



Annual Review 2024

Biodiversity



CLIMATE
CHANGE
ADVISORY
COUNCIL

Annual Review 2024: Biodiversity

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Summary for All

In this seventh part of the 2024 Annual Review, the Climate Change Advisory Council emphasises the need for a unified and integrated approach to addressing the climate and biodiversity emergency. While climate change is a major driver for biodiversity loss, restoring and protecting ecosystems offers key climate benefits, including reduced emissions and greater resilience to the impacts of climate change. The Council welcomes recent policy advances, including the EU Nature Restoration Law and Ireland's 4th National Biodiversity Action Plan. By implementing the local authority climate action plans published in early 2024, local authorities can play a crucial role in advancing actions that benefit both biodiversity and climate.

Key recommendations

- ▶ The Government should ensure that the National Restoration Plan for nature establishes ambitious targets and includes fully costed measures for the restoration of ecosystems, with sufficient financial incentives to encourage widespread adoption of these measures.
- ▶ Increased funding is urgently needed to ensure the success of the 4th National Biodiversity Action Plan. The Infrastructure, Climate and Nature Fund must allocate sufficient resources to protect and restore carbon-rich habitats on land and at sea.
- ▶ The Government needs to create an integrated land use strategy to support climate, biodiversity and water goals. This should be based on comprehensive habitat and biodiversity data and a clear spatial land use planning framework.
- ▶ The Government must create a credible plan to protect 30% of land and sea by 2030 and ensure that each protected area is well managed based on clear conservation and restoration goals.
- ▶ The National Biodiversity Working Group should oversee the implementation of nature-based solutions across sectors and land uses. Institutions identified in the 4th National Biodiversity Action Plan should set clear goals and actions to scale up the adoption of these solutions.
- ▶ The Government must provide farmers with long-term, results-based financial incentives for the adoption of nature-friendly management practices. National-level monitoring of farmland biodiversity is needed and should build on the existing Agri-Climate Rural Environment Scheme (ACRES) approach.
- ▶ In collaboration with the broader research community, the Government should develop a dedicated research programme aimed at understanding and adapting to the impacts of climate change on nature.
- ▶ The Government should assess how domestic policies might negatively impact climate and biodiversity in other countries to avoid shifting problems elsewhere.



Abbreviations

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|-------|---|
| DMURS | Design Manual for Urban Roads and Streets |
| EPA | Environmental Protection Agency |
| FAO | Food and Agriculture Organization of the United Nations |
| FIF | Future Ireland Fund |
| ICNF | Infrastructure, Climate and Nature Fund |
| NPWS | National Parks and Wildlife Service |



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Key observations

- ▶ The climate and biodiversity emergency needs to be addressed in an integrated manner through aligned policies, targets, practical actions and common timeframes. Climate change is a key driver of biodiversity loss and ecosystem degradation, while the protection and recovery of biodiversity will contribute to both climate change adaptation and mitigation.
- ▶ The Council welcomes the EU Regulation on nature restoration that came into effect on 18 August 2024, and it recognises that reaching the mandated restoration targets within a well-designed and implemented National Restoration Plan for nature will play a key role in achieving climate and biodiversity objectives by 2050.
- ▶ The Council notes the publication of the 4th National Biodiversity Action Plan (2023–2030) in January 2024 and its commitments to meet urgent biodiversity conservation needs, develop a nature restoration plan and promote the use of nature-based solutions by relevant bodies in programmes relating to terrestrial, freshwater and marine environments.
- ▶ The widespread inclusion of biodiversity considerations and nature-based solutions in the local authority climate action plans, published in 2024, are noted. However, overall progress in the implementation of nature-based solutions is limited and barriers to implementation need to be addressed.

Key recommendations

1. In respect of the forthcoming National Restoration Plan for nature, the Department of Housing, Local Government and Heritage must ensure that:
 - ▶ The consultative process is highly participatory and inclusive.
 - ▶ Ambitious targets and measures for the restoration of ecosystems on land and at sea are aligned with and support the achievement of the National Climate Objective by 2050.
 - ▶ Proper costing and funding with clear and adequate financial incentives for the adoption of nature-friendly practices and restoration activities are incorporated.
2. Funding from all sources must be urgently scaled up to ensure the successful implementation of the 4th National Biodiversity Action Plan (2023–2030). Adequate funding must be ringfenced through the Infrastructure, Climate and Nature Fund to protect and restore carbon stocks within terrestrial, coastal and marine habitats under special protection. The Local Biodiversity Action Fund should be significantly upscaled to support community-run nature-based solutions and restoration projects.
3. As an outcome of the Land Use Review process, the Department of the Environment, Climate and Communications must develop a national integrated land use strategy to guide on-the-ground actions to achieve national climate, biodiversity and water



objectives. Biodiversity protection and restoration should be recognised land uses, and the national strategy must be underpinned by adequate habitat and biodiversity data at a national scale and a strategic spatial land use planning framework.

4. The Government must provide a credible plan for achieving the 2030 target of having 30% of land and marine areas under protection. Each protected area must also be effectively managed in accordance with ambitious ecosystem conservation and restoration objectives, targets and measures outlined in management plans for each area.
5. The implementation of nature-based solutions across sectors and land uses should be coordinated and monitored through the National Biodiversity Working Group. Specific objectives, targets and actions for nature-based solutions are needed from relevant institutions identified in the 4th National Biodiversity Action Plan to ensure their increased uptake. Reporting on implementation of nature-based solutions must form part of the annual reporting process under the plan.
6. The Department of Agriculture, Food and the Marine needs to expand schemes under the CAP (Common Agricultural Policy) Strategic Plan to ensure long-term financial support to farmers for nature-friendly management practices. Systematic monitoring of the condition of biodiversity on farmland is needed at the national level and should build on the scorecard approach under the Agri-Climate Rural Environment Scheme (ACRES).
7. The National Parks and Wildlife Service, in collaboration with existing research centres/programmes, academic institutions and other stakeholders, must develop a dedicated research programme to better understand and adapt to the impacts of climate change on Ireland's habitats and species.
8. The Department of Enterprise, Trade and Employment should undertake an assessment of the international impacts of relevant domestic policies and plans to avoid 'off-shoring' negative effects onto climate and biodiversity in other countries.



