beetle banks have been built, the flower blocks and beetles have been widely adopted by farmers across the country, thanks to their inclusion within the national Eco-Scheme.

Image © Shutterstock

[26]Countries data base available here: https://pecbms.info/country/
[27]RBP Network, Result based Payment network. Scheswig-Holstein Grassaléndˆ Bird Protection Scheme
[28]RBP Network, Result based Payment network. Slovenia's Corncrake protection
[29]https://www.interregnorthsea.eu/our-news/bringing-back-the-birds-how-to-restore farmland-biodiversity

3.5 Rewetting Drained Peatlands

Peatlands currently only cover 3% of EU land, but store nearly 25% of its soil carbon, concentrated in Northern and Eastern Europe (e.g. Ireland, Germany, Poland, Finland). Over half of Europe's peatlands are degraded, emitting large amounts of CO2 due to drainage for agriculture and forestry (Tanneberger *et al.*, 2021). A better integration of peatlands in the CAP has led to the development of national peatland strategies across Europe, "recognising the cross-cutting effect" that sustainable peatland management has on achieving national commitments to EU regulations and international agreements. (R. Nordbeck and K. Hogl, 2024).

Restoration measures aim to reduce GHG emissions, enhance biodiversity, and improve hydrology. More specifically, they include blocking drainage ditches, re-establishing natural hydrology, reintroducing native wetland species, constructing leaky dams, and implementing paludiculture. Farm level adaptation includes low-impact grazing and cultivation of wetland-adapted crops such as reeds or berries (EU, 2022; IEEP, 2022).

Monitoring system: While worldwide data is collected at national and regional levels through the Global Peatland Database (GPD)[30], which features the drainage status of peatlands and organic soils, detailed data at parcel level is missing, including in Europe. The EU Soil Observatory Dashboard and the European Soil Data Centre[31] (ESDAC) of the EU Joint Research Centre (JRC) provides an assessment of the state of soil health in the EU (including peat soils), which is updated continuously and synchronised with the System for Earth Observation Data Access, Processing and Analysis for Land Monitoring (SEPAL)[32] of the Food and Agricultural Organisation (FAO). Currently, various EU-funded Horizon Europe projects (notably ALFAwetlands and WET Horizons) aim at filling crucial knowledge gaps, improving the geospatial knowledge base and evaluating pathways of peatland restoration in Europe. Additional methodologies, such as the GHG Site Types (GESTs) approach, use vegetation as a proxy to estimate CO2 and GH4 fluxes (Couwenberg *et al.*, 2008) (e.g. **EU-funded restoration projects** like **REPEAT**, **Care-Peat**, **Carbon Connects**, and **PEATWISE**).

Financial incentives: Eco-schemes and AECC can further support the rewetting, paludiculture, and cooperative management – beyond GAEC 2 requirements to protect wetlands. For instance, an agri-environment scheme for peat soil conservation in Germany includes cooperation measures between farmers, local stakeholders, and landowners. This scheme goes beyond individual farm actions as part of the agri-environment-climate commitments: one on climate protection, and one on biodiversity (IEEP, 2023).
The CRCF could also bring extra financing to peatland restoration as mentioned by the regulation itself.

Project examples: The **LIFE Peat Restore project** which ended in 2021, involving partners from Estonia, Latvia, Lithuania, and Poland, aimed to rewet 5,300 hectares of degraded peatlands to restore biodiversity and improve greenhouse gas sequestration. Results showed that the restoration measures implemented achieved approximately a 30% reduction of the Global Warming Potential (GWP) from all sites, amounting to 14,500 tons CO2-eq per year. More information can be found in the project's Best practice Book.

[30]The Global Peatland Database (GPD) is a project of the International Mire Conservation Group (IMCG) located and maintained at the Greifswald
[31]Joint Research Center (2025). EU Soil Observatory Dashboard and the European Soil Data Centre. Accessed: 30 October 2025
[32]Processing and Analysis for Land Monitoring System for Earth Observation Data Access (SEPAL) Forest and Land Monitoring for Climate Action

3.6 Restoration of Pollinator Populations

Restoration measures under Article 10 are similar to the ones required to improve the Butterfly Index under Article 11, at both the farm and landscape level. These measures focus on field margins allowing wildflowers to grow within fields and beyond, maintaining native flowering hedgerows and nesting habitats, such as bare soil patches and beetle banks, as well as reduced pesticide use and rotational mass-flowering crops. There is evidence that pollinator corridors, step-stone habitats, semi-natural grasslands (which provide nesting habitats for bumble bees and feral honey bees (Kells, A. R. & Goulson, D (2003)), and meadow restoration improve connectivity and resilience (EEA, 2025) (cf. Annex II).

Monitoring system: Monitoring relies on the updated EU Pollinator Monitoring Scheme[33] (EU-PoMS) and the Farmland Pollinator Indicator, which use standardised transects for bees, hoverflies, butterflies, and light traps for moths. Examples include Ireland's Protecting Farmland Pollinators Pilot (50 farms) and France's 25-site monitoring by the Office Français pour la Biodiversité (OFB), demonstrating scalable, farm-to-national, approaches. Citizen science can complement pollinator monitoring to expand coverage while reducing costs.[34] The current lack of taxonomic capacity (European Red List of Insect Taxonomists) is being addressed through capacity building, and citizen scientists will support pollinator monitoring (e.g. volunteers collecting data).

