A Real Mosaic of Solutions to Respond to Loss and Damage from Climate Change

Ecosystem Protection and Restoration

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Introduction

This publication is part of a series of briefs unpacking the pieces of a fit for purpose "mosaic of solutions" to respond to loss and damage from climate change. This series expands on our earlier work which presented a five-year vision for Loss and Damage under the United Nations Framework Convention on Climate Change (UNFCCC) to look beyond the international climate regime at catalysing a wider mosaic of solutions.

In the flagship paper of the series, we unpack the pieces of the mosaic. In these thematic briefs we dive deeper into existing solutions and how they can be strengthened. We also consider any reforms needed and explore emerging solutions.

This brief unpacks the role that ecosystem protection and restoration can play in loss and damage response. It provides a short introduction to what ecosystem protection and restoration entails, highlights a number of the challenges that developing countries face in implementing ecosystem protection and restoration, and how these challenges can be addressed.

What is ecosystem protection?

The protection of ecosystems includes actions to conserve, manage, and restore terrestrial, freshwater, and marine ecosystems. This involves halting biodiversity loss, enhancing resilience against loss and damage, and the sustainable use of resources to provide human well-being, clean water, and food. Ensuring that ecosystems are protected and healthy helps to both prevent and reduce loss and damage by providing natural buffers to extreme weather events (e.g. floods and cyclones) and slow onset climatic processes (e.g. sea level rise).

What is the problem?

Humans are exploiting Earth's resources at an alarming rate. We are using the equivalent of 1.6 Earths to maintain our current way of life.[1] One million of the world's estimated 8 million species of plants and animals are threatened with extinction.[2] 75 percent of the Earth's land surface has been significantly altered by human actions.[3] 66 percent of the world's ocean area is impacted by human activities, including from fisheries and pollution.[4] Close to 90 percent of the world's marine fish stocks are fully exploited, overexploited or depleted.[5]

Ecosystem degradation and biodiversity loss act as risk multipliers that intensify loss and damage by destroying natural buffers and undermining food and water security, the regulation of crop pests and diseases, and the regulation of air, water, and soil quality. At the same time, loss and damage caused by climate change is itself causing ecosystem degradation and biodiversity loss, thereby increasing vulnerability. [6] For example, mangroves, coral reefs, and seagrass meadows act as natural seawalls, breaking waves and lowering the energy of storm surges, which reduces flooding and shoreline erosion.[7] Yet, rising ocean temperatures—combined with acidification and sea-level rise—are causing widespread degradation and irreversible shifts in mangroves, coral reefs, and seagrass ecosystems, leading to a high risk of habitat collapse.[8]

These impacts are causing profound economic consequences, particularly in sectors such as agriculture, fisheries, and healthcare, further compounding vulnerability to climate impacts.[9] In 2023, finance for ecosystem protection only reached 220 billion USD,[10] despite projected needs ranging from 571[11] to 700 billion[12] USD each year.

What are the existing solutions?

Countries have adopted a number of international treaties with the intention of protecting ecosystems. This includes the Convention on Biological Diversity (CBD), the UN Convention to Combat Desertification (UNCCD), the World Heritage Convention, the UN Convention on the Law of the Sea (UNCLOS), the Kunming-Montreal Global Biodiversity Framework (GBF), and the High Seas Treaty (BBNJ). Negotiations are also under way to produce a legally binding agreement on plastic pollution.[13]

The protection of ecosystems is also enshrined in the 2030 Sustainable Development Goals (SDGs). SDG Goal 14 (life below water) seeks to conserve and sustainably use the oceans, seas, and marine resources. SDG Goal 15 (life on land) aims to sustainably manage forests, combat desertification, halt and reverse land degradation, and stop biodiversity loss.

Indigenous Peoples play a critical role in protecting and restoring biodiversity by managing up to approximately 20 per cent of the world's land[14] including areas with a significant amount of remaining biodiversity.[15] They do so utilising Indigenous Knowledge, traditional ecological knowledge, sustainable practices (e.g. controlled burning to reduce wildfire risk[16]), kinship, and ecological stewardship to secure long-term ecosystem and biodiversity protection.[17] Local communities also play an important role and utilise many of these tools to protect and restore biodiversity.

What do we need to see?

To ensure that developing countries, Indigenous Peoples and local communities have the resources they need to protect ecosystems while meeting their needs, the finance gap must be closed. Countries must get back on track to meeting the goals of the CBD and the UNCCD, and uphold all other relevant treaties. A legally binding agreement on plastic pollution must be reached[18] and marine protected areas must be established and enforced under the High Seas Treaty.