1. Introduction

Climate change and biodiversity loss are recognised as two intertwined crises that threaten human wellbeing. Climate change is one of the main drivers of biodiversity change and loss and ecosystem degradation in Europe.^[1] Warming, precipitation changes and the increasing frequency and severity of extreme events disturb ecosystem functioning, alter the timing and synchrony of biological events, and cause habitat loss. This exacerbates the unprecedented loss of biodiversity already caused by human-induced habitat degradation, overexploitation of natural resources and pollution.^[2]

Biodiversity loss and climate change were declared a national emergency in Ireland in 2019, and the National Climate Objective^[3] commits Ireland to pursue and achieve the transition to a climate-resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy by no later than 2050. This objective highlights the need to address the biodiversity and climate change emergency in an integrated manner, as satisfactorily resolving each issue requires consideration of the other.^[4]

While the biodiversity-rich aspect of the National Climate Objective has not been defined, a wide variety of reports have demonstrated the poor condition of habitats and species both inside and outside protected areas in Ireland.^[5-8] Intact and functional ecosystems store and sequester carbon, and strengthening their condition on land, in freshwater and in the ocean will support climate mitigation and adaptation. In this context, the adoption of nature-based solutions^{a[9]} and nature restoration measures^b inside and outside protected areas has become increasingly relevant. The EU Regulation on nature restoration^[10] has made nature restoration a key priority for EU Member States. It offers multiple potential benefits for biodiversity, ecosystem services and climate change adaptation and mitigation. There is a need to ensure that climate change adaptation and mitigation actions positively impact biodiversity and associated ecosystem services.

2. Biodiversity and key Climate Action Plan targets

The Climate Action Plan 2024^[11] and its Annex of Actions^[12] does not contain a chapter or theme dedicated to biodiversity, but several actions and measures are of direct and indirect relevance. These include actions and measures under the themes relating to Just Transition, the marine environment, agriculture, land use, land use change and forestry, electricity and adaptation. Notable actions and measures in the Climate Action Plan 2024, with a likely mix of positive and negative impacts on biodiversity, include those that:

- ▶ Support the restoration and rehabilitation of degraded peatlands.
- ▶ Accelerate renewable energy generation.

-
- a The multilaterally agreed definition of nature-based solutions is actions to protect, conserve, restore, and sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services, and resilience and biodiversity benefits.
 - b Restoration is the process of actively or passively assisting the recovery of an ecosystem to improve its structure and functions, with the aim of conserving or enhancing biodiversity and ecosystem resilience through improving an area of a habitat type to achieve good condition, re-establishing a favourable reference area, and improving a habitat of a species to sufficient quality and quantity (Article 3 of the EU Regulation on nature restoration).



- ▶ Deliver abatement of greenhouse gas emissions and increase sequestration of carbon from land use, land use change and forestry.
- ▶ Reduce chemical nitrogen use and the use of low-emission chemical fertilisers in the agriculture sector.
- ▶ Expand the indigenous biomethane sector through anaerobic digestion.
- ▶ Increase the area under tillage and the level of organic farming.
- ▶ Design and initiate the national process for achieving 30% marine protected area coverage by 2030.
- ▶ Improve assessments of climate impacts in Ireland's coastal and marine waters.

3. Progress on previous Climate Change Advisory Council recommendations

The Council made three main recommendations relating to biodiversity in 2023, focusing on the need for an ambitious and adequately resourced policy framework for biodiversity, the integration of nature-based solutions in various plans and the restoration of degraded carbon stocks in protected areas.

The 4th National Biodiversity Action Plan (2023–2030)^[6] was published in January 2024 and acknowledged the need for a whole-of-government approach to addressing the biodiversity crisis. The next Biodiversity Sectoral Adaptation Plan, to be published by September 2025, and the National Restoration Plan for nature, to be published by 1 September 2026 in compliance with Article 16 of the EU Regulation on nature restoration, represent important opportunities to demonstrate increased ambition and action for biodiversity conservation and restoration in Ireland. While the 4th National Biodiversity Action Plan contains an action to secure funding by 2024 to implement long-term biodiversity conservation and restoration, information is lacking on the estimated costs of implementation and specific funding needs and targets.

Nature-based solutions have been prioritised within the 4th National Biodiversity Action Plan and were included as a guiding principle in the second National Adaptation Framework^[3] and must now be considered in the development of sectoral adaptation plans. The local authority climate action plans that were published in February 2024 target mainly the use of nature-based solutions in surface and rainwater management, urban greening, river restoration and integration of nature-based solutions into housing developments. The policy framework for the use of nature-based solutions in flood and water quality management in urban areas was strengthened by the publication of the Design Manual for Urban Roads and Streets (DMURS), providing guidance on drainage using nature-based solutions,^[4] in June 2023 and the National Strategy for the Nature Based Management of Urban Rainwater and Urban Surface Water Discharges^[5] in May 2024. Local biodiversity action plans are also to be developed by all local authorities by 2026 and these are to be integrated within city and county development plans.

Regarding the restoration of degraded carbon stocks in protected areas, the 4th National Biodiversity Action Plan calls for the National Parks and Wildlife Service (NPWS) and other relevant bodies to promote freshwater, transitional, coastal and marine nature-based solutions (including coastal and wetland restoration and restoration of 'blue carbon' ecosystems) in national, regional and local rural and urban programmes. The NPWS is also targeting the restoration and rewetting of raised and blanket bog protected areas in line with Climate Action Plan targets and measures set out in the



National Raised Bog Special Areas of Conservation Management Plan (2017–2022)^[16] and the National Peatlands Strategy (2015–2025).^[17]

4. Analysis and discussion

4.1. Policy developments supporting biodiversity and climate action

There have been significant recent policy developments at national and EU levels relating to the conservation and restoration of biodiversity. The 4th National Biodiversity Action Plan was published in January 2024 and sets the national biodiversity agenda up to 2030, and the EU Regulation on nature restoration came into effect on 18 August 2024. The EU Regulation on nature restoration is a key element of the EU Biodiversity Strategy for 2030^[18] and requires Member States to develop and implement national restoration plans for nature to ensure the implementation of its provisions.