Financial incentives: CAP eco-schemes and AECC are the primary incentive to restore HDLFs, beyond the GAEC 8 (Retention of Landscape Features) requirements to maintain landscape features and ban cutting hedges and trees during the bird breeding and rearing season. Since 2024, Member States have had to offer farmers an eco-scheme for keeping a share of arable land devoted to non-productive areas, including land lying fallow, and for the establishment of landscape features.

As required by the NRR, the EU adopted a delegated act[35] to establish a science-based method for monitoring pollinator diversity and pollinator populations. The European Commission also supports the capacity of Member States to implement the monitoring method through the SPRING project.[36] The Commission currently supports training field surveyors for pollinator monitoring and the identification of pollinator species through the EPIC8 projects (EPIC-bee, EPIC-fly, and EPIC-butterfly). The Commission additionally supports the development of necessary taxonomic tools for pollinator monitoring through the ORBIT project, as well as through the Horizon Europe TETTRIs and MAMBO projects.

Incentives and project examples: Hybrid schemes combine per-hectare management payments with results-based bonuses, which are tied to measured pollinator abundance or habitat quality, as highlighted in Ireland's All-Ireland Pollinator Plan. National strategies, such as Norway's National Pollinator Strategy Estonia's ongoing Pollinator Highway and The Netherlands' Honey Highway illustrate coordinated, evidence-based approaches to incentivising pollinator-friendly farming and monitoring outcomes.

Recommendation 3: Improve monitoring, knowledge systems, and information exchange, building upon pre-existing good practices for nature restoration in agricultural ecosystems at Member State level

[33]Joint Research Centre (JRC) (2024). Refined proposal for an EU pollinator monitoring scheme Oct 2024.
[34]Examples of citizen sciences platforms are as follows: UK Fit Counts, FR Spipoll
[35]European Commission delegated regulation, establishing a science-based method for monitoring pollinator diversity and pollinator populations https://environment.ec.europa.eu/news/better-monitoring-support-restoration-eu-pollinators-2025-11-26_en
[36]SPRING: Strengthening Pollinator Recovery through Indicators and monitoring.

4 Planning and financing nature restoration in agricultural ecosystems

4.1 Use of CAP instruments

The EU's CAP for 2023 to 2027, comprising almost one-third of the EU budget (EUR 386.6 billion), represents the largest EU investment pillar, also for the next Multi-Annual Financial Framework (2028-2034). The current CAP specific objectives 5 and 6[37] directly align with NRR requirements for agricultural ecosystems. Conversely, measures to meet NRR objectives also help Member States achieve sustainable CAP objectives, such as preserving soil organic carbon (specific objective 4), high-diversity landscape features (HDLFs), and supporting wild birds, farmland birds, and pollinators.

The CAP plays an important role in setting baseline environmental standards (GAEC and SMR[38]) for farmers regarding agricultural management. However, several standards relevant to the biodiversity objectives have been impacted by derogations and postponed implementation at the Member State level. In addition, two rounds of CAP simplification packages resulted in relaxation of some important environmental standards relevant for soil cover, crop rotation, wetlands, and landscape features, which might hinder biodiversity protection.

Beyond GAECs, CAP also encourages the voluntary uptake of agricultural practices that are beneficial for biodiversity, climate, and pollution reduction through incentivised eco-schemes and AECC. These can include creation and management of fallow, habitats for pollinators and birds, landscape features, extensive management of grasslands, support for pesticides use reduction organic farming, but also targeted schemes for improvement status of certain farmland species. The CAP also fosters collaboration through European Innovation Partnerships (EIP), LEADER groups, and other collective initiatives supporting environmental and climate goals. These mechanisms play a key role in developing Nature Restoration Plans (NRP) by enabling large-scale coordination, resource sharing, and the implementation of strategies across multiple farms.

The CAP financial incentives can be powerful tools to accelerate nature restoration if strategically aligned with NRR goals (Anougmar, *et al.*, 2025). However, the EEA observed that the effectiveness of CAP interventions is often limited by low environmental ambitions (i.e. current eco-schemes) and poor attractiveness for farmers. Furthermore, CAP incentives are also contradictory: While a range of incentives provide payments for biodiversity-friendly practices, other CAP payments support economic objectives that are harmful for biodiversity (EEA, 2024). Additionally, administrative challenges, inadequate promotion, and unattractive payment rates limit farmer participation in biodiversity-targeted schemes (Meister & Nemcova, 2024). This shows a clear need to improve the effectiveness of CAP instruments to support achieving the NRR objectives.

[37]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) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013. Article 6 of Regulation (EU) 2021/2115

[38]For more information on CAP conditionality https://agriculture.ec.europa.eu/common-agricultural-policy/income-support/conditionality_en

Figure 9. EU 2023-2027 CAP NRR related objectives

[39]For further analysis on the consequences of the CAP proposed reform, refer to Scenar 2040 analysis from the Joint Research Centre (JRC), especially chapter 7, which highlights the Common Agricultural Policy (CAP)'s pivotal role in shaping the EU's agricultural sector, revealing that its removal could have significant economic, environmental, and social impacts. Fellmann,T., and al. (2025) Scenar 2040: a scenario study on the Common Agricultural Policy. JRC

[40]Communication from the Commission to the European Parliament, the Council, the European Economic and Social committee and the Committee of the Regions, A Vision for Agriculture and Food Shaping together an attractive farming and agri-food sector for future generations COM/2025/75 final

Key Challenges for Biodiversity in the CAP Post-2027

The next Common Agricultural Policy (CAP) is currently being negotiated as part of the broader European Multiannual Financial Framework (MFF). This new framework will guide CAP subsidies from 2028 to 2034, a period that is critical for delivering on the objectives of the Nature Restoration Regulation (NRR)[39].

