

# Contributing to Climate Action through Restoration

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## Overview

Land-use change and degradation have reduced the potential for natural carbon sequestration and adversely affected ecosystem resilience. Restoration can play a major role in enhancing the capacity of ecosystems to sequester carbon by removing degradation and assisting in the recovery of vegetation. Vegetation recovery, however, is linked inextricably to soil health. The IPCC AR6 (1) sounded the alarm about the rapid loss of soil on degraded lands and the effect of this loss on the capacity of ecosystems to absorb carbon and other greenhouse gases. The report underlined the importance of repairing degraded soils to reduce carbon loss and increase rates of sequestration, as well as to recover biodiversity, and secure food and water. Thus, restored and healthy ecosystems will not only have greater capacity for carbon sequestration and climate change mitigation, but also will provide the ecosystem services on which humans (and other species) rely, and improve ecosystem resilience to changing climate over time.

## Restoration Opportunity and Planning

Many restoration opportunities exist around the world, as emphasized by the UN Decade on Ecosystem Restoration. Potentially over 1.6 billion ha of croplands, 2.2 billion ha of grazing lands, and 1.4 billion ha of natural areas could be under effective restoration, representing almost 40% of the global land area<sup>2</sup>. Therefore, the goal under Target 2 of the Kunming-Montreal Global Biodiversity Framework of 30% of effective restoration by 2030 is essential not only for biological diversity but also for carbon sequestration.

However, repairing degraded ecosystems is a complex process that requires careful assessment, planning and design, implementation, ongoing management, and monitoring and evaluation. Projects that narrowly focus on carbon sequestration may have unintended adverse consequences on ecosystem integrity and human wellbeing. To maximize net gain for carbon sequestration, biodiversity and ecosystem integrity, and human wellbeing, restoration activities should be implemented as part of well-planned and executed Nature-based Solutions (NbS). Restoration initiatives should, to the extent possible, adhere to the IUCN Global Standard for NbS (3) as well as the principles (4) and standards of practice (5) developed under the UN Decade on Ecosystem Restoration.

## Inclusive Design of Restoration Initiatives

As detailed in the principles and standards for NbS and ecosystem restoration (3,4,5) restoration initiatives must ensure that all stakeholders and rights and knowledge holders, including Indigenous Peoples and other key groups (e.g., local communities, ethnic minorities, women, youth, and LGBTQS2A+ people), have opportunities to be involved in the restoration process. Societal challenges and climate change impacts are intricately connected and must be addressed to ensure long-term sustainability of restoration investments and benefits to stakeholders and rights and knowledge holders and their livelihoods. It is critical to follow good practices for ecosystem governance so that decisions and actions can be devolved to the lowest level (6), while promoting enabling actions and policies at the regional or national level. Following these practices will improve social acceptability, support, and engagement, as well as sustainability of the restoration activities.

Restoration initiatives also must respect cultural practices to ensure inclusion of Indigenous Peoples, in accordance with the UNDRIP. Indigenous Peoples' biocentric restoration is based on their cosmogony and food and knowledge systems. It recognizes the collective and customary rights of Indigenous Peoples and considers all living beings in the ecosystem, as well as their relations and interactions with both biotic and abiotic elements. Thus engaging Indigenous Peoples in restoration can substantially improve restoration outcomes. Indigenous Protected Conservation Areas (IPCAs) can become good examples of NbS when they integrate equitable and participatory restoration, land use, biodiversity and ecosystem governance for the sustainability of their communities and the lands. These IPCAs could benefit from Indigenous peoples biocentric restoration, while using other ways of knowing when needed according to the principle of the Two-Eyed Seeing.