The 4th National Biodiversity Action Plan contains 194 actions within the framework of five strategic objectives:

1. Adopt a whole-of-government, whole-of-society approach to biodiversity.
2. Meet urgent conservation and restoration needs.
3. Secure nature's contribution to people.
4. Enhance the evidence base for action on biodiversity.
5. Strengthen Ireland's contribution to international biodiversity initiatives.

Several notable actions supporting climate adaptation and mitigation are included under the second strategic objective in the 4th National Biodiversity Action Plan. These include the promotion of nature-based solutions in terrestrial, freshwater and marine environments; restoration and rewetting of raised bogs and blanket bogs; use of nature-based solutions in flood relief schemes, including the retrofitting of existing schemes for biodiversity enhancement; control and management of alien invasive species; and explicit consideration of biodiversity in the next sectoral adaptation plans that are to developed by 30 September 2025 in the context of the National Adaptation Framework.

There is also considerable cross-referencing to improve sustainability practices in the agriculture, forestry and fisheries sectors through the effective implementation of relevant EU directives and related national action plans and schemes, including the Common Agricultural Policy, Common Fisheries Policy, National Forest Strategy and Forestry Programme, the EU Habitats and Birds Directives and action plans relating to the water framework, marine strategy and nitrates. This highlights the wide variety of actors and stakeholders involved in biodiversity. The National Biodiversity Working Group, which oversees implementation of the 4th National Biodiversity Action Plan, has a crucial coordination and monitoring role to play to ensure that the plan is successfully executed.

The EU Regulation on nature restoration will strengthen the national framework with an aim to prevent further biodiversity loss and ensure the long-term and sustained recovery of biodiverse and resilient ecosystems on land and at sea. It also aims to contribute to the achievement of the EU's overarching objectives of climate change mitigation, adaptation and land degradation neutrality, as well as enhancing food security.

The Regulation stipulates legally binding restoration targets for Member States to restore ecosystems, habitats and species across the EU's land and sea areas (inside and outside protected areas) to 2050. These targets are for habitats included in Annex I of the Habitats Directive^[19] (including forest



habitats, peatlands, grasslands, rivers and lakes) as well as for habitats of species protected under the Habitats Directive and the Birds Directive,^[20] and restoration targets for essential marine habitats covered by these directives and the Marine Strategy Framework Directive.^[21] Beyond the habitats covered by existing legislation, Member States are also required to:

- ▶ Halt the loss of urban green space and urban tree canopy cover by 2030 and increase urban green space and urban tree canopy cover thereafter.
- ▶ Restore the natural connectivity of rivers and the natural functions of related floodplains.
- ▶ Halt and reverse the decline of pollinator populations by, at the latest, 2030 and thereafter achieve an increasing trend in pollinator populations.
- ▶ Put in place measures aiming to increase farmland bird populations and to achieve a positive trend in certain other key biodiversity indicators in agricultural ecosystems, including the grassland butterfly index, the stock of organic carbon in cropland mineral soils and the share of agricultural land with high-diversity landscape features.
- ▶ Put in place measures that aim to restore and rewet peatlands under agricultural use. Targets for restoration measures for organic soils in agricultural use constituting drained peatlands are:
 - ▶ 30% of such areas by 2030, of which at least one-quarter shall be rewetted,
 - ▶ 40% of such areas by 2040, of which at least one-third shall be rewetted,
 - ▶ 50% of such areas by 2050, of which at least one-third shall be rewetted.^c
- ▶ Achieve a positive trend in a range of biodiversity indicators in forest ecosystems, including an increasing trend for standing and lying deadwood, uneven aged forests, forest connectivity, abundance of common forest birds and stock of organic carbon.
- ▶ Contribute to the EU-level commitment of planting at least 3 billion additional trees by 2030.

Ireland is required to submit its National Restoration Plan for nature to the European Commission by 1 September 2026 in line with Article 16 of the EU Regulation on nature restoration. The plan will contain specific national targets and measures to restore degraded habitats in marine and terrestrial protected areas and to enhance biodiversity within agricultural, forest and urban ecosystems in the period up to 2050. This aligns with the timeframe for achieving the National Climate Objective, and it is essential that the National Restoration Plan ensures the alignment of climate and biodiversity targets in pursuit of the National Climate Objective.

The National Restoration Plan will apply to areas both within and outside protected areas and lead to the adoption of more nature-friendly management approaches and land uses that ensure diverse ecosystems. The commitment of a diverse range of stakeholders, in particular farmers and private landowners, is required to ensure the successful design and implementation of the National Restoration Plan. It is important that it is properly funded, with clear and adequate financial incentives, and developed through a highly participatory and inclusive approach.

c As per Article 11(4) of the EU Regulation on nature restoration, restoration measures, including rewetting, may be put in place in areas of peat extraction sites and be counted as contributing to meeting the respective targets. Rewetting on agricultural land remains voluntary for farmers and private landowners and is to be incentivised to make it an attractive option for farmers and private landowners.



It is notable that the 'biodiversity-rich' component of the National Climate Objective is yet to be defined. Moreover, the 4th National Biodiversity Action Plan does not elaborate how this objective is aligned with the 2050 vision for biodiversity and priority actions identified in the plan. The meaning of 'biodiversity-rich' should be defined and clarified through the process of developing the National Restoration Plan, so that appropriate targets, actions and indicators are set and progress towards achieving the objective is monitored. In research commissioned by the Council to inform the second cycle of carbon budgets, Molloy *et al.*^[22] outline some likely key elements of the definition. However, these would need to be further developed through due consultative process.