The Commission's proposal, based on its Vision for Agriculture and Food, aims to shift from conditions towards incentivising farmers to deliver environmental outcomes. However, while the baseline conditionalities have been significantly weakened, any guarantees that sufficient funding will be directed towards biodiversity, or broader environmental supporting actions, are missing.

To ensure stronger synergies between agricultural support and nature restoration, the EU CAP framework must be strengthened to deliver, amongst other things, the following:

- Meaningful Farm Stewardship system, including clearly defined actions and quantifiable objectives that can be monitored and evaluated. This should be based upon robust scientific evidence, ensuring effective protection of natural resources, and genuine compliance with the "Do No Significant Harm" (DNSH) principle, while ensuring a level playing field for farmers.
- Dedicated funding for biodiversity and broader environmental actions, ensuring that all farmers have access to a well-resourced toolbox of biodiversity-friendly measures.
- Robust, quantifiable impact indicators to track progress and ensure alignment with NRR objectives and other key biodiversity targets.
- Eliminate, and safeguard against, harmful subsidies undermining nature restoration objectives.

Recommendation 4: Craft and implement CAP instruments in support of NRR targets

The increased flexibility to amend CAP Strategic Plans 2023-2027 should allow maximum alignment with NRR objectives. The new framework for the CAP post-2027 is still under discussion, but the main elements of the CAP toolbox must support nature restoration and wider environmental benefits with proper planning and financial stability. The new framework should:

- Develop CAP Strategic Plans that align with Nature Restoration Plans, leveraging relevant indicators to measure progress
- Focus funding on areas with high restoration potential (e.g., with peatlands, grasslands, landscape features) and on High Nature Value Farms (e.g. farms in Natura 2000 areas)
- Protect and restore rural culture on agricultural lands by rewarding farmers for maintaining extensive practices that preserve habitats and rural landscapes
- Ensure CAP payments reflect the true cost of action and incentivise high environmental outcome and transformation at the farm level
- Design support schemes to leverage private investment by offering co-financing or guarantees, such as for peatland rewetting, which can under strict regulatory conditions generate carbon removal credits[41]
- Empower farmers with integrated environmental, technological, and business advice that is locally tailored. Such capacity building should foster result-based, ambitious, yet achievable targets, supported by transition payments and progressive financial incentives for long-term commitments and practices.
- Progressive phase out of harmful subsidies. Make sure that CAP subsidies do not work against nature restoration objectives.[42]

4.2 Addressing the Finance Gap for Nature Investment in Agriculture

To effectively restore nature in agricultural ecosystems, for the benefit of biodiversity and farmers, a wider and longer-term agro-ecological transition is needed. This can be facilitated through engaging farmers and landowners in **multi-annual commitments with dedicated financial resources**, to help improve their environmental and socio-economical resilience. Through such multi-annual engagements, it would become possible to enable coordinated planning at both the farm and landscape levels (e.g. engaging multiple farms in cooperation schemes), and thus, ensure a more integrated approach to restoration and land management.

[41]According to Regulation (EU) 2024/3012 on Carbon Removal and carbon Farming, Article 7 "sustainability", "activities shall do no significant harm to the environment and may generate co-benefits for one or more of the following sustainability objectives", including "(f) protection and restoration of biodiversity and ecosystems, including soil health as well as avoidance of land degradation".

[42]"Every year, more than €30 billion from the Common Agricultural Policy (CAP) funds activities that harm nature and fail to support farmers." Can your money do better? WWF 2024. See also EEA 2024.

Image © MN Studio

Overall, it is estimated that **nature restoration generates €8 to €38 in economic value for every €1 invested**[43], thanks to the ecosystem services it provides regarding food security, climate resilience and mitigation, and human health. The benefits of nature restoration thus far outweigh the costs. Yet, nature conservation and restoration in the EU are critically underfunded. A 2022 study commissioned by the European Commission highlights a **growing funding gap of approximately €19 billion annually through 2030**.[44] Another report by the European Commission is still expected (as requested by the NRR article 21(7)), which will provide an overview of the available EU financial resources for NRR implementation, as well as an assessment of the funding needs and gaps, with proposals for addressing them.

Closing the budget gap requires multiple approaches, with public, private, and blended financial resources. Under the current Multiannual Financial Framework (MFF) until 2027, **Member States and other actors need to make better use of the available funding options at the national and European level**. For the period after 2027, the **next MFF should guarantee dedicated funding for nature, including the implementation of the NRR and the continuation of the LIFE programme** (which is the only EU programme dedicated specifically to biodiversity, while also benefitting agricultural ecosystems).

Overall, **Member States need to deliver strong National Restoration Plans, including for agricultural ecosystems, fully costed and submitted by the legal deadline of 1 September 2026**. Such plans will be key to mobilising dedicated nature funding in the years to come. The NRR (article 15 (3)(v)) requires Member States to include an indication of which subsidies could negatively affect the achievement of the NRR's targets in their National Restoration Plan. This should allow for better **redirecting of such environmentally-harmful subsidies**.

[43]European Commission Impact Assessment accompanying the Nature Restoration Regulation

[44]European Commission: Directorate-General for Environment, IEEP, Trinomics, Nesbit, M., Whiteoak, K. *et al.*, Biodiversity financing and tracking – Final report, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2779/950856

Well-designed private financing mechanisms can contribute, and are also necessary to close the budget gap and fully unlock the economic and social co-benefits of healthy ecosystems. Their implementation should happen with the needed safeguards, and their overall contribution should not be overestimated. Private finance cannot replace public investment needs, nor justify cuts to nature funding (also within and beyond CAP). Private and public financial resources can act as mutual levers to scale up restoration efforts in agricultural ecosystems and beyond.

