Submission of views and options on enhanced policy coherence on biodiversity and climate change from members of academia and research

This document was prepared by members of the Academia and Research Organisations Group (A&R Group), established under the United Nations Convention on Biological Diversity (CBD), which provides a collective platform to support the meaningful participation and engagement of academics and researchers in CBD processes. However, it reflects only the views of the individuals listed as signatories and does not constitute an endorsement by the Academia and Research Organisations Group as a whole, nor by any of the institutions with which the signatories are affiliated.

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Executive summary

It is well established scientifically that the twin crises of climate change and biodiversity loss are deeply interconnected. However, while many climate change mitigation and adaptation strategies offer mutual benefits for nature and climate, others—especially when implemented without robust social and ecological safeguards—can unintentionally undermine biodiversity and the health of ecosystems.

This submission is divided into three sections and highlights: 1) Trade-offs and key interactions between biodiversity and climate policy and outcomes; 2) Nature-based solutions for integrated climate-biodiversity-equity benefits; 3) Procedures and mechanisms for greater policy coherence.

1.Trade-offs and key interactions between biodiversity and climate policy and outcomes

While other submissions and CBD decision 16/22 emphasise the many potential synergies between actions tackling biodiversity loss and climate change, our submission fills a gap by emphasising and providing more detail on the risks of trade-offs. Potential trade-offs that should be carefully mitigated can occur in relation to the energy transition, particularly linked to renewable energy production and critical minerals extraction, where biodiverse natural habitats and the people who depend on them may be put at risk if poorly designed. Crops for bioenergy compete for scarce land and could risk biodiversity loss, jeopardise food security and involve land grabs while bioenergy development has in some cases been linked to the extraction of biomass from high-integrity ecosystems. Geoengineering and novel carbon dioxide removal strategies can carry potentially severe risks for biodiversity and are under-researched. Climate adaptation actions such as fire suppression in naturally fire-adapted ecosystems, or construction of hard engineered defences against flooding can also have negative consequences for biodiversity and ecosystem resilience. It is necessary to recognise and manage these trade-offs early on, through integrated planning, demand-side measures and robust environmental standards.

2. Nature-based solutions for integrated climate-biodiversity-equity benefits

Nature-based solutions (NbS) can deliver both climate and biodiversity benefits while supporting human well-being but must be planned and delivered in line with high-integrity standards, to maximise benefits and avoid adverse impacts. Some poorly planned nature-based interventions have caused adverse socio-ecological impacts and have been used for greenwashing. NbS can reduce some of the trade-offs detailed in the previous section, by offering integrated climate mitigation and adaptation opportunities that also benefit biodiversity and people. However, NbS must not be a substitute for emission reductions and the phase-out of fossil fuels, and instead should complement these strategies, contributing to a just and inclusive transition. Protecting high-integrity ecosystems and ensuring participatory bottom-up planning and implementation that benefits Indigenous Peoples and Local Communities are of utmost importance.

Current climate policy often overlooks ecosystem quality—treating all forests equally—and neglects non-forest ecosystems. Better spatial planning, opportunity mapping, and dietary and agricultural shifts can reduce land-use conflicts. Redirecting finance away from low-integrity carbon offsets toward verified, rights-based community-led projects is also critical.

3) Procedures and mechanisms for greater policy coherence

Strengthening coherence between the Rio Conventions presents a timely opportunity to deliver greater impact, reduce duplication, increase efficiency, and unlock funding for multiple benefits. In line with other submissions, we support strengthening the mandate of the Joint Liaison Group, the creation of a Joint Work Programme, the creation of an Ad-hoc Technical Expert Group under the UNFCCC, and the adoption of ambitious language on synergies at COP30.

Additionally, early alignment of national policies—such as NDCs, NBSAPs and NAPs—and enhanced coordination between science-policy bodies like the IPCC and IPBES can support integrated, evidence-based decision-making. A formalised process for lesson learning, adaptive policy making and dialogue for continuous improvement to allow for flexibility should be established. Embedding inclusive, rights-based governance processes—centered on Indigenous Peoples and Local Communities—is essential for effective, just, and locally grounded implementation. Government funding can be unlocked and used more effectively to meet multiple goals, particularly in the case of public infrastructure. Aligning processes and timelines can help foster a whole-of-government and whole-of-society approach. Harmonising indicators and reporting should be prioritised to improve efficiency, reduce reporting burdens and improve transparency, particularly leveraging the development of indicators for the Global Goal on Adaptation as an opportunity for alignment.

Introduction

To avoid an unprecedented collapse of ecosystems and biodiversity, as well as to strengthen coordination and align goals, it is crucial to integrate biodiversity and climate goals at the highest level. We therefore welcome the opportunity to respond to this consultation.

Whilst developing this submission, we have had the opportunity to read two other key submissions, one by another group of academics led by Prof Idil Boran and Prof Nathalie Pettorelli, and another from a joint consortium of NGOs titled NGO joint views on options for enhancing policy coherence across the Rio Conventions, submitted by the RSPB. We fully endorse the key points from those submissions. In this submission we do not aim to repeat their points, but instead we focus on additional areas. We are also pleased to say that we have been part of conversations with those leading other submissions, for example the submissions from the British Academy, Conservation International, Griffith University, and a collaboration led by Cambridge University on the legal foundations for policy coherence. By joining up the dots between actors from academia and civil society working in the climate-biodiversity synergies space, we aim to help foster better communication and cooperation and avoid duplication with the goal of advancing this agenda together.

Part 1 of our submission explores key examples of interactions between biodiversity and climate policy, highlighting some potential trade-offs and suggesting how they could be mitigated. In Part 2 we consider the role of nature-based solutions for delivering climate-nature synergies alongside other benefits, including the importance of following global standards. We also consider potential policy options to reduce trade-offs between NbS and other land uses such as food production. Part 3 then addresses processes and mechanisms for achieving better coordination between climate and nature policies, including a Joint Work Programme, building on the groundwork of the Boran and Pettorelli and Joint NGO submissions.

