Briefing Paper
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PROTECTED AREAS AND CLIMATE CHANGE

- Protected areas are an important line of defense in combatting the twin crises of climate change and biodiversity loss simultaneously.
- Terrestrial protected areas currently store about 12% of terrestrial carbon stocks. The amount of carbon stored in coastal and marine protected areas is also significant, but to date unquantified.
- If effectively managed, protected areas safeguard biodiversity in both the terrestrial and marine realms, and help society cope with climate change impacts by reducing risks associated with climate-related hazards. They also maintain the essential ecosystem services upon which the health and livelihoods of people depend.
- Protected areas are themselves at risk from climate change, requiring managers to take actions to increase resilience, which will be the subject of a separate brief on Building the Resilience of Protected Areas to Climate Change.

Issue Summary

Protected natural ecosystems are an important tool for climate change mitigation and adaptation. They play a significant role in the global carbon cycle, through sequestering carbon dioxide from the atmosphere and storing it in vegetation and soils.

Cameroon forest in the Congo-Basin. ©iStock/3000Risk

Protected area systems are among the most effective policy measures to safeguard biodiversity from a wide range of threats, including providing a haven for species as they shift ranges in response to climate change.

Background

All pathways to attaining the Paris Agreement goal of limiting average global temperature increases to 2°C or 1.5°C require removing carbon dioxide from the atmosphere. One of the most efficient ways of removing carbon dioxide from the atmosphere is to enhance terrestrial carbon sinks and stores.

This can be done through various approaches, including afforestation, restoration and the establishment and effective management of protected areas.

Terrestrial ecosystems, including forests, wetlands, peatlands and grasslands, are a sink for about a third of anthropogenic carbon dioxide emissions. Destruction and degradation of natural ecosystems accounts for 12–20% of the carbon dioxide released into the atmosphere globally. According to one recent analysis, nature-based climate solutions, including protection and restoration of forests and other carbon-storing ecosystems, could provide up to 37% of the reductions in greenhouse gas emissions needed by 2030 to stabilize warming to 2°C.

Forest ecosystems, covering about one third of the global land area, are among the most biologically rich ecosystems on earth and are vital carbon sinks and stores, buffering the rate of climate change. Continued deforestation, particularly in South America and Africa, has highlighted the importance of effective protection of tropical forests for reducing biodiversity loss and enhancing carbon storage.

Oceans have been a sink for approximately 20–25% of the carbon dioxide in the atmosphere since 2008. Blue carbon – the carbon stored in mangroves, tidal marshes and seagrass meadows – is a major carbon store, covering about 0.2% of the total ocean surface, but accounting for half of the carbon stored in marine sediments. Blue carbon ecosystems are also hot spots of biodiversity and provide protection from climate-induced disasters, including storm surges.

Like tropical forests, blue carbon ecosystems are rapidly being lost. For example, 22% of global mangroves were lost from 2002–2012.

Recommendations

Update Nationally Determined Contributions to the Paris Agreement to include Protected Areas

Article 5.1 of the Paris Agreement states that “Parties should take action to conserve and enhance, as appropriate, sinks

and reservoirs of greenhouse gases ...” The Paris Agreement also clearly notes “the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity”. New and revised Nationally Determined Contributions (NDCs) submitted in support of the Paris Agreement provide an opportunity to increase global ambition on climate change through nature-based climate solutions, including increased protection, resilience, restoration and improved management of carbon-dense, high-biodiversity ecosystems. New and revised NDCs also provide an opportunity for countries to consider actions with co-benefits for climate change adaptation and mitigation, biodiversity loss and sustainable development, with specific targets. Currently only one third of countries refer to protected areas as a means of attaining adaptation and mitigation goals in their NDCs.

Mangrove. IUCN Photo Library / © Andre Seale

Add carbon-density as a criterion for selection of new protected areas

Carbon-rich ecosystems, which by definition store the most carbon from the atmosphere, are also the most biodiverse ecosystems. Carbon-dense ecosystems, such as primary forests, grasslands, peatlands, drylands and blue carbon systems, are being lost at an alarming rate because they are particularly vulnerable to land-use change. For example, between 2014–2018 tropical tree cover loss emitted 4.7 gigatonnes of carbon dioxide per year – more than the 2017 greenhouse gas emissions of the whole European Union. Nearly half of these emissions occurred within humid tropical primary forests.

Carbon-density is a key value to be considered when assessing ecosystem integrity, resilience and the maintenance of ecosystem services.

Blue carbon ecosystems store more carbon, on an area basis, than forests. Although they cover a fraction of the total area of forests, their importance as sinks and stores of atmospheric carbon is significant. Given the significance of blue carbon for marine biodiversity and protection from climate-induced disasters, a focus on increased blue carbon protection would have multiple benefits.

Support Indigenous Conservation Areas, including tenure rights on Indigenous lands

Thirty-seven percent of all remaining natural lands on the planet are Indigenous peoples’ lands. These lands store about 13% of all the carbon stored in terrestrial ecosystems. More than one third of the carbon identified in community lands across the tropics lies in areas without secure tenure rights. The Amazon Basin, Congo Basin, boreal, tundra, Borneo and New Guinea ecoregions all store massive amounts of above and below-ground carbon and overlap with Indigenous lands. Providing a mechanism to recognize and support these communities to secure tenure rights and maintain traditional governance systems could also result in keeping much of this land intact – for hunting, protection of traditional lifestyles and other features.

Examples

In every region the relationship between climate change, biodiversity and sustainable development is being highlighted. For example, Latin American countries, through an initiative of REDPARQUES, issued a declaration calling for recognition of the role of protected areas in addressing climate change.

Several countries have already incorporated protected areas into their NDCs (e.g. Colombia, Mexico, Morocco, Jordan, and Bhutan). Some countries have been taking stock of the carbon stores in their protected areas network (e.g. Canada), while researchers in other countries (e.g. Australia) are developing the methodology to expand carbon accounting in NDCs to include harder to assess ecosystems, such as blue carbon.

Additional information

IUCN Global Protected Areas Programme & IUCN World Commission on Protected Areas

Arneth et al. (2019). *Climate change and land: Summary for policymakers*. Intergovernmental Panel on Climate Change. WMO and UNEP.

The Blue Carbon Initiative

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