Some illustrative examples (also see Figure 11):

- **Payment for ecosystem services:** this includes results-based payment schemes available in the CAP, complemented by private investments for biodiversity positive products. For example, in Finland, the METSO programme offers financial incentives to forest owners who voluntarily protect valuable habitats and implement nature management projects. In Germany, private financing schemes for wildflower strips on farmland have emerged alongside public agri-environmental programs. Companies and individuals pay farmers to establish and maintain wildflower strips.
- **Blended finance:** LIFE Peat Restore combines EU funding with private and NGO contributions to rewet peatlands' carbon storage and biodiversity. In Ireland, the FarmCredit project, supported by the ministry of agriculture, investigates whether a cost- sharing instrument is a viable financing mechanism for funding the sustainable transition in agriculture.
- **Nature certificates and credits:**[45] as compliance mechanisms embedded in existing environmental regulatory frameworks, they can help achieve legal requirements and close the financing gap for nature. Pilot projects are ongoing in several Member States (for e.g, in France with a nature credits pilot project on wetlands, and a private-led projects on farms).[46]
- **"Nature-Swap" Programs:** debt repayment (nature-swap) programs in exchange for taking long-term agroecological actions, including in connection with other ecosystems (forests, marine and coastal)
- **Food value chain mobilisation:** such as in the case of the US Smart Climate Commodities Partnership.[47]
- **Risk-sharing tools:** such as warranty-backed contracts or insurance for protecting farmers during transitions into sustainable practices. Support affordable insurance schemes for farmers embracing organic farming.[48]

Payment for environmental outcomes	**Private PES schemes**	Environmental outcomes or sustainable practices are agreed on and paid for by beneficiaries within the local value chain.	**Uncertain monetary benefits** **Temporary lack of income security**
	Private PES schemes	GHG emission mitigation and/ or sequestration generate offset credits that are sold on voluntary carbon markets.	
	Bioviversity credits	Biodiversity improvements generate offset credits that are sold on voluntary biodiversity markets.	
	Price premiums	Off-takers pay a bonus per kg on top of the market price, based on sustainable practices implemented or environmental standards met	
Debt-based Financing	**Green bonds & loans**	Bonds issued are tied to pre-approved 'green' projects, offered to the investment market, and repaid with interest.	**Limited access to upfront capital**
	Sustainabitity-linked bonds & loans	Bonds issued are linked to the achievement of sustainability targets, with finance terms being determined by ESG performance.	
	Loans on favorable terms	Agricultural lenders offer loan products on favourable terms, e.g., flexible repayment, to reward farmers for sustainable farming.	
Transition-risk Sharing	**Research Pilots**	Off-takers offer suppliers technical assistance & research to identify and test context-specific effective sustainable farming practices.	**Various**
	Practice-based capacity building	Off-takers offer suppliers technical support and advisory services to facilitate the transition.	
	Purchase agreement & Min. price	Off-takers commit to long-term procurement agreements and/or offer a price floor that integrates the costs of sustainable practices.	
	Transition insurance / warranty	Insurers or industry partners offer fixed payments during the transition in case yields fall below historical production	
	Sustainable lease	Landowners offer long-term leases on the condition of farmers using sustainable practices.	
	Equity investment in enabling tech	Impact investors or impact funds invest private equity in scaling (tech) solutions that support the transition, e.g., bio-based fertilizer	
Blended Finance	**Blended Fund**	Public/ philanthropic actors provide first-loss capital to crowd in commercial investors and offer farms financing & technical support.	**Upfront capital + barriers for capital for providers**
	Guarantee	Public/ philanthropic actors insure a share of losses in case of non-repayment, thereby de-risking loans to farmers	

Figure 11. Innovative instruments complementing 'traditional instruments' to meet NRR objectives (Source: Wedl and Kam, 2025)

[45] In Europe, nature credits (or biodiversity credits or certificates) are emerging as market-based tools for financing ecosystem restoration and conservation, such as habitat restoration, soil health, and species populations improvement. While still in early development (the EC Roadmap towards Nature Credits published on July 2025), pilot projects in countries like France and the Netherlands are testing frameworks to ensure additionality, and integrate these credits into corporate sustainability strategies and public funding schemes. The Commission sees a use case or farmers and land managers working together for example to enhance a wetland ecosystem and sell credits to agrifood companies.

[46] Green Assist project supporting Seine Normani wetlands pilot on nature credits https://cinea.ec.europa.eu/news-events/news/green-assist-experimenting-biodiversity-certificates-seine-normandy-wetlands-2025-06-30_en ; https://noe.org/en/mobiliser-de-nouveaux-flux-financiers-en-faveur-de-la-biodiversite-grace-aux-certificats-biodiversite/

[47] https://www.usda.gov/sites/default/files/documents/partnerships-climate-smart-commodities-project-summaries.pdf

[48] Marc Yeterian Paying more for less: An empirical analysis of insurance pricing discrimination against organic farmers (2025)

Recommendation 5: Address the financing gap for restoring agricultural ecosystems with a longer-term commitment benefitting biodiversity and farmers

- **Redirect existing and new CAP subsidies** to support restoration in priority areas (e.g. Natura 2000 sites with small farms) and provide **results-based payment to farmers for ecosystem services**
- **Promote innovative and blended finance mechanisms** to restore nature in agricultural ecosystems (e.g. carbon removal credits payment, nature credits).
- **Enhance Monitoring and Impact Reporting** to track environmental outcomes of agroecological practices (e.g. by developing digital platforms). This can build trust with investors and policymakers, making it easier to secure financing and subsidies.