Part 1: Trade-offs and key interactions between biodiversity and climate policy and outcomes

Trade-offs

Synopsis: Action on climate and biodiversity usually aligns, but some mitigation and adaptation measures can undercut nature if they are rolled out at speed or at scale without safeguards. Recognising and managing these trade-offs early—through integrated planning, demand-side measures and robust environmental standards—helps avoid simply replacing one crisis with another.

Energy transition to renewable energy and electrification

Key messages:

(1) **Land use:** Tripling global renewables by 2030 will mean vast new wind, solar, hydropower and grid footprints, threatening >110,000 km² of habitat and 1,500 species if poorly sited.

(2) Minerals: Clean-tech hardware needs far more lithium, nickel, cobalt, copper, etc. Mining expansion (on land and potentially seabed) is accelerating, with supply-chain impacts felt mainly in biodiverse regions of the Global South.

(3) **Deep-sea mining:** Interest is rising but ecological knowledge is thin; many scientists call for a moratorium until rigorous safeguards are in place.

(4) **Solutions:** Circular-economy design, higher recycling rates, rooftop solar, agrivoltaics and strong spatial planning can cut land take and virgin-material demand.

While other submissions and CBD decision 16/22 emphasise the many potential synergies between actions to tackle biodiversity loss and climate change, noting that the two crises share many of the same solutions and can benefit from progress being made on the other, our submission fills a gap by providing more detail on the risks of trade-offs.

Failure to act on climate change is viewed as a highly likely risk with irreversible impacts, such accelerated biodiversity loss unless met with an immediate global response (Wynes et al., 2022). However, the global effort to reduce greenhouse gas emissions in line with the Paris Agreement is a growing but often overlooked driver of biodiversity loss. The urgency to advance the energy transition, for instance, requires accelerated policy implementation and increased investments for scaling-up natural resource extraction and large-scale renewable energy infrastructure development. The outcome of the global stocktake at the UNFCCC COP28 in Dubai committed countries to tripling renewable energy globally by 2030 to achieve the Paris Agreement targets (UNFCCC 2023). However, if not properly managed, the implementation of the energy transition may inadvertently accelerate biodiversity loss at a global scale.

First, the rapid expansion of wind turbines, solar PV, hydropower plants, and grid infrastructure implies unprecedented demands for space in both natural ecosystems and human settlements, leading to more spatial competition between renewable energy infrastructure and biodiversity conservation (Gibson 2017; Tafon et al. 2023). Achieving the Paris Agreement targets through land-based renewable energy expansion could cause over 110,000km^2 of habitat loss, with impacts on over 1,500 threatened species (Kiesecker et al. 2019).

Second, the growth of renewable energy and electrification is accelerating demand for certain natural resources such as critical and rare earth minerals, as renewable energy infrastructure typically requires more critical minerals than fossil fuel-based energy sources, e.g. nine times more per MW for offshore wind compared to gas (IEA 2022). With low recycling rates of technological hardware, producers continue to rely heavily on mining expansion to meet demand (Söderholm and Ekvall 2020). This has already intensified mining of minerals such as copper, lithium, nickel, graphite and cobalt. This comes against a backdrop of growing global resource use; the most recent United Nations Environment Programme (UNEP) Global Resource Outlook Report, for example, projects a 60% increase in global raw material extraction by 2060, and natural resource extraction has already surged by nearly 400% since the 1970s (UNEP, 2024).

Finally, an analysis of the impact of the energy transition on biodiversity loss must go beyond production and include trade and the global supply-chains that facilitate trade of these minerals. For example, many critical mineral deposits are extracted in countries in the Global South and consumed in countries in the Global North and, increasingly, in emerging economies, where much of the processing also takes place (Bazilian, 2018). These so-called teleconnected links (Cotta et al. 2022) and their impacts warrant further exploration (Dzebo et al. 2025). For example, a recent publication connected global trade related to renewable energy infrastructure to 14% of the estimated biodiversity loss (Wang et al. 2025).

This escalating demand extends beyond terrestrial sources, prompting interest in the mineral wealth of the ocean floor. Critical minerals such as cobalt, nickel, and rare earth elements are abundant in deep-sea formations like polymetallic nodules and cobalt-rich crusts, especially in Areas Beyond National Jurisdiction. However, deep-sea mining poses significant risks to marine biodiversity (Niner et al. 2018; Carbon Brief, 2024). The International Seabed Authority (ISA), responsible for regulating mineral-related activities in international seabed areas, is currently deliberating on the development of a mining code to govern such activities (IISD, 2025). Concerns have been raised about the potential irreversible damage to deep-sea ecosystems, many of which are still poorly understood and host unique species (Ramirez-Llodra; Rabone et al. 2019). Scientific studies indicate that mining activities could disrupt these fragile habitats, leading to biodiversity loss and long-term ecological impacts (IUCN, 2022). In light of these concerns, numerous stakeholders, including scientists and environmental organizations, are advocating for a precautionary pause or moratorium on deep-sea mining until comprehensive environmental assessments and regulatory frameworks are established (Deep Sea Conservation Coalition, 2025).

The recently adopted BBNJ agreement (United Nations, 2023), could also be an important tool to protect marine biodiversity in this respect, as it creates a binding obligation to conduct Environmental Impact Assessments for any activity that “may cause substantial pollution of or significant and harmful changes to the marine environment in areas beyond national jurisdiction” (Art. 28), in all cases where such activity “may have more than a minor or transitory effect on the marine environment, or the effects of the activity are unknown or poorly understood” (Art. 30). However, the treaty has not yet entered into force, as it has not reached the 60 ratifications threshold mandated by its Article 68, and once it does, it will need almost universal adoption to have a real impact.

A circular economy approach is vital to reduce the demand for mining and processing of raw minerals for the energy transition. This includes more funding for research into reusing or recycling used components such as solar panels and batteries, including through novel approaches such as biotechnology.