The draft revised National Planning Framework^[13] updated several of its national policy objectives to include the application of nature-based solutions to reduce flood risk, manage stormwater, rainwater and surface water risk, and, in retrofitting existing environments, cater for surface water run-off. New national policy objectives also support an increase in green and blue spaces and tree canopy cover in settlements and addressing no net loss to biodiversity within the plan-making functions of local authorities.

4.2. Implementation of nature-based solutions

Nature-based solutions and nature-friendly management approaches are an important area of synergy between climate action and biodiversity action and are likely to increase in importance with the implementation of the EU Regulation on nature restoration. The Council's Annual Review of 2023^[23] highlighted the potential for implementing nature-based solutions and recommended their implementation across sectors and land uses, including in urban areas, agriculture, forests, coastal and marine habitats, peatlands, and riverine and freshwater environments. Figure 1 shows nature-based solutions such as ecosystem restoration, urban greening and sustainable agriculture, forestry and fisheries as areas of synergy between mitigation and adaptation.

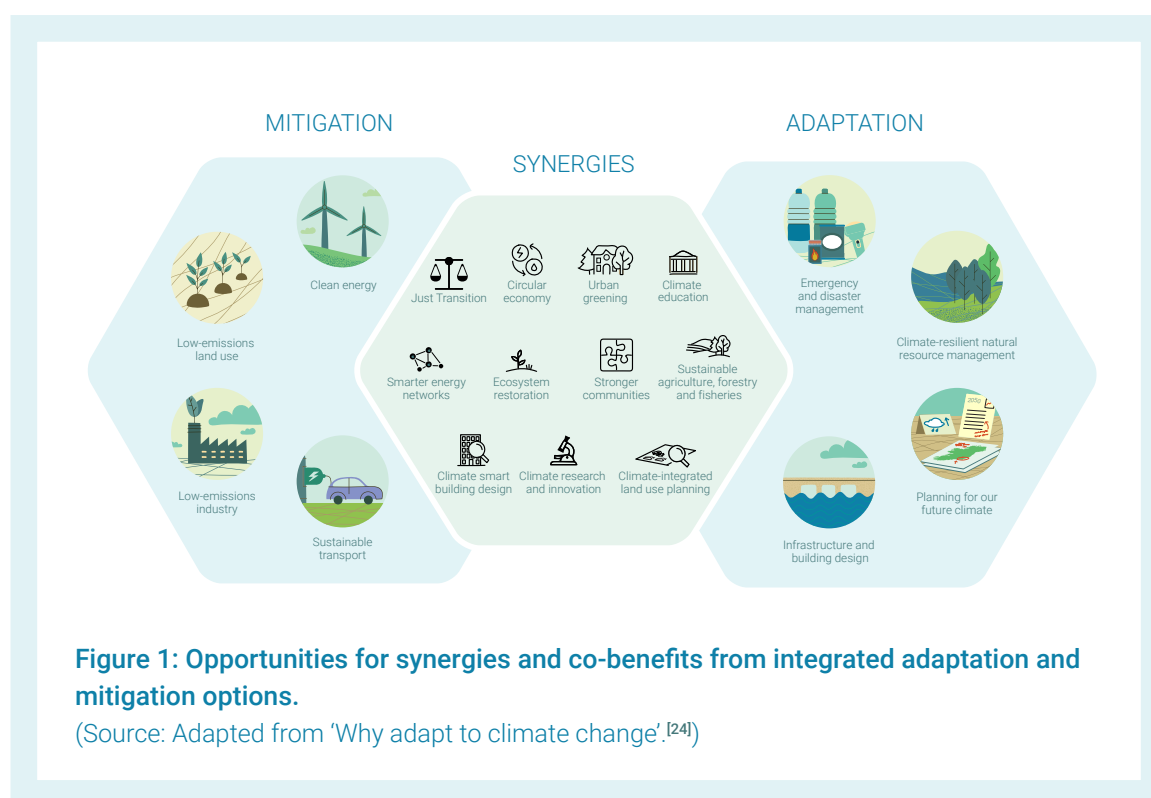


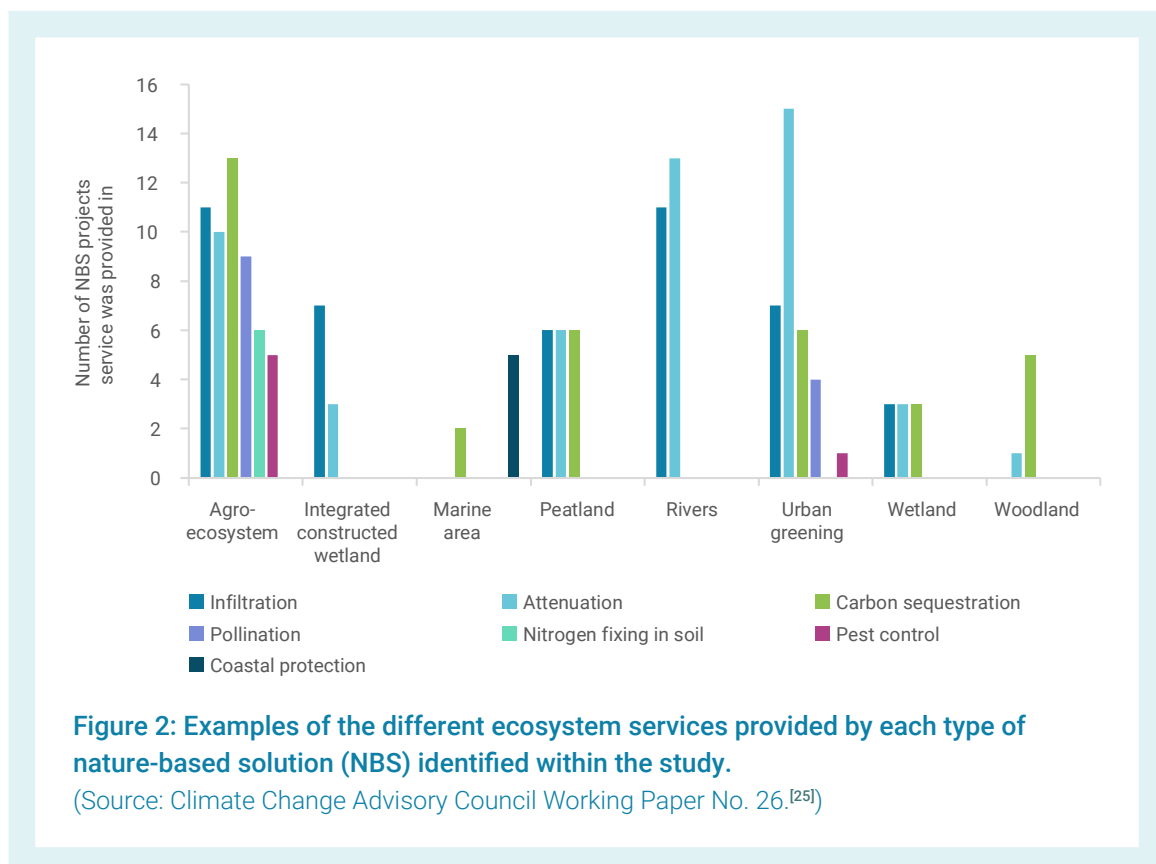
Figure 1: Opportunities for synergies and co-benefits from integrated adaptation and mitigation options.