Litigation should be used to increase protection through the targeting of states who fail to prevent harm by regulating harmful activities and corporations. This should leverage the landmark 2024 Advisory Opinion (AO) on Climate Change and International Law from the International Tribunal for the Law of the Sea (ITLOS) and the International Court of Justice's (ICJ) AO on the Obligations of States in respect of Climate Change in 2025.[19]

Ultimately, the protection of ecosystems and biodiversity depends on humanity living within the safe operating space of the 9 planetary boundaries. This will require a fundamental shift in the way we "value" ecosystems and biodiversity and the services they provide. Decision makers at all levels must recognise the finite nature of the Earth's resources, and the dangers of commodifying[20] irreplaceable ecosystems and biodiversity and reducing their intrinsic worth to market prices. This shift must centre Indigenous Knowledge, traditional ecological knowledge, kinship, ecological stewardship, the seventh generation principle, and intergenerational equity, while enshrining and upholding the rights of nature[21] and criminalising ecocide.[22] Table 1 highlights how existing solutions can be strengthened.

Table 1 : **Enhancing ecosystem protection and restoration solutions to prevent and reduce loss and damage.**

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
Convention on Biological Diversity	The CBD has three main goals: 1. The conservation of biological diversity; 2. The sustainable use of its components; and 3. The fair and equitable sharing of the benefits arising from the use of genetic resources. The GBF adopted under the CBD aims to protect at least 30 percent of the world's land and sea by 2030.	By 30 December, 2025, only 66 countries had submitted revised National Biodiversity Strategies and Action Plans (NBSAPs) under the CBD. The GBF faces immense challenges, driven by the finance gap. Loss and damage from climate change is marginalised in CDB discussions as protection efforts focus on harmful activities, such as deforestation.	Synergies between the CBD and Loss and Damage under the UNFCCC need to increase.[23] Loss and Damage and biodiversity actors must break down silos and identify ways that responses can be complimentary and coordinated. This should include aligning commitments under NDCs, NAPs, and NBSAPs, adopting ecosystem-based solutions within adaptation strategies and loss and damage response as well as strengthening institutional cooperation between the two conventions.[24]
Global Biodiversity Framework Fund (GBFF)	Hosted by the Global Environment Facility (GEF), the Global Biodiversity Framework Fund (GBFF) was established to finance the implementation of the GBF.	The GBF calls for mobilising at least 200 billion USD annually by 2030. But to date total contributions to the Fund are just 383.36 million USD.[25] Accessing funds from the GEF presents significant challenges for Indigenous Peoples and local communities.[26]	Developed countries must ensure that the GBF reaches its 200 billion USD target by 2030. Access must be simplified.

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
UN Convention to Combat Desertification	The primary aim of UNCCD is to combat desertification and mitigate the effects of drought. The UNCCD's 2018–2030 Strategic Framework includes several objectives relevant to loss and damage responses. This includes objectives to improve the condition of affected ecosystems, improve the living conditions of affected populations, and manage the effects of drought in order to enhance the resilience of vulnerable populations and ecosystems.	The world loses 100 million hectares of land to degradation yearly.[27] Funding for land restoration is nowhere near the 355 billion USD needed each year.[28] At UNCCD COP 16, countries failed to operationalise the Riyadh Global Drought Resilience Partnership (RGDRP) [29] despite initial funding of 2.1 billion USD being secured.[30] [31]	Synergies between the UNCCD objectives and adaptation and Loss and Damage under the UNFCCC need to be increased. This should include aligning commitments under NDCs and NAPs and the UNCCD's National action programmes and Land Degradation Neutrality (LDN) targets.
UN Convention on the Law of the Sea (UNCLOS)	The United Nations Convention on the Law of the Sea (UNCLOS) establishes a legal framework for all marine and maritime activities, defining rights, obligations, and jurisdictions for states in areas such as navigation, resource management, and environmental protection.	A landmark 2024 Advisory Opinion on Climate Change and International Law from the ITLOS confirmed that States must prevent, reduce, and control marine pollution from climate change, including ocean warming and acidification.[32]	The advisory opinion is a crucial legal benchmark for litigation, clarifying the obligations of States in regards to preventing transboundary harm and protecting and preserving the marine environment.[33] Litigation should be used to increase protection by targeting states who fail to prevent harm by regulating harmful activities and corporations.
High Seas Treaty	The High Seas Treaty is designed to protect, conserve, and sustainably use marine biodiversity in international waters. It provides the first legal framework to establish Marine Protected Areas (MPAs) in the high seas which cover roughly two-thirds of the ocean.	The High Seas Treaty faces major challenges in establishing, enforcing, and financing marine protected areas.[34]	Developing countries need finance to support enforcement and establishment of MPAs.