Other elements of an integrated climate-nature-energy policy would include guidance on strong planning policy to minimise the impacts of large-scale renewables (wind, solar, hydropower, tidal) on habitats and species. Maximising rooftop PV would reduce the land needed for ground-mounted solar farms, but there are also options to integrate food production and/or biodiversity into solar farms (Pandey et al., 2025).

Bioenergy demand

Key messages:

(1) IPCC pathways lean on large-scale bioenergy, yet delivering the technical BECCS potential could appropriate up to 45 % of global cropland and push multiple planetary boundaries.

(2) Sourcing “residual” wood often triggers clear-felling of old-growth forests, weakening carbon stocks and resilience; similar risks exist for kelp and other marine feedstocks.

(3) Waste-based feedstocks are limited and compete with other circular economy uses.

(4) Prioritising energy-efficiency, diet shifts and material sufficiency can shrink the need for BECCS, while strict sustainability criteria and monitoring protect ecosystems.

Most of the modelled scenarios presented in IPCC reports rely heavily on future deployment of bioenergy and BECCS to meet global climate targets, but this can have severe trade-offs for biodiversity and other sustainability goals (Creutzig et al 2021). Deploying the technical BECCS mitigation potential of 11.3 GtCO2/year (according to the IPCC 6th Assessment Report, IPCC 2022a) could use 6-45% of global cropland area, and it is estimated that 90% of this technical mitigation potential has a medium to high risk of causing biodiversity loss and other adverse land-use impacts (Deprez et al 2024). Almost any expansion of bioenergy crops beyond the current farmland area is likely to exceed multiple planetary boundaries including biosphere integrity, water use and nitrogen use (Braun et al 2025).

IPCC AR 6 WG 11 found clear evidence that a biomass energy industry results in an intensification of logging with increasing negative impacts on forest ecosystem integrity - referring here to the ability of ecosystems to maintain their biodiversity and associated key ecological processes, recover from disturbance and adapt to new conditions (Mackey et al., 2022).

Sourcing biomass from forestry by-products avoids competition with food production, but has been associated with clear felling in old-growth forests in the USA and Canada (Southern Environmental Law Centre, 2025), conversion of old-growth forests to plantations, which is incentivised by tax breaks in North Carolina, one of the main biomass-producing regions (NC State, n.d.) and intensification of logging in Europe. Growing demand for wood pellets is reported to be opening up more old-growth and other natural forests for biomass harvesting, especially via the forestry industry narrative that all forests (including protected old growth forests) should be thinned to reduce fire risk. However, this is contested by research showing that thinning can increase fire risk by creating a hotter, drier, windier microclimate and encouraging growth of flammable grasses (Hansen and Baker, 2024, Lesmeister et al 2021), and the view that fires are an essential part of fire-adapted forest ecosystems, and are necessary for keystone species such as ponderosa pine and sequoia to regenerate (Binkley et al 2007). Similarly, pest-damaged stands are being clear-felled for bioenergy, but native ‘pest’ species such as pine beetle can play a key role in the forest ecosystem; both fire and pests create dead wood habitat for species such as owls and woodpeckers (Binkley et al 2007). Harvesting biomass to address fire and pest risk, either through preemptive thinning or post-outbreak salvage logging, may not only reduce future resilience but can remove more biomass than would be lost through fire and pest damage, and can cause severe damage to forest soils (Hansen and Baker, 2024). From an ecological perspective there is no such thing as “residue” biomass in a natural forest ecosystem. "There will be major perverse impacts, in terms of both elevated anthropogenic carbon emissions and substantial negative impacts on forest ecosystem integrity and increased biodiversity loss" from burning woody biomass derived from natural forests, and burning any form of residue/waste from natural forests is neither renewable in relevant time frames (2030 and 2050) (Mackey et al., 2022). In summary, biomass extraction for bioenergy and BECCS risks loss of the existing carbon stored in intact forest ecosystems, without which we cannot meet climate targets.

Other feedstocks such as marine macroalgae also entail potential risks for biodiversity, especially from harvesting wild species such as kelp (Bularz et al 2022, Carbajal et al 2022, Mineur et al 2015). Some potential feedstocks from waste streams could be more sustainable, but may face competing uses in the circular economy, as well as being typically widely dispersed and having high water and ash contents (Pour et al 2018).

A more coordinated nature-climate approach could place much stronger emphasis on rapid deployment of demand-side measures to reduce fossil fuel emissions, and thus reduce the need for BECCS, biofuels and afforestation to meet climate targets, as illustrated through the low demand (IMP-LD) pathway from the IPCC Sixth Assessment Report (Riahi et al., 2022; Fig 3.7). This could be coupled with much stricter safeguards and monitoring to ensure the sustainability of bioenergy and BECCS feedstocks, protecting the integrity of mature native ecosystems.

Geoengineering and novel carbon dioxide removal approaches

Key messages:

(1) Geoengineering carries potentially severe risks for biodiversity which are under-researched.

(2) The need for risky geoengineering approaches can be avoided or minimised through greater focus on demand-side measures including energy and material efficiency..

Geoengineering approaches such as injection of sulphate aerosols into the stratosphere, or ocean fertilisation, have largely unknown but potentially severe impacts on biodiversity and environmental quality, both due to direct impacts from the addition of sulphate and iron into ecosystems and through the resulting steep rates of change in environmental conditions including rainfall regimes which can alter ecosystems (El Semary & Nermin, 2022; Gilbert et al., 2008; Haywood et al., 2025; McCormack et al., 2016; Trisos et al., 2018). Other novel geoengineering and carbon dioxide removal approaches may also have impacts. For example, unless enhanced weathering is restricted to the use of rock dust from quarry waste, it may entail quarrying and transport of large amounts of crushed rock, with associated habitat loss and air pollution. Direct air capture and storage (DACCS) involves high energy usage, so the impacts depend on the source of energy.