CONCLUSION

Nature is the backbone of food production, delivering essential ecosystem services such as soil productivity, water regulation, pollination, pest control, and climate resilience. Biodiversity degradation and climate change are increasingly compromising these services, threatening agricultural resilience and food security in Europe. The EU Nature Restoration Regulation (NRR), represents a landmark opportunity to reverse these trends by restoring degraded agricultural ecosystems, and mitigating the adverse impacts of intensive agricultural practices on connected ecosystems such as rivers, seas, forests, as well as wider urban areas (Article 8, which is not discussed in this guide) where 75% of Europe's population lives.

Through developing and implementing well-designed National Restoration Plans (NRPs), Member States can better protect agricultural biodiversity, soil fertility, and sustain needed ecosystem services while adapting to climate change. The NRR's success hinges on a systemic approach that aligns restoration efforts with other EU policies, strengthens monitoring and data systems, and leverages financial incentives within and beyond the Common Agricultural Policy (CAP). By integrating sustainable agricultural practices, fostering ecological continuity, and securing dedicated financing, the NRR can build resilience in food production systems without compromising productivity. Addressing the vulnerabilities of degraded ecosystems is not just an environmental imperative, but a strategic investment in Europe's capacity to adapt to climate challenges and ensure food security for future generations.

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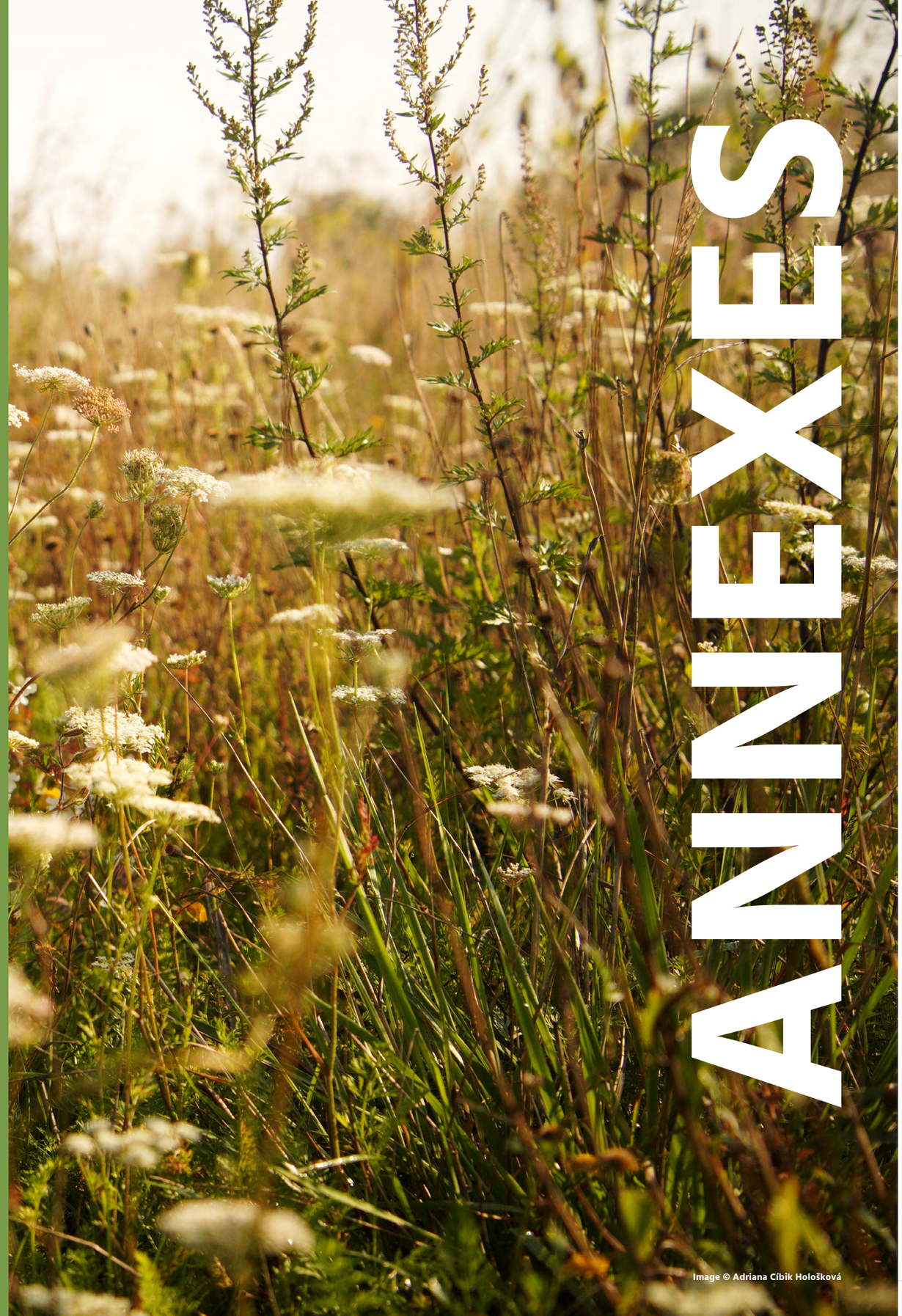

ANNEXES

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Annex I: EU policies, strategies and initiatives interlinkage with the NRR

