

BLUE CARBON - NATIONALLY DETERMINED CONTRIBUTIONS INVENTORY

Appendix to:

Coastal blue carbon ecosystems

Opportunities for Nationally Determined Contributions



Martin, A., Landis, E., Bryson, C., Lynaugh, S., Mongeau, A., and Lutz, S. (2016). Blue Carbon - Nationally Determined Contributions Inventory. Appendix to: Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions. Published by GRID-Arendal, Norway.

ISBN: 978-82-7701-161-5

This document is jointly produced by Blue Climate Solutions, The Nature Conservancy, IUCN, GRID-Arendal, Conservation International and World Wildlife Fund, and serves as the appendix to 'Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions' (Herr, D. and Landis, E. 2016), available from: www.iucn.org/resources/publications.

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Acknowledgments

This publication has been made possible in part by funding from the UNEP/GEF Blue Forests Project (www.gefbblueforests.org), the Norwegian Ministry of Foreign Affairs and the Curtis and Edith Munson Foundation.

Reviewers

Herr, D., Kurvits, T., and Neumann, C.

Layout and production

Charles El-Zeind and Elsa Lindevall

Photo credits

Cover: Tim Calver, The Nature Conservancy; Wade Fairley, WorldFish; back cover: Wade Fairley, WorldFish

Please address comments to angela.martin@BlueCSolutions.org

Blue carbon and NDCs

Context

This appendix provides an inventory of the existing Intended Nationally Determined Contributions (INDCs) and ratified National Determined Contributions (NDCs) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) that include coastal blue carbon ecosystems, namely mangroves, tidal saltmarshes and seagrasses, as climate mitigation or adaptation solutions. This document serves as the appendix to '*Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions*'ⁱ, which provides additional information and analysis, available from: www.iucn.org/resources/publications. For the time being, if a country does not submit an NDC when the country ratifies the Paris Agreement, any INDC submitted by that country prior to ratification will automatically count as its first NDCⁱⁱ. In this appendix, the term NDC is used to refer to both NDCs and INDCs. This inventory and the corresponding report provide a tool for countries to include or enhance actions for blue carbon ecosystems in future NDCs.

Paris Agreement and purpose of NDCs

The Paris Agreement was adopted by all 196 Parties to the UNFCCC at COP21 in December 2015. One of the important elements of the Paris Agreement is that countries can independently determine how to lower their emissions, which they outline in pledges called NDCs. Every five years Parties are asked to communicate a revised NDC (Art 4.9 of the Paris Agreement). Each successive NDC signifies a progression from the previous one, representing the highest possible ambition (Art. 4.3 of the Paris Agreement). One of the principles to ensure enhanced ambition of these commitments over time includes the principle of “no backsliding.” While it is a non-legal aspect

of the Agreement, it indicates that the current level of ambition is the baseline, and that for each review period countries should increase their ambition accordingly.

Nature based solutions

Parties can develop their NDC actions and priorities based on a portfolio of measures including the conservation and restoration of nature as a climate change solution. The recognition of the roles that natural ecosystems can play in climate change mitigation and adaptation are often referred to as nature-based solutions.

Coastal blue carbon

Blue carbon ecosystems, namely mangroves, tidal saltmarshes and seagrasses, remove significant amounts of carbon from the atmosphere and store it in their biomass and soil. The carbon sequestered in the soil can be stored for hundreds to thousands of years, helping to mitigate climate changeⁱⁱⁱ. In addition, coastal wetlands provide adaptation and coastal protection benefits by absorbing incoming wave energy, providing coastal and storm surge protection, and preventing erosion. Coastal wetlands may keep pace with sea level rise and, in some instances, are more cost-effective than artificial infrastructure like seawalls and levees^{iv,v}. Healthy coastal wetlands also support other benefits, including spawning grounds for commercial fish, water purification and local livelihoods. Thus, blue carbon ecosystems can be a nature-based solution with multiple co-benefits.

When degraded, these co-benefits are greatly diminished along with the ecosystems' capacity to sequester carbon, and stored carbon can be released back to the atmosphere, along with other greenhouse gases. The protection and restoration of coastal blue carbon ecosystems is therefore recognised as a priority for both

climate change mitigation and adaptation, and many countries have identified measures that harness these benefits in their NDCs, including:

- 28 countries' NDCs include a reference to coastal wetlands in terms of mitigation.*
- 59 countries are including coastal ecosystems and the coastal zone in their adaptation strategies.

Other Contributions

The UNFCCC has various mechanisms through which countries can report planned actions and progress on climate change. Many countries include blue carbon ecosystems in their National Adaptation Plans (NAPs), National Adaptation Plans of Actions (NAPAs), and National Appropriate Mitigation Actions (NAMAs). For more information on blue carbon in other UNFCCC mechanisms, see section 4 of “Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions”, available from: www.iucn.org/resources/publications.