Similarly to BECCS and bioenergy, all these impacts could be reduced through an integrated policy that places much stronger emphasis on demand-side measures such as energy and material efficiency, to reduce fossil fuel use and emissions with co-benefits for air quality, human health and energy security (Creutzig et al 2022, Finn and Brockway 2023, Smith 2013).

Trade-offs between climate adaptation and biodiversity

Key messages:

(1) Climate adaptation is vital to minimise risks to people and ecosystems, but adaptation actions are sometimes poorly planned, leading to 'maladaptation'.

(2) This can be avoided through fully considering impacts on biodiversity and ecosystems at the outset, when planning adaptation actions.

There is an urgent and growing need for well thought-out and scientifically supported climate adaptation action. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2022b) showed that climate change impacts and related loss and damage on nature and people are already widespread and pervasive. Vulnerable human and ecological systems are especially impacted with some irreversible impacts as systems are pushed beyond their ability to adapt. Hydrological changes, for example, resulting from the retreat of glaciers, or the changes in some mountain and Arctic ecosystems are approaching irreversibility. Hundreds of local losses of species have been driven by increases in the magnitude of heat extremes, as well as mass mortality events on land and in the ocean. Despite such strong signals, scientific knowledge is unevenly spread by geography and ecology, with limited work across impacted and vulnerable species and ecosystems to provide joined-up assessments of loss and risk. Given the high exposure of fragile ecosystems and the human health, livelihood and cultural integrity they support, adaptation actions are widespread, though often spontaneous and ad hoc.

There is good evidence that high-integrity nature-based solutions and/or ecosystem-based adaptation can deliver synergies for biodiversity and climate adaptation (Chausson et al., 2020; Key et al, 2023; see section on NbS below), but there can also be trade-offs between some climate adaptation actions and biodiversity. Both planned and spontaneous adaptation can have downstream impacts - on risk but also on other drivers of sustainability. Maladaptation arises when adaptation locks in exposure, vulnerability or risk and exacerbates inequalities, including shifting harms across ecosystems and their elements. These are features of human and natural systems and their interdependencies. Examples of maladaptive actions for ecosystems include fire suppression in naturally fire-adapted ecosystems, or construction of hard defences against flooding, which are resource-intensive and form barriers to hydrological processes and the movement of aquatic species.

Maladaptation can be reduced by considering biodiversity and autonomous adaptation of natural systems in adaptation planning processes. However, the rapid proliferation of adaptation actions, driven by humanity and nature, has outstripped systematic assessment of feasibility and consequence. It is crucial that ecological and social-ecological qualities are included in efforts to establish methods and indicators through which to measure the costs and benefits of adaptation options (or doing nothing) and to capture the downstream impacts adaptation can have on risk and resilience. This includes actions involving grey/physical infrastructure, natural infrastructure, and social policy responses.

Part 2: Nature-based solutions for integrated climate-biodiversity-equity benefits

Synopsis: Nature-based solutions (NbS) can deliver benefits for climate, biodiversity and social equity - especially through protecting existing biodiverse ecosystems - but must be planned and delivered in line with high-integrity standards, to maximise socio-ecological benefits and avoid adverse impacts on local communities, Indigenous Peoples and biodiversity. Carbon finance has been associated with greenwashing, and funding needs to be redirected to high-integrity NbS and locally-led initiatives. Careful planning and integration with supporting policies can help to free up land for NbS and avoid trade-offs with other goals such as food production.

Nature-based solutions are a key approach for delivering integrated climate-biodiversity benefits. If planned carefully, in line with best practice including the IUCN Global Standard on NbS (IUCN 2020), NbS can deliver win-wins for climate change adaptation and mitigation as well as for biodiversity and human well-being (Chausson et al., 2021; Seddon et al 2021; Key et al. 2022; Chang et al., 2024). In accordance with Criterion 6 of the IUCN standard, NbS should also “equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits”.

NbS can contribute to climate mitigation by storing and sequestering carbon in soils and vegetation, and provide climate adaptation through coastal and inland flood and erosion protection, agroecology and agroforestry (which can improve the resilience of food production to floods, droughts and heatwaves) and urban green infrastructure such as parks and green roofs, which provides cooling and flood reduction (Choi et al., 2021). NbS also deliver benefits for physical and mental health through air and water quality improvements and opportunities for recreation and interaction with nature (Barton & Rogerson, 2017), especially in urban areas. They also provide urban areas with greater resilience, offering urban strategies that reduce soil erosion, lower temperatures, buffer critical infrastructure and housing from natural hazards, and reduce disease vectors.

The importance of high integrity NbS

Key messages:

(1) NbS should follow the IUCN Global Standard to maximise benefits and avoid trade-offs
(2) They should not be used as a substitute for cutting fossil fuel emissions

(3) They should be delivered by or in partnership with local communities and Indigenous Peoples, respecting human rights and diverse knowledge systems
(4) They should be explicitly designed to deliver measurable benefits for biodiversity and human well-being.

Some poorly planned nature-based interventions have caused adverse socio-ecological impacts which sparked a backlash against the concept of NbS, with many in the Global South preferring to use the term Ecosystem-based Approaches instead. For instance, some forest carbon projects have resulted in land grabs and have disrespected local rights (Bayrak and Marafa 2016; Scheidel and Work, 2018). There has also been an overemphasis on monoculture tree plantations to gain carbon credits, with little or no biodiversity benefit (Lewis et al., 2019). Tree-planting has also occurred and been targeted on inappropriate locations such as naturally open grasslands and savannas (Veldman et al., 2019). However, these interventions do not qualify as NbS in alignment with the UN Environment Assembly 5/5 resolution on Nature-based Solutions for Supporting Sustainable Development, which defines NbS as 'actions to protect, conserve, restore, 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 well-being, ecosystem services and resilience and biodiversity benefits,' while respecting the knowledge and safeguarding the rights of communities and indigenous peoples (UNEA, 2022). Similarly, the NbS Guidelines (https://www.naturebasedsolutionsinitiative.org/nbs-guidelines/) emphasise that NbS should not be a substitute for reducing emissions; they should be delivered by or in partnership with local communities and Indigenous Peoples, respecting human rights and diverse knowledge systems; and they should be explicitly designed to deliver measurable benefits for biodiversity and human well-being.