(Source: Adapted from 'Why adapt to climate change'.^[24])



The 4th National Biodiversity Action Plan recognises the role of nature-based solutions in supporting the National Climate Objective and that nature-based solutions should be contributing to national climate ambitions by 2025. It specifically calls on the Department of the Environment, Climate and Communications, Department of Agriculture, Food and the Marine, Department of Housing, Local Government and Heritage, NPWS, local authorities and the climate action regional offices and other relevant bodies to promote terrestrial and marine/coastal nature-based solutions in national, regional and local rural and urban programmes. This is a high-level action, and specific objectives, targets and actions should be developed and driven by these bodies to ensure the increased uptake of nature-based solutions in Ireland. Reporting on implementation of nature-based solutions should form part of the annual reporting process under the 4th National Biodiversity Action Plan.

Research commissioned by the Council identified a sample of 81 nature-based solutions projects that are contributing to climate action and the provision of ecosystem services in Ireland and fall into eight types – agroecosystem, integrated constructed wetlands, urban greening, rivers, peatlands, woodlands, wetlands and marine areas.^[25] It found that 53% of these projects contributed to climate change adaptation, 26% to both adaptation and mitigation and 21% to mitigation. Figure 2 shows the profile of the main ecosystem services that were provided by each of the nature-based solutions projects, with each project providing at least two types of ecosystem service. Nature-based solutions projects implemented in agroecosystems and for urban greening were found to deliver the most varied mix of ecosystem benefits.





The research found that progress on the implementation of nature-based solutions is most advanced in the areas of flood risk and water quality in urban areas, but that overall progress is limited. The policy framework for the integration of nature-based solutions into flood and water quality management in urban areas has also recently been strengthened. The DMURS guidance on drainage using nature-based solutions,^[14] published in June 2023, provides guidance for designers on how to incorporate nature-based solutions into road and street drainage design. Applying DMURS guidance is now mandatory when providing new or when modifying existing urban roads and streets. The National Strategy for the Nature Based Management of Urban Rainwater and Urban Surface Water Discharges^[15] was published in May 2024. It focuses on the redesign and softening of urban landscapes by integrating planted areas into urban areas to store and treat rainwater run-off prior to discharging it back into the urban drainage system. The implementation of the DMURS guidance and the national strategy by local authorities has the potential to scale up the use of nature-based solutions for urban drainage in new projects and to retrofit urban neighbourhoods and streetscapes. While the primary objective is flood mitigation, intentionally designed co-benefits should be built in to enhance human wellbeing, aesthetics and biodiversity and to leverage economic investment, as with the award-winning 'Grey to Green' scheme in Sheffield, UK.^[26]

The implementation of nature-based solutions and nature-friendly practices in agroecosystems and forests is particularly important given that agriculture is the main threat to and pressure on Ireland's protected habitats and species. Long-term support and programmes are needed beyond the current Common Agricultural Policy to incentivise the uptake of nature-friendly farming practices such as allocating space for nature, organic farming approaches, agroforestry, hedgerow recovery, sward diversification and carbon farming. The National Economic and Social Council publication *Accounting for Nature in Ireland*^[27] highlighted concern over the short-term nature of agro-ecological payments for farmers and the challenges of the time lag between action and result with regard to results-based payments.

Afforestation and reforestation with monocultures may contribute to climate change mitigation but are often detrimental to biodiversity and do not have clear benefits for adaptation.^[4] Therefore, to ensure a more nature-friendly management approach to forestry, increased afforestation will need to consider species diversification (including native conifer and broadleaved species) across the landscape, diversity of management practices (including lower impact), plans for sustained carbon stock and wood production, and hence a healthy age profile and spatial distribution of the national forest estate, and buffer zones to protect against fire, pests and diseases.^[22] To prevent biodiversity considerations and requirements inhibiting afforestation and reforestation projects, individual landowners should receive financial support through existing schemes to undertake the necessary environmental assessments.

Nature-based solutions have a central role to play in ensuring no net biodiversity loss from new developments. With infrastructure development being a major driver of habitat loss, it is essential that nature-inclusive design is considered in new infrastructure projects, including the design and development of new residential areas and settlements. Nature-based solutions should be identified and implemented as measures to mitigate biodiversity loss, mitigate and/or adapt to climate change, and provide ecosystem services and benefits to people through infrastructure projects as part of the environmental assessment process. The implementation and impact of these measures should be monitored and enforced by the relevant bodies as part of licensing conditions.