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
UNESCO World Heritage Convention	The United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention Concerning the Protection of the World Cultural and Natural Heritage aims to protect and preserve cultural and natural sites of "Outstanding Universal Value". It links nature conservation with cultural preservation, creating a list of globally significant heritage sites.	UNESCO faces difficulties in implementing its mandate due to complex regulations, lack of resources, and weak governance in managing site preservation. It also faces criticism for Eurocentrism and top-down management of conservation that can neglect local communities and Indigenous Peoples rights.[35]	UNESCO needs sustained and scaled up funding to accelerate action to address loss and damage to ecosystems. It must also reform its approach to centre Indigenous Peoples rights and knowledge.
Plastics Treaty	Negotiations are under way to produce a legally binding agreement on plastics. This aim is to reduce the environmental impacts of plastic, which exacerbate loss and damage.[36]	Negotiations face a deadlock over whether to cap plastic production, regulate toxic chemicals, or focus on recycling. Key challenges include opposition from oil-producing nations, plastic industry lobbying, and funding disparities. This risks a weak agreement that fails to address the full, hazardous lifecycle of plastics.[37]	A plastic treaty must be agreed in 2026 that will implement immediate action to cap plastic production to align with climate and biodiversity goals. Recycling alone is insufficient.[38] The treaty must govern the entire lifecycle of plastics, not just waste management. It must enforce mandatory identification and elimination of toxic chemicals and additives in plastic production to protect human health and biodiversity. The treaty must establish legally binding, enforceable international obligations rather than voluntary national plans.[39] A robust conflict of interest policy must be put in place to restrict industry influence, limit lobbying, and ensure an independent scientific advisory body to prevent the treaty from being undermined by profit motives.[40]

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
Global Environment Facility	The Global Environment Facility (GEF) provides grants and financing for projects addressing biodiversity loss, climate change, land degradation, and pollution.	The GEF mobilised only 5.33 billion USD between 2022 and 2026.[41] The GEF provides access for Indigenous Peoples to funding for biodiversity, climate change, and forest management through the Small Grants Programme and the Inclusive Conservation Initiative. However, as little as 2.5 percent of GEF funding is reaching communities on the frontline of the biodiversity crisis.[42]	The GEF aims to raise 4.9 billion USD during its ninth replenishment cycle (GEF-9, running from July 2026 to June 2030). Developed countries must ensure that this target is exceeded. The GEF must significantly scale up the amount of funding reaching Indigenous Peoples and local communities. Including by enhancing capacity building related to the preparation of dungeon requests.[43]
The Green Climate Fund (GCF)	The Green Climate Fund (GCF) scales up investment in ecosystems by supporting large-scale measures that protect, restore, and manage ecosystems to enhance adaptation and reduce emissions. In order to do this, GCF focuses on two main areas: ecosystem-based management of terrestrial and freshwater ecosystems; and ecosystem-based coastal and marine zone management.[44]	The GCF faces significant challenges, including slow bureaucratic accreditation and project approval processes, high transaction costs and difficulties in balancing mitigation and adaptation funding. The GCF only invested 1.6 billion USD in adaptation projects related to ecosystems and ecosystem services.[45] The GCF has significant barriers to access for local communities and Indigenous Peoples.[46]	Developed countries must significantly increase contributions to the GCF. The GCF must simplify access for local communities and Indigenous Peoples and increase the amount of funding that they receive.
United Nations Environment Program (UNEP) / UNEP's Environment Fund	The United Nations Environment Program (UNEP) leads global efforts to halt biodiversity loss and restore ecosystems by providing scientific expertise, facilitating policy, and driving restoration initiatives.[47] The Environment Fund (EF) is UNEP's core financial mechanism.	UNEP's budget has been reduced by 20 percent.[48] The EF faces a funding reduction of 11–12 percent in 2026 after the loss of contributions from the US and reductions by other developed countries.[49]	UNEP and the EF need sustained funding to advance efforts to halt biodiversity loss. Developed countries must ensure that they are fully funded.

CURRENT SOLUTIONS	HOW DOES IT WORK?	WHAT ARE THE ISSUES?	WHAT NEEDS TO CHANGE?
Ramsar Convention on Wetlands	The Ramsar Convention on Wetlands is an intergovernmental treaty adopted in 1971 in Ramsar, Iran, focused on the conservation and "wise use" of all wetlands through local, national, and international cooperation. It provides a framework for protecting wetlands—vital for biodiversity and water—and managing a network of designated "Ramsar Sites" of international importance.	Despite 50 years of international attention, wetlands continue to decline in both area and quality. Since 1970, approximately 35 percent of the world's wetlands have been lost, with the rate of loss accelerating in the last two decades.[50] Wetland loss risks increasing loss and damage as natural buffers that manage floods, droughts, and storm surges disappear.[51] The Ramsar Convention faces challenges including insufficient integration of wetland policies into broader development strategies, lack of comprehensive national inventories, inadequate financial resources, and conflicts with agricultural and industrial expansion.[52]	Developed countries must increase financial resources for wetland protection in developing countries.

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