When focused primarily on carbon benefits, nature-based interventions have faced the accusation that this simply enables wealthy consumers to continue high-carbon lifestyles, while using land in the Global South to offset their emissions (Pereira et al., 2024). This highlights the necessity of following principles 1 and 3 of the NbS Guidelines, to ensure that NbS are not used as a substitute for reducing fossil fuel emissions, and that they are delivered by or with Indigenous Peoples and Local Communities so that they deliver local benefits for climate adaptation and livelihoods, in order to ensure a Just Transition. The ongoing development of the supplement to the Voluntary Guidelines for the Design and Effective Implementation of Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction will also provide further guidance on the kinds of safeguards and considerations to respect when implementing NbS.

Rapid urbanization provides an opportunity to include NbS/EbA in municipal policy. However, the popularity of NbS requires an enhanced focus on accounting for consequences - both ecological and social, and a recognition that these might look different from specific perspectives (Dorst et al 2019). These can be integrated into financing mechanisms that are being developed to meet demand from cities, including through green and sustainability bonds which are extending beyond the current dominance of climate mitigation finance initiatives (Hurst et al., 2025).

Protecting high integrity ecosystems

Key messages:

(1) Existing high-integrity ecosystems need to be protected for their carbon and biodiversity value as well as their benefits for climate change adaptation and local livelihoods.
(2) Climate mitigation policy needs to emphasise the importance of protecting, connecting and restoring high-integrity ecosystems, as currently it typically treats all forest types the same and often neglects other ecosystem types such as grasslands.

Protecting existing ecosystems that have high ecological integrity, including primary native forests, natural grasslands, wetlands, heathlands, coastal and marine habitats, is vital for biodiversity and carbon storage (Cook-Patton et al., 2021), as biodiversity and ecosystem health increase resilience to climate change and thus reduce the risk that stored carbon will be lost (Adolf et al., 2020). These ecosystems also deliver vital benefits for climate change adaptation (Chausson et al 2020) and support the livelihoods and cultures of Indigenous Peoples and other local communities. However, at present, climate policy includes only limited consideration of ecosystem integrity. For example, UNFCCC Article 4.1d refers to forests but not to whether the forest is mature, biodiverse, healthy, or comprises native or non-native species ("Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems").

It is therefore important that climate policy should consider the quality of carbon stores and sinks and their value for biodiversity, by prioritising the protection and conservation management of old-growth forests and other natural carbon dense and biodiversity-rich ecosystems, and fostering ecological recovery of degraded ecosystems. Improving biodiversity, connectivity and other aspects of ecosystem health (such as water and air quality) improves ecosystem resilience to change and thus helps to retain and recover lost carbon stocks and reduce the risk of losing ecosystem carbon to the atmosphere. Accounting systems such as the UN SEEA-EA could be used to reveal the superior ecosystem service benefits (including carbon retention) of retaining areas of high ecological integrity and recovering the integrity of those in poor condition.

Carbon finance

Key messages:

(1) Carbon finance has been accused of greenwashing; this has resulted in a steep decrease in finance for locally-led forest protection projects.

(2) More action is needed to redirect finance towards high-integrity NbS that meet global socio-ecological standards.
(3) Novel finance mechanisms are delivering high nature-value carbon credits and vetting buyers to ensure they reduce their own emissions first.

NbS, and particularly the subset of natural climate solutions (NCS) that focus on climate mitigation (Griscom et al., 2017), can be funded through market-based financing mechanisms such as the voluntary carbon market (Waring et al., 2023). However, these financing mechanisms can be controversial, and recent accusations of inaccurate baselining (West et al., 2020; 2023) have resulted in a steep decrease in the sale of credits for forest protection. In addition, carbon markets create specific incentives by commodifying carbon removal or reductions, resulting in potential trade-offs with other ecosystem services and benefits. Market-based mechanisms have also faced issues such as limited scale, a narrow focus on financial outcomes, and challenges in governance, particularly for IPs and LCs (Chausson et al., 2023). Therefore, Chausson et al. (2023) propose more emphasis on complementary financing mechanisms such as repurposing harmful government subsidies, taxing environmentally harmful activities and direct government funding for nature.

Despite these issues, there are examples of high integrity nature-based carbon projects that have succeeded in protecting crucial ecosystems, such as the Katingan-Mentaya project in Indonesia, the largest forest carbon reduction project in the world (Katingan-Mandaya, n.d.). This is an example of Avoided Planned Deforestation: 150,000 hectares of tropical forest overlying 13 metres of peat had been licensed for clearance and drainage for an acacia plantation, so the baseline was clear. The project is triple-gold certified by the Climate, Communities, and Biodiversity Standard, meaning that it delivers independently verified benefits for communities, biodiversity and climate adaptation as well as carbon savings. Community members are trained to spot and fight fires, drains are blocked to prevent the peat from drying out, and communities are provided with healthcare and education facilities and offered alternative livelihoods that provide higher incomes than illegal felling. The protected area is vital for biodiversity, supporting 5 to 10% of the world's Bornean Orangutan populations amongst many other threatened species. It is important that valid concerns over greenwashing do not undermine high integrity forest carbon projects such as this; instead, the focus should be on tackling greenwashing by strengthening standards and monitoring (Jones, 2024).

There are also initiatives that sell high nature-value carbon credits, such as Wilder Carbon in the UK (Wilder Carbon, n.d.). This offsetting scheme aims to provide high quality 'Conservation-grade' carbon credits with demonstrable biodiversity benefits. The projects are delivered by a consortium of UK nature conservation organisations to ensure that they deliver genuine benefits for biodiversity as well as carbon storage, and they take a nature-led approach to habitat restoration, including a wide range of habitat types (wetlands, grasslands, scrub and woodland) rather than just tree planting. They also vet the purchasers of their credits to ensure that they are demonstrably reducing their own emissions.