Given the need for a cross-sectoral and collaborative approach to nature-based solutions, it is recommended that the National Biodiversity Working Group serves as an overall platform to coordinate and monitor the implementation of nature-based solutions and address any barriers that impede their implementation. This should include addressing the barriers to implementation and taking forward



the main recommendations identified by Molloy *et al.*^[25] The main barriers identified were limited funding and resources, lack of information on the implementation of nature-based solutions, along with a lack of evidence for and published data on the effectiveness of nature-based solutions, and a lack of knowledge transfer.^[25] The main recommendations included the need for:

- ▶ a comprehensive and shared definition of nature-based solutions for policymakers to implement across sectors,
- ▶ advisory programmes for informing stakeholders on the application, monitoring and evaluation of nature-based solutions across landscapes and seascapes,
- ▶ a collaborative approach across governmental departments, non-governmental organisations, public service bodies, local authorities and the private sector, along with engagement with local communities and a clear governance strategy, which is essential for mainstreaming the implementation/monitoring of nature-based solutions at national level,
- ▶ development of regulations, standards and certification systems for nature-based solutions,
- ▶ development of a national database of nature-based solutions implemented across sectors in Ireland, as well as monitoring and evaluation tools to build up the evidence base for nature-based solutions for climate action.

4.3. Role of protected areas in climate adaptation and mitigation

Natural and semi-natural ecosystems are important for climate adaptation and mitigation and play a significant role in the global carbon cycle through sequestering carbon from carbon dioxide in the atmosphere and storing it in vegetation and soils.^[28] Many natural ecosystems also act as natural defences against coastal erosion and reduce flood risk from inland and coastal events.^[29] Article 5 of the Paris Agreement requires parties to take action to conserve and enhance sinks and reservoirs of greenhouse gases, including biomass, forests and oceans, as well as other terrestrial, coastal and marine ecosystems.^[30]

According to the latest assessment, 85% of Ireland's EU protected habitats were in unfavourable status,^[5] and a 2023 ruling of the Court of Justice of the European Union found that Ireland had failed to define site-specific conservation objectives for 140 protected area sites and failed to adopt necessary conservation measures.^[31] These findings reinforce the need to ensure the active implementation of conservation and restoration measures within existing protected area sites. The next report on the status of EU protected habitats and species in Ireland is due in 2025 and will give insight into the trend in conservation status since 2019.

Ireland is in the process of expanding its protected area network, both on land and in the marine environment. The creation of Ireland's first marine national park, Páirc Náisiúnta na Mara, is welcomed, together with the acquisition by NPWS of land at the Conor Pass in Kerry; however, all of the sites covered by the national park were already designated for protection under EU directives.^[32] 13.9% of Ireland's land area^[33] and almost 10% of its marine area^[34] are currently covered by protected areas. The Kunming–Montreal Global Biodiversity Framework,^[35] agreed under the Convention on Biological Diversity in 2022, requires parties to ensure that at least 30% of their land and marine environments are effectively conserved and managed by 2030 through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures. In the 4th National Biodiversity Action Plan, the Government commits to identifying preliminary areas that will be pledged as future protected areas by 2024, although no explicit target



is given in terms of the coverage of terrestrial areas. The Council recommends that the Government must provide a credible plan for achieving the 2030 target of 30% of land and marine areas under protection. This should also consider practical measures to increase the connectivity of protected areas and explore the possibility of integrating protected areas with other effective area-based conservation measures.

The Programme for Government^[36] committed Ireland to achieving 30% of marine protected area coverage by 2030, as is also referenced in action MA/24/5 of the 2024 Climate Action Plan Annex of Actions,^[12] although the enactment of the Marine Protected Areas Bill continues to be delayed.^[37] The Council recommends that the Marine Protected Areas Bill be urgently enacted to provide certainty for the conservation and restoration of biodiversity in the marine environment and for other sea uses, including renewable energy and fisheries.

Carbon stocks within terrestrial, coastal and marine habitats should be further identified and prioritised for protection as part of the process of designating future protected areas. Although progress is being made to restore raised bogs inside and outside protected areas, extensive restoration and rehabilitation work needs to be undertaken on blanket bogs. There is also a need to prioritise the conservation and restoration of salt marshes and seagrass meadows in coastal and marine areas through different approaches depending on the location, surrounding landscapes and extent of degradation or loss.^[38] While the improved coverage of protected areas is an important indicator, it is essential that the management of existing protected areas is improved to deliver better outcomes for species and habitat integrity. Each protected area should be effectively managed in accordance with ambitious conservation and restoration objectives, targets and measures at landscape level, as outlined in management plans for each area. This ambition should be matched by the necessary mobilisation of funding through the current prioritised action framework (2021–2027) for Natura 2000 sites in Ireland,^[37] as well as through future iterations of the prioritised action framework.

The delays in enacting the Marine Protected Areas Bill have drawn to attention the impacts of the expansion of protected areas on future planning relating to offshore renewable energy. With respect to the issue of offshore wind and protected areas, the need to carefully manage the siting of offshore wind farms and the ongoing expansion of marine protected areas was highlighted in the Council's 2023 Annual Review,^[23] and the expansion of both areas is a key issue to address through the marine spatial planning framework and environmental assessment process. There is no clear EU policy specifically on the co-location of offshore wind energy and marine protected areas, but scope is allowed for developments, such as for offshore wind energy, in Natura 2000 sites if significant disturbance of species can be avoided or if it is in the overriding public interest.^[39] Article 6 of the EU Regulation on nature restoration presumes plans for the production of energy from renewable sources, their connection to the grid, the related grid itself and storage assets to be of overriding public interest. Member States may exempt such projects from the requirement that no less damaging alternative solutions are available, provided that a strategic environmental assessment or an environmental impact assessment has been carried out. It is noted in the 4th National Biodiversity Action Plan that the NPWS will have reviewed its licensing and consent system by 2025 to facilitate sustainable activities within Natura 2000 sites.

4.4. Need for an integrated national land use strategy

Phase 2 of the Land Use Review is ongoing and seeks to identify the key demands on land (both public and private) to inform policies for land use across key Government objectives, improving socioeconomic, climate, biodiversity, water and air quality outcomes.^[40] As part of this process, it is recommended that the Department of the Environment, Climate and Communications commit to the



immediate development of a national integrated land use strategy to guide on-the-ground actions in pursuit of the stated outcomes.