EU Policy	Relation to NRR
Birds Directive	The Birds Directive (first version dated from 1979) aims to protect all wild bird species in Europe and their habitats. The directive, the provisions of which are compiled in the 2009 consolidated version, establishes rules for conservation, including the creation of Special Protection Areas (SPAs) (included in Natura 2000) to ensure the survival of threatened bird species. The directive was supported by the Birds@Farmland Initiative[49] in 2020, intending to develop tools for supporting farmland bird conservation in the EU. This led to the creation of 22 conservation schemes across 10 Member States in attempts to reverse the 52% decline in farmland birds (1980–2021), targeting key agricultural systems. This framework can inspire NRPs to improve the Farmland Bird Index, as required by article 11.
Nitrates Directive	This Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources that pollute ground and surface waters and by promoting the use of good farming practices. It forms an integral part of the overarching WFD and is one of the key laws protecting waters against agricultural pressures, hence helping achieve Article 11 targets.
Habitats Directive	Under SO6 (Strategic objective 6 - biodiversity), an evaluation of the green architecture is planned for 2026-2027. One of the subthemes is related to biodiversity: "Continue to stop and a This directive, along with the Birds Directive, is one of the main pillars of the European Union's system of wildlife and nature conservation. It requires Member States to designate Special Areas of Conservation (SACs) to ensure the conservation of flora and fauna species which, together with the existing SPAs, became the so-called Natura 2000 network. Article 11's focus on restoring agricultural ecosystems (e.g. high-diversity landscapes, agroecological practices) directly supports the Habitats Directive's objectives by improving habitats for protected species and ecosystem connectivity within and beyond Natura 2000 sites. and landscapes". It is unclear how eco-schemes will be monitored and evaluated.
Water Framework Directive (WFD)	This Directive establishes a blueprint for community action in the field of water policy. It requires Member States to adopt an integrated approach to water management, respecting the integrity of whole ecosystems, including regulating individual pollutants and setting regulatory standards through the adoption of management plans at river basin district level. Article 11 can directly support the Water Framework Directive's goals by improving water quality, reducing pollution, and helping achieve "good ecological status" in EU rivers, lakes, and coastal waters, and indirectly, marine ecosystems.
Sustainable Use of Pesticides Directive	The Sustainable Use of Pesticides Directive encourages integrated pest management and alternatives to chemical pesticides, as well as the utilisation of ecological infrastructures that can help improve grassland butterflies and common bird population targets for Article 11 (Annex III). The Commission proposal to achieve a necessary reduction of 50% use of pesticides by 2030 was withdrawn. Member States can still adopt more stringent measures.
EU Biodiversity Strategy for 2030	The EU Biodiversity Strategy for 2030 sets targets for pollinators, pesticides (50% reduction by 2030), high-diversity landscape features (Target 7), and organic farming (Target 8) which can support objectives specified under NRR Articles 10 and 11.
EU Pollinators Initiative	The EU Pollinators Initiative provides key recommendations for monitoring systems and tools at the EU level, which will contribute to support Article 10 on pollinator diversity and population improvement. The EU Pollinator Monitoring Scheme (EU-PoMs)[50] provides robust information on the status and trends of pollinator populations in EU Member States. For monitoring methods, a delegated act[51] from the European Commission is expected by the end of 2025.
European Climate Law and EU Carbon Removals and Carbon Farming Regulation (CRCF)	Restoration measures in the NRPs can be linked to the National Energy and Climate Plans (NECPs) to track Member States progress against the Net GHG emissions reduction targets. In addition, the EU Carbon Removal and Carbon Farming Regulation provides examples of nature restoration as Nature-based Solutions (NbS) for climate to enhance carbon sequestration and storage in soils or forests in an agricultural context. This includes restoring peatlands or wetlands, agroforestry, and soil protection measures
Soil Monitoring Directive	The Soil Monitoring Directive adopted by the EU institutions mandates the development of soil biodiversity indicators at the national level (e.g. basal respiration, earthworm diversity), which will feed into the EU Soil Monitoring Scheme. This monitoring system will support the monitoring of the Soil Organic Carbon indicator as specified under Article 11.

[49] https://circabc.europa.eu/ui/group/e21159fc-a026-4045-a47f-9ff1a319e1c5/library/ab19ce7a-fa8b-4364-bdbf-c21137e8e214
[50] 2024 methodological review by the JRC available here
[51] Delegated act on pollinator monitoring method: https://webgate.ec.europa.eu/regdel/#/delegatedActs/2803