Making space for nature-based solutions

Key messages:

(1) Trade-offs of NbS with other goals such as food production can be reduced through shifting to a more plant-based diet, reducing food waste and improving the productivity of agroecological cultivation methods.
(2) Spatial planning through participatory opportunity mapping can identify opportunities for NbS that maximise benefits such as habitat connectivity and erosion prevention while reducing trade-offs with food production.

While NbS can deliver multiple benefits for climate, biodiversity and people, there can be competition for land needed for food and timber production. For example, planting trees to sequester carbon, or restoring wetlands, could remove land from agricultural production. Also, while shifting from conventional agriculture to land-sharing approaches such as agroecology has benefits for soil carbon storage, biodiversity and the long term resilience of food production, it can reduce yields per hectare due to reduced use of agrochemicals together with adding features such as hedgerows, buffer strips or species-rich field margins that take extra space. Without deployment of mitigating measures, this can simply lead to importing more food to compensate for the lost production, thus displacing impacts elsewhere; yet it is not possible for all countries to import more food from each other.

This has been investigated by the FABLE (Food, Agriculture, Biodiversity, Land-use and Energy) consortium, using a model of the global agrifood and land use system that takes account of international trade balances, informed by stakeholder consultations. The model shows three ways to make space for NbS (Mosnier et al., 2022; Vittis et al., 2024):

1. Dietary change to a healthier, more plant-based diet, reducing the area needed for livestock grazing and feed crops.

2. Improve agricultural productivity, especially focusing on improving crop and livestock health and increasing the productivity of agroecological farming methods, to avoid tradeoffs with agrochemical use.

3. Reduce food waste.

In addition, trade-offs can be further reduced and benefits maximised through careful spatial targeting of NbS. For example, trade-offs with food production can be reduced by avoiding conversion of high-grade farmland to other uses, and trade-offs between climate and biodiversity can be reduced through avoiding planting trees on biodiverse open habitats or peaty soils. Opportunity maps can help planning NbS in locations where they avoid trade-offs and maximise delivery of connected networks of biodiverse habitats, with climate adaptation benefits such as flood and erosion protection (e.g. the Agile maps in the UK, Agile Initiative n.d.). Opportunity maps should be used as part of a participatory process, with input and ground-truthing from stakeholders.

The IPBES Nexus Assessment (IPBES, 2024) provides a comprehensive scientific analysis of how global challenges—such as climate change, biodiversity loss, food and water security, health, and energy—are interconnected. This holistic view is essential for breaking down siloed policy approaches. It is a timely assessment that sheds understanding on the trade-offs and synergies involved in addressing multiple environmental and social challenges simultaneously. As such, it serves as a crucial tool, offering guidance to governments, stakeholders, and policymakers, in developing effective, inclusive, and sustainable policies, and should be closely considered by the CBD, UNFCCC and UNCCD Secretariats and Parties when evaluating options for enhanced policy coherence.

Part 3: Procedures and mechanisms for greater policy coherence

Synopsis: There is a window of opportunity for strengthening synergies between the three Rio conventions and the SDGs, to deliver greater impact, reduce costs and unlock more effective funding delivering multiple benefits. We propose pro-actively aligning national policies, particularly the development of NDCs, NBSAPs, and NAPs, as early as possible in their cycles and encouraging dialogue between UNFCCC, CBD, and UNCCD focal points. Continuous coordination between science-policy interfaces and advisory bodies such as the IPCC and IPBES should be actively fostered. Lesson learning and sharing for adaptive policy making and dialogues between different stakeholders with a focus on inclusive, rights-based governance that values diverse contributions and perspectives, particularly from Indigenous Peoples and Local Communities should be encouraged. Climate and biodiversity finance should not be siloed and public funds should be used to achieve multiple benefits and goals. Finally, aligning indicators, monitoring and reporting across the Rio Conventions is put forward as a key recommendation, and specific attention is given to how indicators in the CBD and UNFCCC's Global Goal on Adaptation can be aligned.

Several other submissions have outlined in detail specific mechanisms for enhancing policy coherence, namely, **strengthening the mandate of the Joint Liaison Group** (emphasised in Conservation International's submission), **the creation of a Joint Work Programme across the Rio Conventions** (described in the Boran and Pettorelli submission and RSPB-led Joint NGO submission), **the creation of an Ad-hoc Technical Expert Group under the UNFCCC** (NGO submission), and **the adoption of ambitious language on synergies at COP30**, which mirrors similar text in CBD and UNCCD decisions. We support these recommendations and seek to complement them with other considerations here.

A window of opportunity is emerging as the topic of policy coherence is rising on policymakers' agendas. Calls for stronger synergies between global environmental and sustainability agendas are increasing, highlighting the need for better integration across various multilateral frameworks. This includes the Global Sustainable Development Report (GSDR), the IPBES Nexus Assessment report, the Global Stocktake outcome, and the UNFCCC and UN-DESA programme on Climate-SDG Synergies. In addition, the DESA/UNFCCC Expert Group on Climate-SDG Synergies is set to launch a sub-report on Biodiversity and Nature Conservation in July 2025. Strengthening synergies across the three Rio Conventions (UNFCCC, CBD, UNCCD) is essential for improving government planning, reporting, monitoring and implementation. These synergies can maximize impact and policy coherence while reducing duplication and administrative burden.

These synergies should not be treated in isolation but should be explicitly linked and embedded within the broader Sustainable Development Goals (SDG) framework. This could ensure that actions simultaneously advance climate, biodiversity, and desertification agendas while contributing to inclusive, sustainable development. Improving the alignment between secretariats and UNFCCC, CBD and UNCCD bodies is a critical step in this process. **Existing efforts from the past two decades should be revisited and evaluated to understand why the progress has been limited (for example, progress with the Joint Liaison Group has been stagnant).** This assessment will help to identify key issues and provide a foundation for the work of parties and representatives of negotiation groups to develop an inclusive, transparent and effective way forward.