Inventory of blue carbon related NDCs

The inventory below classifies the types of mitigation or adaptation action related to coastal blue carbon ecosystems as identified in the NDCs, with specific actions and timelines listed where available, and direct quotes from the NDCs. Countries that have ratified the agreement are denoted with a (*), and countries that have included the term “blue carbon” in their NDC have been noted with a (T) in the Country Name column. Countries are listed in alphabetical order. The inventory recognises the following categories of blue carbon related actions:

Mitigation actions

LULUCF and Forestry: Countries that include coastal wetlands as part of Land Use, Land-Use Change and Forestry (LULUCF) and other forest commitments.

General Mitigation: Countries that include coastal wetlands as part of general mitigation aims.

Mitigation Co-benefits: Countries that specifically recognize both the mitigation and adaptation benefits of coastal wetlands.

Adaptation actions

Conservation, protection and restoration efforts: Countries that include coastal wetlands as adaptation solutions, with references to conservation and management, protection, and reforestation measures.

Coastal zone management for climate adaptation: Countries that include information and make specific references to planning tools, such as Integrated Coastal Zone Management (ICZM).

Adaptation in the fisheries sector: Countries that include information and/or see the need to prioritise adaptation in job-generation sector using coastal and marine resources (e.g. fisheries).


For additional information on these categories, see Table 1 of “Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions”, available from: www.iucn.org/resources/publications.

*This does not include countries that note mitigation as an adaptation co-benefit only



Blue Carbon Inventory of NDC Actions

Country	Mitigation	Adaptation	Year	NDC Actions
Angola	LULUCF and Forestry		2030	<p>Mangroves role in mitigation recognised with specific targets for afforestation and reforestation of degraded mangrove habitats identified as a mitigation measure. Coastal zone included as a priority area for adaptation measures.</p> <p>"Afforestation and Reforestation of degraded forest lands and mangrove habitats have a strong potential for mitigation purposes."</p> <p>". . . committed to increase carbon sequestration from the forestry sector to 5 million tons of CO₂e per year by 2030."</p> <p>"Angola prioritises the implementation of Adaptation measures in the following main sectors: . . . 2. Coastal Zone 3. Land-Use, Forests, Ecosystems and Biodiversity . . ."</p> <p>"Enhancement of coastal adaptive capacities at the institutional, systemic and community levels; response to urgent needs posed by climate change."</p>
Antigua and Barbuda*	General Mitigation	Adaptation Co-benefits		<p>Wetlands role in mitigation with adaptation co-benefits recognised, with protection for all remaining wetlands and watershed areas with carbon sequestration potential by 2030 identified as a mitigation measure.</p> <p>"Conditional Mitigation Targets: . . . By 2030, all remaining wetlands and watershed areas with carbon sequestration potential are protected as carbon sinks."</p> <p>"Similarly, mitigation actions can have adaptation co-benefits. For example, expanding the protection of wetlands and watersheds to sink GHG emissions also serves as an adaptation strategy by enhancing water retention and reducing the risks of climate impacts, namely flooding and storm surge."</p>
Australia*	LULUCF and Forestry		2021-2030	<p>Wetlands role in mitigation recognised through inclusion of IPCC 2013 Supplement.</p> <p>"Intends to apply the IPCC 2006 Guidelines and IPCC 2013 Revised Supplementary Methods, or as otherwise agreed."</p>
Bahamas*	LULUCF and Forestry	<p>Conservation, protection and restoration efforts</p> <p>Adaptation in the fisheries sector</p>	2020	<p>Mangroves role in mitigation and marine environment role in adaptation recognised with protection of mangrove ecosystems to increase their carbon sink ability identified as a mitigation measure, and protection and conservation of near shore marine environment identified as an adaptation measure. National Forests across the Bahamas may be considered for inclusion in REDD+ activities.</p> <p>"In 2008, as a part of the Caribbean Challenge Initiative, we committed to the protection of 20% of our near shore marine environment by 2020, and have this year achieved half of our goal. These protected areas will conserve and protect habitat for Grouper and Bonefish spawning aggregations, coral reefs, sea grass meadows, mangrove nurseries and important bird areas."</p> <p>"Results of a mangrove ecosystem study on one Pine Island (Andros) indicate that approximately 5,661,077tCO₂e may be removed from the atmosphere through the proper management of the ecosystem. Proper management will improve the functionality of our mangrove ecosystems and increase their carbon sink ability."</p> <p>"These Pine Islands and other designated National Forests across The Bahamas may be considered for inclusion in REDD+ activities, pending further study."</p>