Annex II: Good practices in agricultural ecosystems for nature and farming

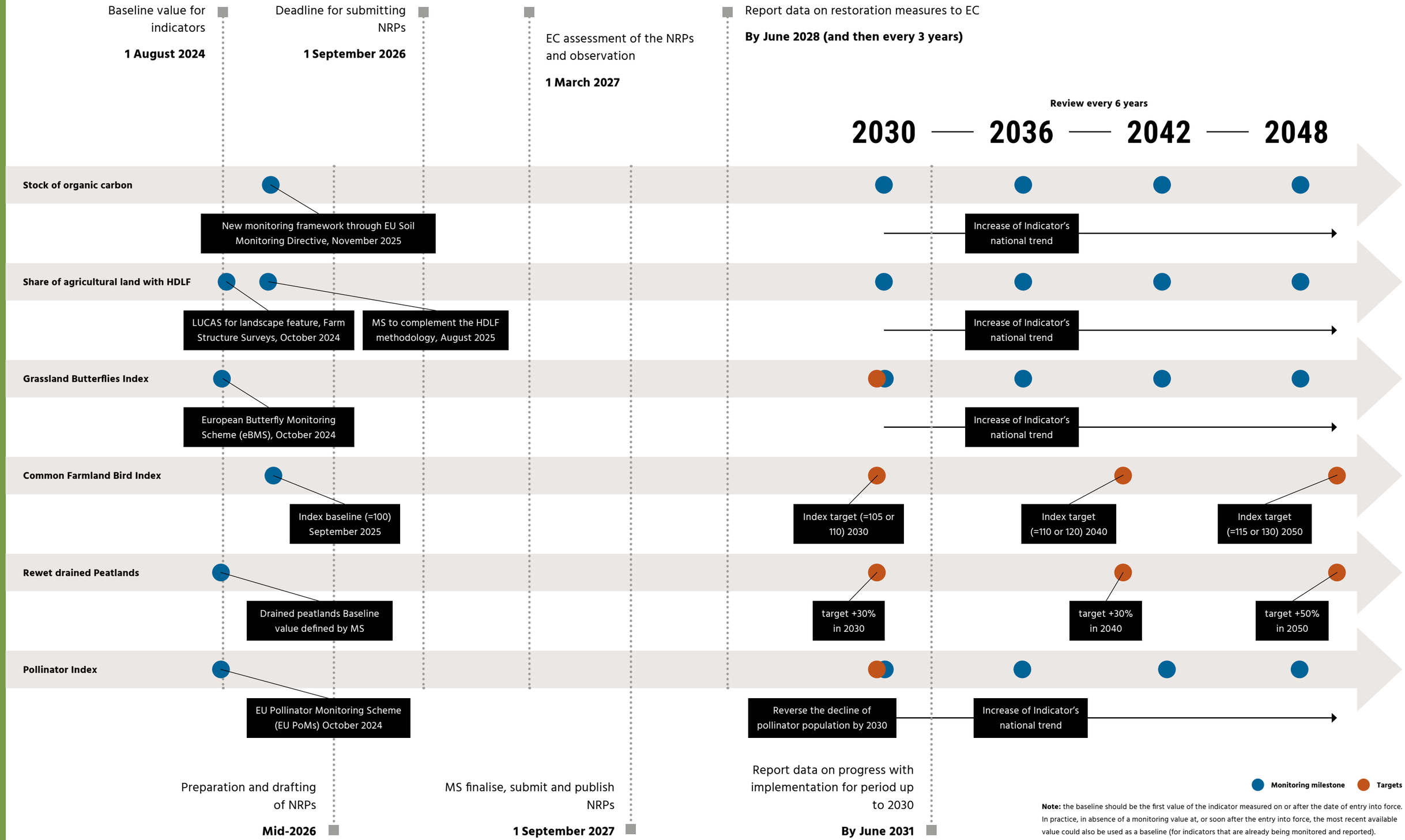
Table 2. Summary of Sustainable agricultural practices at farm and ecosystem level