Changes in land use are needed to achieve the interlinked elements of the National Climate Objective, namely climate neutrality, climate resilience, biodiversity richness and environmental sustainability, by no later than 2050. Molloy *et al.*^[19] highlight the need to balance the targets and measures for greenhouse gas emissions reductions and carbon stock protection, sustainable utilisation of land resources, conservation of habitats and species, and other sustainable development goals. While high-level national targets on climate and biodiversity may be in place or under development, land use change requires decisions to be taken at the local level by a diverse range of stakeholders.

The national integrated land use strategy should be underpinned by a strategic spatial land use planning framework. The first target of the Global Biodiversity Framework under the Convention on Biological Diversity requires parties to ensure that all areas are under participatory, integrated and biodiversity-inclusive spatial planning. Spatial land use planning in Ireland needs to be optimised as a decision support tool to inform stakeholders of the most suitable land use options in specific areas, to advise stakeholders on alternatives and to develop schemes to incentivise change.^[22] Spatial land use planning has the potential to identify and balance climate actions with minimising biodiversity loss and providing opportunities for restoration in specific areas and to pursue stacked land uses with synergistic social, economic, climate and biodiversity objectives.^[22] Strategic spatial planning could also assist in ensuring that land use planning decisions are informed by future projections of changes in climate. Biodiversity protection and restoration should be considered specified land uses in the Land Use Review, as demand for ensuring space for nature and the restoration of degraded ecosystems is likely to increase in the coming years.

4.5. Resourcing of biodiversity

Inadequate funding and resources were identified as key impediments to biodiversity conservation and restoration by the Joint Committee on Environment and Climate Action^[41] and the Citizens' Assembly Report on Biodiversity Loss.^[42] Adaptation scorecard reports^[43,44] have also identified this as a key challenge affecting the implementation of the Biodiversity Sectoral Adaptation Plan. While the financial costs of the actions in the 4th National Biodiversity Action Plan are not estimated, the need to mobilise additional financial and human resources to match the escalation of biodiversity ambition is recognised. Further work is needed on the costs of effectively conserving and restoring biodiversity in Ireland, and this is to be an important consideration of the National Restoration Plan.

A report from 2008 estimated that Ireland's biodiversity contributed approximately €2.6 billion each year via ecosystem services to the economy^[45] and this figure is considered a significant underestimation.^[46] Biodiversity loss is also listed as one of the top three economic risks over the next decade.^[47] In spite of its value and the high level of risk due to biodiversity loss and ecosystem collapse, investment in biodiversity protection and restoration has not been sufficient. In its 2023 report, the Department of Public Expenditure, NDP Delivery and Reform tagged Government allocations for biodiversity expenditure in 2024 for the first time and estimated that €978 million was allocated to activities considered favourable to biodiversity.^[48] This includes funding for the NPWS and the Environmental Protection Agency (EPA), peatland restoration, conservation and management programmes, including those in receipt of funding from the EU Just Transition Fund, funding for research, mapping and monitoring systems, and programmes funded by the Marine Institute. A total of €419 million of expenditure allocated in the Revised Estimates for Public Services 2024 is considered to have a potentially unfavourable impact on biodiversity. This includes expenditure focusing on emissions and pollution-intensive activity and activities detrimental to water



quality, including infrastructure on greenfield sites and new road investment, and certain agricultural schemes. This compares with €4,140 million allocated to activities considered favourable to climate change mitigation and €1,539 million allocated to activities considered unfavourable to climate change mitigation. Investment by the Government in biodiversity and nature-based approaches should be tracked comprehensively on an annual basis through the budget tagging work of the Department of Public Expenditure, NDP Delivery and Reform.

Two new funds were announced in Budget 2024 – the Future Ireland Fund (FIF) and the Infrastructure, Climate and Nature Fund (ICNF). Legislation was also enacted for the establishment of these two funds in 2024.^[49] The purpose of the FIF is to support State expenditure from 2041 and 0.8% of gross domestic product (GDP) will be paid into the fund from 2024 to 2035. It is estimated that the FIF could grow to €100 billion by 2035, and 3% of the fund is allowed to be drawn down each year from 2041. The ICNF intends to provide support to projects that directly or indirectly contribute to climate change, nature, water quality and biodiversity objectives. Some €2 billion will be paid into this fund annually from 2024 to 2030. Each year from 2026 to 2030, up to 22.5% of the fund can be drawn down to support State expenditure on designated environmental projects, subject to an overall cap of €3.15 billion. It is recommended that adequate resources are ringfenced through the ICNF to support initiatives to conserve and restore biodiversity, bearing in mind that significant funding is needed to prioritise the protection and restoration of carbon stocks within terrestrial, coastal and marine habitats under special protection.

While the medium- and long-term focus of the FIF and INCF is welcome, there is a need to urgently scale up funding from all sources to ensure the successful implementation of the 4th National Biodiversity Action Plan. This should include allocations to Government agencies and departments, local authorities, semi-state bodies with mandates for activities in protected areas, such as Coillte and Bord na Móna, programmes under the EU Multiannual Financial Framework (2021–2027) and the further development of blended public and private finance mechanisms, such as those used to establish Peatland Finance Ireland.^[50]

As with climate adaptation and mitigation, local government and communities are key agents for the delivery of actions to conserve and restore biodiversity. Local authorities will have an important role in delivering commitments made in the National Restoration Plan to increase urban green spaces, ensure no net loss of biodiversity, integrate nature-based solutions into new developments and schemes, and retrofit existing urban environments and flood-relief schemes with nature-based solutions. The increased deployment of biodiversity officers within local authorities is welcomed, and these officers should collaborate closely with climate action officers to ensure that biodiversity and climate change are addressed in an integrated way and that communities are provided with financial and technical support to implement practical nature-based solutions. Research commissioned by the Council on coastal community recommendations for building climate resilience^[29] found that there is an urgent need for local governments to be able to prioritise support for community-led actions addressing climate adaptation and biodiversity conservation. It highlighted the need to empower biodiversity and climate offices, to ringfence multi-year funding for climate adaptation and conservation projects, and to build the capacity of these offices to work in communities.