The UNFCCC holds a particularly large responsibility for advancing synergies, since it is lagging behind compared to the CBD and UNCCD on ambitious language on climate-biodiversity synergies in its decision texts. **The full participation and cooperation of the UNFCCC is essential** for enhanced policy coherence, particularly since many of the potential trade-offs highlighted in Part 1 risk coming from the unintended negative effects of climate action on biodiversity. The UNFCCC should endeavour to make space in the agendas at its SBSTAs and COPs to address climate-biodiversity synergies and determine a place for language on synergies to land.

Nexus governance approaches

Nexus governance approaches, as highlighted by the IPBES Nexus Assessment, should be central to global policy coherence efforts. Coherence studies of global health and trade interactions have shown that global incoherencies translate to national incoherencies in implementation (Battams and Townsend 2019). Therefore, enhancing transversal and cross-sectorial policy coherence and coordination at the regional, national and sub-national level is crucial. For instance, the IPBES Nexus Assessment emphasizes the importance of synergistic policy action across sectors—such as agriculture, health, climate, and water—rather than isolated interventions. Isolated environmental and policy decisions can disproportionately impact vulnerable and Indigenous communities; therefore, it is paramount to ensure that solutions promote both social and environmental justice.

Proactive steps are needed, such as favouring communication between CBD, UNFCCC, and UNCCD national focal points where needed, as well as implementing "joint" consultative processes for **NBSAP, NDCs, NAPs and Land Degradation Neutrality Targets** design and revisions. In essence, **alignment should happen as early as possible in the policy and project cycle, ensuring a proactive rather than reactive approach.** Aligning timelines can also reduce the burden for parties regarding reporting, consultations, and other processes.

There is also a need for better coordination between science-policy interfaces and advisory bodies, such as the **IPCC and IPBES**. Proposing tangible elements for enhanced and **continuous** coordination between these bodies can strengthen their contribution to policy coherence.

Focus areas for lesson learning, adaptive policy making and capacity building

The focus areas for lesson drawing and capacity building should center on what works on the ground, particularly in addressing key challenge areas such as finance for the Global South, just transitions and policy integration. Dialogues between policy-makers at multiple scales across geographies should be encouraged, to **share lessons learned** and foster adaptive policy making. This learning and capacity development process should also consider evolving the UNFCCC from a predominantly technical-scientific framework to an integrated whole-of-government and whole-of-society approach. This shift requires the inclusion of science, policy, and societal engagement to drive transformative action. This shift can be implemented through inclusive, rights-based governance that values diverse contributions and perspectives, particularly from Indigenous Peoples and Local Communities (IP and LCs) (Fajardo et al. 2021). Their active involvement and central role in co-designing solutions enables the meaningful integration of scientific, traditional, and contextual knowledge, which is essential for developing and implementing nature-based solutions (NbS) that enhance climate resilience, equity, and social justice.

The role of the UNFCCC is evolving, moving towards a learning forum (Rietig, 2025) where best practices and lessons learned are shared based on parties' experiences with implementing NDCs. The UNFCCC has been opening informal arenas for civil society input, facilitating mutual learning and reflection on experiences with national and sub-national/local policies. This process could be strengthened and expanded with a UNFCCC-CBD dialogue, inviting negotiators from both conventions to share lessons, identify key issues, and develop procedures and mechanisms for facilitating learning, and improving the implementation of NDCs/national policies.

Facilitating dialogue between stakeholder groups

In parallel, it is paramount to facilitate spaces for dialogues between different constituencies and stakeholders' groups. These dialogues could foster a greater understanding and cooperation among multiple key actors, stakeholders and rights-holders, ensuring that the process is inclusive and that various values, knowledge systems and perspectives are considered in creating and shaping integrated policies to achieve the three Rio Conventions. This could be part of the mandate of the Joint Liaison Group and/or the Joint Work Programme.

In the spirit of good biodiversity and climate policy making, a permanent subsidiary body for Indigenous Peoples and local communities (IPLCs) was established at the sixteenth Conference of the Parties to the UN Convention on Biological Diversity (COP16) in Cali, Colombia in October-November of 2024 (CBD 2024). At national and subnational levels this new global initiative will sustain policy coherence based on western science and Indigenous knowledge.

Facilitating dialogue brings decision-making into local Indigenous communities – those long connected to the landscapes and waterways where they live – but long excluded from policy decisions about those places. Indigenous peoples' traditional knowledge systems incorporate oral teachings and timeless values with western science and ecosystem approaches to natural resources management – toward the primary outcome of reconciliation with the Earth.

Better alignment with government spending priorities unlock public funding

Public funding can be unlocked and used more effectively to meet multiple goals, including the goals of the Rio Conventions and the broader SDGs, by better aligning government spending priorities, particularly for public infrastructure. This would especially benefit the alignment of biodiversity, conservation, restoration, development, and climate goals, specifically through projects that deliver co-benefits for climate, biodiversity, and human well-being, while considering a human rights approach. For example, public infrastructure for flood management could incorporate climate and biodiversity goals, such as considering upland forest restoration instead of downstream engineering, where appropriate.

While the 'double-counting' of finance for climate and nature can be a real concern when it reduces the overall amount of finance pledged and available to developing countries, it is important to not let fears of double-counting prevent progress being made on enhancing synergies in funding and finance for biodiversity and climate. Better and more transparent accounting and reporting frameworks should be developed and mainstreamed to track funding streams, ensuring that overall finance is not compromised while getting multiple benefits and added value from funding streams is encouraged. Siloed thinking in funding and financing results in more siloed thinking across governance, implementation and monitoring and reporting. Further work should rapidly be commissioned on the issue of double-counting, a notorious sticking point in negotiations, to clarify key and innovative ways for Parties to overcome these challenges.