Legend

+++ Very high impact* ++ High impact + Medium impact

	NRR - Article 10	NRR - Article 11				
Actions	Restoration of pollinator populations	Improve Stock of organic carbon in cropland mineral soils	Restore Grassland Butterflies population (Grassland Butterflies Index)	Improve the share of agricultural land with high-diversity landscape feature	Restore Farmland Bird Populations (Farmland Bird Index)	Rewet/Restore (drained)peatlands
Fallow land (set aside areas)	**+++** Fallow land provides habitats and food resources for animals (e.g. butterflies, ground-nesting meadow birds) (Staggenborg and Anthes, 2022)	**+++** It can increase resilience since it supports soil health and reduces the need for fertiliser inputs (Żarczyńsk et al., 2023)	**+++** Fallow land provides habitats and food resources for animals (e.g. butterflies, ground-nesting meadow birds) (Staggenborg and Anthes, 2022)	**++** Fallow land can provide habitats for plants, including rare species (Jeanneret *et al.*, 2021)	**+++** It provides habitats and food resources for animals (e.g. butterflies, ground-nesting meadow birds) (Staggenborg and Anthes, 2022)	
Maintaining and restoring semi-natural grasslands	**+++** Semi-natural grasslands offer diverse floral resources and nesting sites, for a wider range of pollinator species, improving resilience and pollination services for crops. (Traveset et al., 2024).	**++** Grasslands, especially permanent ones, store significant organic carbon in soils, by improving organic matter and reducing atmospheric CO_2 (evidence from Poland in Pietrzak & Holaj-Krzak, 2022).	**+++** Grasslands deliver pollination and other services (Bengtsson *et al.*, 2019)	**++** Semi-natural grasslands introduce structural diversity (e.g. wildflower strips, hedgerows), supporting a wider range of species (Gorris *et al.*, 2025).	**++** Grasslands provide insects, seeds, and shelter for birds. Structurally rich grasslands offer safer nesting environments compared to intensively managed fields (Jung *et al.*, 2024).	**+** Compared to intensified management in grasslands, semi-natural grasslands can help reduce water nutrient pollution (Y. Guo and al., 2023). Restoring or maintaining both ecosystems in proximity creates connected landscapes, allowing species to migrate, feed, and breed across habitats (Chen et al, 2024).
Crop rotation	**++** It supports diverse semi-natural habitats and reduces pesticides use, mitigating stressors that lead to pollinator declines (Underwood et al., 2017)	**+++** Crop rotations reduce soil erosion and degradation, enhance nutrient cycling, and promote carbon sequestration, contributing to long-term soil health (van Dijk et al., 2024)	**++** Crop rotations that include flower-rich fallows or semi-natural margins support habitats and food plants essential for butterflies during larval and adult stages (Underwood *et al.*, 2017)	**++** Well-designed crop rotation systems increase crop and habitat diversity in landscapes (Alliance Environnement and EC, 2017)	**++** Crop rotation contributes to diversified and rich food sources for farmland birds by maintaining varied crops and associated insect communities (Jung el a, 2024)	
Reduce the use of chemical pesticides and chemical fertilisers	**+++** Cutting or reducing chemical pesticides and fertiliser use improves habitats and food resources for animals (e.g. pollinators) (Brunelle et al., 2024)	**+++** Reducing fertilizer use, combined with other practices (such as diversified crop rotations) increases soil organic matter. It can increase resilience since it supports soil health (Panagos et al., 2025)	**+++** It improves habitats and food resources for animals (e.g. butterflies and birds). Lower chemical inputs allow wildflower margins and semi-natural habitats to thrive, essential for butterfly life cycles. (Brunelle *et al.*, 2024)		**+++** Reducing fertilisers and pesticides will increase insect prey availability for birds (Brunelle *et al.*, 2024)	**+++** Reducing chemical residues from fertilisers and pesticides can restore water quality, including in sensitive ecosystems like peatlands (Tallapragada & Lather, 2022)
Landscape features establishment and maintenance (e.g. buffer strips, hedgerows, field margins, tree rows, small wetlands, ponds, patches, stone walls)	**+++** Some landscape elements can be important for pollinators and farmland birds (Kovács-Hostyánszki et al., 2011)	**++** Grass margins, stone walls, and green infrastructure are effective in reducing soil erosion by water. (Panagos et al., 2020)	**+++** Some landscape elements can be important for pollinators and butterfly populations (Czúcz *et al.*, 2022)	**+++** Different landscape elements provide unique biodiversity benefits (Kovács-Hostyánszki *et al.*, 2011)	**+++** Some landscape elements can be important for pollinators and farmland birds (Henderson *et al.*, 2012)	**++** Agricultural landscape features such as ditches, dams, and buffer zones act as physical barriers that decrease runoff velocity, increase infiltration, and trap sediments, facilitating rewetting. (Panagos *et al.*, 2020) .
Agroforestry	**++** Agroforestry promotes ecosystem stability via suitable habitats for species (Frelih-Larsen et al., 2022)	**++** Agroforestry promotes soil biodiversity (Frelih-Larsen et al., 2022)	**++** Agroforestry promotes ecosystem stability via suitable habitats for species (Frelih-Larsen *et al.*, 2022)	**+++** New agroforestry systems using native, locally adapted tree species can create diverse landscapes (Tscharntke *et al.*, 2021)	**++** Agroforestry promotes ecosystem stability via suitable habitats for species (Frelih-Larsen *et al.*, 2022)	
Conserving, and restoring wetlands	**++** Wet meadows and riparian grasslands provide food resource for pollinators (Stewart et al., 2017)	**+++** Restored peat-dominated wetlands quickly become net CO_2 sinks due to high primary productivity and slow decomposition under waterlogged conditions.	**++** Wet meadows and riparian grasslands provide food resource for butterflies population (Van Swaay *et al.*, 2025)	**++** Small wetlands, riparian zones of buffer strips, function as multi-benefit landscape features improving water quality, connectivity, and reduce drought risk (Cole *et al.*, 2020)	**+++** Rewetting reduces habitat homogenization and increase food resources and nesting (Cole *et al.*, 2020)	**++** Blocking drainage and restoring natural water tables lowers decomposition and CO2 fluxes (Günther *et al.*, 2020)

Annex III: Visual timeline of NRR agricultural ecosystems indicators



Note: the baseline should be the first value of the indicator measured on or after the date of entry into force. In practice, in absence of a monitoring value at, or soon after the entry into force, the most recent available value could also be used as a baseline (for indicators that are already being monitored and reported).

Annex IV: Useful links for nature restoration in agricultural ecosystems

EEA (2024). Solutions for Restoring Europe's Agricultural Ecosystems: https://www.eea.europa.eu/en/analysis/publications/solutions-for-restoring-europes-agricultural-ecosystems

Guidance and Recommendations for Ambitious Nature Restoration Plans report (2024): https://www.restorenature.eu/File/NRP_Final%20WEB_compressed.pdf

IEEP (2022). Nature restoration as a driver for resilient food systems report: https://ieep.eu/wp-content/uploads/2023/01/Nature-restoration-as-a-driver-for-resilient-food-systems_IEEP-2022.pdf

Biodiversity Information System for Europe (BISE). Nature Restoration: https://biodiversity.europa.eu/europes-biodiversity/nature-restoration (related to General Information, Reference Data) and **Frequently Asked Questions:** https://biodiversity.europa.eu/europes-biodiversity/nature-restoration/reference-portal-for-nature-restoration-regulation/nrr-frequently-asked-questions

European Union (2022). Restoring nature – For the benefit of people, nature and the climate: https://data.europa.eu/doi/10.2779/439286

European Commission (2024). The Nature Restoration Regulation: https://op.europa.eu/en/publication-detail/-/publication/cd10f41c-fd61-11ef-b7db-01aa75ed71a1/language-enon

EU CAP NETWORK(2023) Managing High Diversity Landscape Features (HDLF) for pollinators: https://www.researchgate.net/publication/374921629_Managing_High_Diversity_Landscape_Features_for_pollinators

European Commission (2025). Delegated regulation establishing a science-based method for monitoring pollinator diversity and pollinator populations: https://environment.ec.europa.eu/news/better-monitoring-support-restoration-eu-pollinators-2025-11-26_en.

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