## The Restorative Continuum

Another key principle of ecosystem restoration under the UN Decade (4,5) is achieving the highest degree of recovery possible. The planned degree of recovery necessarily varies among restoration initiatives, given the wide variety of restoration activities that can be utilized. These activities fall along what has been described as the "restorative continuum" (7). At one end of this continuum, restoration includes activities aimed at reducing societal impacts and mitigating threats such as climate change. The other end of the continuum includes ecological restoration, which aims to remove degradation, mitigate threats and recover the ecological integrity of native ecosystems (7). The recognition by the UN Decade that restoration includes ecological restoration as well as other forms of ecosystem repair is an important step in advancing a common lexicon. However, global restoration strategies within the Rio Conventions have not yet taken advantage of this lexicon to set specific targets under the broad target of restoration. For instance, the extent to which restoration will achieve the highest degree of recovery possible will depend on the relative proportion of different types of activities along the restorative continuum. To maximize the potential benefits and minimize trade offs among benefits, it would be strategic to have a sub-target for ecological restoration within broader targets for restoration. Without such a target, the majority of restoration activities might be only minimally restorative at best, and at worst cause further degradation.

### Restoration within a larger ecological, cultural, and socioeconomic landscape or seascape

An additional need for improving restoration under the Rio Conventions is implementing restoration in the context of the larger landscape or seascape, as detailed in the principles and standards for NbS and restoration (3,4,5). Every restoration site is embedded within a larger ecological, cultural, and socioeconomic landscape or seascape, and conditions and activities within the broader geographic area greatly influence trajectories of recovery. For instance, site-level recovery often depends on the degree of fragmentation of the broader landscape or seascape in which it is embedded, occurring either naturally or due to habitat conversion or degradation, because fragmentation affects process such as the flow of propagules and organisms. In addition, threats from the larger landscape, such as contamination, wildfire hazard, or invasive species, may thwart recovery. For this reason, it is critical to plan restoration activities, even those that will be done at the site scale, in the context of the ecological, cultural, and socioeconomic conditions at the landscape or seascape scale.

#### Recommendations

IUCN stresses the urgent need to link all climate change mitigation and adaptation activities, including restoration, to improving biodiversity, ecosystem integrity, and human wellbeing.

#### Restoration must:

- be based on **equitable, inclusive and fair processes involving communities**, stakeholders and rights and knowledge holders to ensure their sustainability in the long term;
- aim to achieve the **highest level of recovery possible**;
- and be planned, implemented, maintained, and evaluated in the **context of the larger landscape and seascape**.

Without such requirements, restoration will not effectively contribute to carbon sequestration and climate change mitigation, or improving ecological integrity and human wellbeing.

### Further information can be found at:

1. IPCC. 2023. Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland.
2. PBL Netherlands Environmental Assessment Agency. 2022. The Global Potential for Land Restoration: Scenarios for the Global Land Outlook 2. The Hague, Netherlands.
3. IUCN. 2020. Global Standard for Nature-based Solutions. A User-Friendly Framework for the Verification, Design and Scaling Up of NbS. First edition. Gland, Switzerland.
4. FAO, IUCN-CEM, and SER. 2021. Principles for Ecosystem Restoration to Guide the United Nations Decade 2021–2030. Rome, FAO.
5. FAO, IUCN-CEM, and SER. 2023. Standards of Practice to Guide Ecosystem Restoration: A contribution to the United Nations Decade on Ecosystem Restoration. Summary Report. Rome, FAO.
6. Vasseur, L., D. Horning, M. Thornbush, E. Cohen-Shacham, A. Andrade, E. Barrow, S.R. Edwards, P. Wit, and M. Jones. 2017. Complex problems and unchallenged solutions: Bringing ecosystem governance to the forefront of the UN sustainable development goals. *Ambio* 46: 731-742.
7. Gann, G.D., T. McDonald, B. Walder, J. Aronson, C.R. Nelson, J. Jonson, J.G. Hallett, C. Eisenberg, M.R. Guariguata, J. Liu, F. Hua, C. Echeverría, E. Gonzales, N. Shaw, K. Decler, and K.W. Dixon. 2019. [International principles and standards for the practice of ecological restoration. Second edition](#). *Restoration Ecology* 27(S1): S1–S46.

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