Integration of indicators used to track progress

The CBD's monitoring framework for the Kunming-Montreal Global Biodiversity Framework (GBF) includes indicators related to ecosystem integrity, habitat loss, and nature-based solutions, many of which overlap with climate-related metrics under the UNFCCC, such as carbon sequestration, land-use change, and ecosystem resilience in Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). Aligning the indicators of the CBD, UNFCCC and UNCCD frameworks can be achieved by harmonizing measurement methodologies, cross-referencing existing reporting systems, and developing shared indicators for nature-based solutions.

Integrating digital reporting platforms and Earth observation tools would further streamline data collection, while institutional coordination through joint reporting committees and capacity-building initiatives can strengthen national-level implementation. These efforts will improve efficiency, foster synergies, and enhance the impact of biodiversity and climate actions.

One specific opportunity to link the indicators of both frameworks is the current process to establish the Global Goal on Adaptation (GGA), a mechanism created under the Paris Agreement, to provide a clear framework and targets for measuring progress on adaptation.

A general framework for the GGA was approved in 2023 at COP28 (UNFCCC, 2025). While it offers a solid foundation and broad objectives, the framework falls short in defining specific, quantifiable adaptation indicators and does not clearly outline the mechanisms for implementation, such as financing, technological support, and capacity-building measures.

One of the mandates for COP30 is to work on the GGA and come up with indicators for measuring progress and potential quantified elements for the targets (COP30 Presidency, 2025). Therefore, the negotiation and development of these new targets could be an interesting opportunity to bring the three frameworks (UNFCCC, CBD and UNCCD) closer together, by ensuring that the indicators of the GGA are aligned with the GBF targets, as well as relevant biodiversity indicators.

Already one of the objectives of the GGA framework is the "preservation and regeneration of nature, for current and future generations", and one of the targets established in paragraph 9 is "(d) Reducing climate impacts on ecosystems and biodiversity, and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems".

Paragraph 14 also establishes that "adaptation action should be […] based on and guided by the best available science, including through use of science-based indicators, metrics and targets, as appropriate, traditional knowledge, Indigenous People's knowledge, local knowledge systems, ecosystems-based adaptation, nature-based solutions, locally led and community-based adaptation, […] and sustainable development".

This is already directly linked to Target 8 of the Kunming-Montreal GFB (target on minimizing the impacts of climate change and ocean acidification on biodiversity), but it's also related to Targets 1, 2 and 3 of the GFB, on loss of areas of high biodiversity importance, biodiversity restoration and on protected areas.

In the coming negotiations, national delegations could prioritize the integration of biodiversity indicators into the GGA framework, to ensure that adaptation measures not only address climate risks but also support the preservation and restoration of ecosystems.

Civil society, academia, and relevant IGOs can support national delegations by providing essential training, research, and technical expertise, helping to build the capacity needed to develop robust, science-based indicators. Through coordinated efforts, these stakeholders can ensure that the indicators for the Global Goal on Adaptation effectively reflect both climate and biodiversity priorities, creating a comprehensive and interconnected approach to global sustainability.

As a reference, indicators of Targets 1, 2, 3, 4 and 8 of the GBF that may be relevant to the GGA include[1]:

- Priority retention of high integrity ecosystems – to deliver climate mitigation and adaptation benefits (e.g retaining substantial carbon reservoirs in primary forests and ecosystems that may help with climate adaptation, such as wetlands (**Target 1&2** - Component indicator)
- Habitat patches located within marine protected areas or integrated marine and coastal area management (IMCAM) (**Target 1** – Complementary indicator)
- Proportion of transboundary basin area with an operational arrangement for water cooperation (**Target 1** – Complementary indicator)
- Extent of natural ecosystems by type (**Target 2** – Component indicator)
- Maintenance and restoration of connectivity of natural ecosystems (**Target 2** – Component indicator)
- Increase in secondary natural forest cover (**Target 2** – Complementary indicator)
- Forest Landscape Integrity Index (**Target 2** – Complementary indicator)
- Coverage of protected areas and OECMs (**Target 3** – Headline indicator)
- Ramsar Management Effectiveness Tracking Tool (RMETT) (**Target 3** – Complementary indicator)

[1] Available at: https://www.gbf-indicators.org/.

- Proportion of terrestrial, freshwater and marine ecological regions which are conserved by protected areas or other effective area-based conservation measures (**Target 3** – Complementary indicator)
- The proportion of populations within species with an effective population size > 500 (**Target 4**)
- Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 that include biodiversity (**Target 8** – Component indicator)
- Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies (**Target 8** – Complementary indicator)
- Number of least developed countries and small island developing States with nationally determined contributions, long-term strategies, national adaptation plans, strategies as reported in adaptation communications and national communications (**Target 8** – Complementary indicator).

Conclusion

Climate change and biodiversity loss are deeply interconnected crises that require integrated, coherent, and ambitious action. There is a huge opportunity for synergies to lead to multiple benefits across biodiversity and climate, as well as human wellbeing targets if policy can be well aligned. However, interactions are complex, and policy that is not properly integrated to consider biodiversity and climate together, risks inadvertently creating net negative outcomes in terms of securing a habitable planet and social justice. It is critical that potential trade-offs between climate and biodiversity must be well-understood, addressed, accounted for in planning, and mitigated. Nature-based solutions can play a key role in fostering climate and biodiversity synergies and multiple benefits, but only if they are high integrity, following principles and standards, protecting biodiversity, upholding human rights and supporting human well-being. Specific mechanisms and processes for enhancing policy coherence between the Rio Conventions must be further strengthened and established, fostering alignment at all levels of policy, including at the convention level through the Joint Liaison Group and a Joint Work Programme, national level through NDC-NBSAP-NAP alignment, science-policy interface with IPCC-IPBES collaboration, and through harmonising finance, indicators and reporting.

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