The Local Biodiversity Action Fund has been in operation since 2018 and has granted funding of just over €6 million to local authorities and communities to implement projects linked mainly to awareness raising, species surveys and monitoring, and habitat mapping.^[51] While the establishment and growth of this fund has been a positive development, there is a need to expand and upscale it to engage community groups in active projects that implement nature-based solutions and restore degraded habitats.



4.6. Biodiversity monitoring and research

The 4th National Biodiversity Action Plan highlights the need to enhance the evidence base for action on biodiversity and includes planned actions to identify research gaps and to establish a system of natural capital accounting, measurement of ecosystem services and other measures to improve biodiversity and ecosystem data and monitoring.

4.6.1. Research gaps

A notable research gap relating to biodiversity and climate change is uncertainty relating to how individual species and ecosystems will respond to future changes in climate. The NPWS, in collaboration with existing research centres/programmes, academic institutions and other stakeholders such as the All-Island Climate and Biodiversity Research Network, should develop a dedicated research programme to better understand the impacts of climate change on Ireland's habitats and species.^[52] This is identified as an objective in the Biodiversity Sectoral Adaptation Plan^[53] but there has been limited progress to date in its implementation.

The dedicated research programme should investigate the loss of and damage to ecosystems and habitats from extreme events and gradual change, vulnerability of species and habitats, and shifts in the timing of biological events and species distribution, invasive species, pests and diseases, as well as changes in ocean temperatures, acidification, salinity and nutrient levels. Invasive alien species represent a major and increasing threat to native flora and fauna in Europe^[54] and are recognised as a risk that is undermining the resilience of Ireland's habitats.^[55] Further research is needed to assess the risk of new invasive species and diseases and the potential for non-native species to become problematic if climatic conditions become more suitable for them.^[46] Positive opportunities to build resilience into ecosystems by deliberately incorporating non-invasive, non-native species that are better adapted to the changing climate should also be explored.

4.6.2. Importance of biodiversity monitoring

The Joint Committee on Environment and Climate Action and the Citizens' Assembly both emphasised the need for strengthened systems and resources for monitoring biodiversity and that incentives for biodiversity should be results based and supported by monitoring and evaluation.^[41] Assessment and monitoring activities for biodiversity are currently undertaken by a wide range of stakeholders including NPWS, National Biodiversity Data Centre, EPA, Department of Agriculture, Food and the Marine, Teagasc, Marine Institute, Inland Fisheries Ireland, BirdWatch Ireland, Natural Capital Ireland and environmental assessment practitioners.

While the ecological condition of protected EU habitats and species is measured every 6 years through the Habitats and Birds Directives reporting processes, there is a need to define and measure the condition of a wide range of habitats and species outside protected areas. Land and sea systems are and will continue to undergo change due to climate actions (e.g. renewable energy deployment (including biofuels), change in agricultural systems, afforestation) as well as other factors. The impact of this on biodiversity needs to be monitored and assessed over the long term, including measures taken to mitigate biodiversity risks.

The implementation of the EU Regulation on nature restoration requires comprehensive monitoring of habitats and species, and existing monitoring systems will need to be aligned and strengthened to assess the effectiveness of restoration measures put in place against a range of indicators identified in the regulation. This includes indicators linked to enhancing biodiversity in agricultural and forest ecosystems such as pollinator diversity and populations, stocks of organic carbon in agricultural areas and forests, soil health, populations of common forest and farmland birds, the



grassland butterfly index, forest connectivity and the share of agricultural land with high-diversity landscape features. Monitoring of biodiversity within all urban ecosystem areas will also need to be strengthened, including urban green space and urban tree canopy cover. The alignment and strengthening of biodiversity monitoring systems will need to be initiated during the planning phase for the National Restoration Plan.

Opportunities exist to expand the monitoring system for the assessment of the biodiversity condition of agricultural land based on efforts through the environmental assessment and scoring system that is carried out on 25% of all land under agricultural management through the Agri-Climate Rural Environment Scheme (ACRES)^[56] as well as through efforts to develop biodiversity indicators through the Teagasc National Farm Survey. The possibility of integrating the monitoring and evaluation of nature-based solutions within ongoing work to develop natural capital systems and standards as well as national assessment of ecosystem accounts by 2027 should be further explored.

4.7. International considerations

Both climate change and biodiversity loss are global challenges requiring international cooperation. Any positive and negative impacts on biodiversity and emissions reductions in Ireland will affect the achievement of global biodiversity and climate targets. Domestic policy and actions taken in Ireland should therefore not result in greater environmental damage in other countries. Given its mandate for trade policy, the Department of Enterprise, Trade and Employment should undertake an assessment of the international impacts of relevant domestic policies and plans to avoid 'off-shoring' negative effects onto climate and biodiversity in other countries. Examples of negative effects include hidden costs across supply chains linked to the environment such as greenhouse gas emissions, nitrogen emissions, natural resource degradation, habitat loss and blue water withdrawals, as well as other broader hidden costs relating to health and social issues.^[57]

Detailed assessments are being undertaken by the Food and Agriculture Organization of the United Nations (FAO) of the hidden impacts of agri-food systems on the environment, health and livelihoods with the intention of better preparing decision-makers for actions that steer agri-food systems towards environmental, social and economic sustainability.^[58] FAO is urging governments to deploy true cost accounting methods to transform agri-food systems to address the climate crisis, poverty, inequality and food security. Similar approaches can also be followed to explore the hidden costs associated with the import of non-sustainably produced goods and services linked to forestry, fodder and energy. Other mechanisms may also be used to limit the import of non-sustainably produced goods through legal and economic instruments such as sustainability certifications and an expanded Carbon Border Adjustment Mechanism.



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