Country	Mitigation	Adaptation	Year	NDC Actions
Bahrain 	General Mitigation Mitigation Co-benefits	Conservation, protection and restoration efforts	2030	<p>Mangroves and seagrass' role in both mitigation and adaptation recognised, and explicitly referenced as blue carbon. Mangrove Transplant Project identified as an adaptation measure with mitigation co-benefits.</p> <p>"Adaptation action with mitigation co-benefits: Blue Carbon: A Mangrove Transplantation Project for the cultivation of plants and planting mangrove seedlings in order to rehabilitate degraded coastal areas began in 2013. The project succeeded in the cultivation of mangroves in Tubli Bay and Doha Arad. There is increasingly strong recognition that there is a need to properly manage particular habitats that act as critical natural carbon sinks. The Black Mangrove is found naturally in Bahrain and is able to sequester carbon and provide an efficient buffer for coastal protection. At present, the Kingdom of Bahrain does not have a full understanding of its mangroves as a carbon sink and is planning to engage with the International Union for Conservation of Nature to do so. Seagrass beds, which constitute an important carbon sink, are distributed along the southeast coast, and along the west coast of Bahrain. At present the Kingdom of Bahrain does not have a full understanding of its seagrass areas as a carbon sink and is planning to further engage with the International Union for Conservation of Nature to do so."</p>
Bangladesh*	LULUCF and Forestry	Conservation, protection and restoration efforts Coastal zone management for climate adaptation		<p>Mangroves role in mitigation and adaptation recognised, with coastal mangrove plantation identified as a mitigation measure. and community conservation of wetlands and coastal zone management planned as adaptation measures.</p> <p>"Sector: Land use, land use change and forestry: Continuation of coastal mangrove plantation."</p> <p>"About 195,000 hectares of mangrove plantations have been raised so far and these new plantations are also playing an important role in carbon sequestration."</p> <p>"Adaptation measure: Community based conservation of wetlands and coastal areas."</p> <p>"Adaptation: Considering the vulnerabilities, the government has identified the following areas of interventions to address adverse impacts of climate change: Key Areas to address adverse impacts of climate change: . . . Coastal Zone Management including Salinity Intrusion control"</p>
Belize*	General Mitigation	Conservation, protection and restoration efforts Coastal zone management for climate adaptation Adaptation in the fisheries sector	2020-2030	<p>Mangroves role in mitigation with adaptation co-benefits recognised, with mangrove restoration, protection, and a transition to a net carbon sink identified as mitigation measures that have adaptation co-benefits. Integrated coastal zone management included as an adaptation measure.</p> <p>"Mitigation: Mangroves: Description: Protecting and restoring mangrove forests. This activity can be an effective mitigation action while also helping the protection of low-lying coastal areas against impact of storms and soil erosion. Mangrove forests also fulfil critical role as nursery ground for regional fish stocks and maritime ecosystems. Objective: Protection of existing mangroves from deforestation and restore lost mangroves. Anticipated emission reduction: Restoration and protection have the potential to turn Belize's mangrove system into a net carbon sink by avoiding current emissions of around 11.2Gg CO₂ per year and removing additional 2.2 – 35Gg CO₂ per year between 2020 and 2030. The expected cumulative emissions reduction would be up to 379Gg CO₂ between 2015 and 2030."</p> <p>"It is also recognised that many mitigation actions will produce co-benefits that promote adaptation and resilience to climate change. Forest protection and replanting of mangroves that are implemented for mitigation purposes are expected to protect the coastline against storm surges and erosion . . ."</p> <p>". . . Initiatives such as mangrove restoration and protection offer new opportunities in scientific fields study to assess the carbon storage capacity of mangrove ecosystems, known as the Blue Economy. "</p> <p>"Adoption and Implementation of the Belize Integrated Coastal Zone Management Plan."</p>

Country	Mitigation	Adaptation	Year	NDC Actions
Benin*		Conservation, protection and restoration efforts		<p>Coastal zones role in adaptation recognised with protection of coastal zone and restoration of mangrove ecosystems identified as adaptation measures.</p> <p>"Protect the coastal zone in the face of sea level rise for erosion control. Correct the instability of sediments from thinning and beach loss. Restore the fragile ecosystems (mangrove) . . ."</p>
Brunei*	LULUCF and Forestry	Adaptation in the fisheries sector		<p>Mangroves role in mitigation recognised and forest preservation identified as a mitigation measure. Forestry, coastal and flood protection identified as adaptation priorities.</p> <p>"Brunei Darussalam is considered one of the world's leading nations in terms of its actions to preserve forest cover, with currently approximately 75% of its 5,765 square kilometres national land area is under forest cover. It is comprised of what experts believe to be the oldest tropical rainforest ecosystem in the world, but also mangroves, peat swamps and other areas which sequester carbon dioxide from the atmosphere."</p> <p>"Brunei Darussalam has identified the following sectors for priorities for further climate change adaptation actions: . . . vi. Fisheries. Climate change adaptation is currently most advanced in the biodiversity and forestry sectors."</p>
Cambodia		<p>Coastal zone management for climate adaptation</p> <p>Adaptation in the fisheries sector</p>		<p>Mangrove ecosystems and coastal zone resources identified for sectoral adaptation measures.</p> <p>"Adaptation: . . . most vulnerable sectors to the impacts of climate change: Coastal zones: Coastal zone resources already face a number of pressures, including from over-fishing, over-exploitation of forest resources and mangrove ecosystems leading to increased erosion. Climate change adds to these existing challenges through sea level rise . . ."</p> <p>"Adaptation: . . . Priority Actions: . . . mainstreaming of climate change into sector and sub-sector development plans."</p>
Cameroon*		<p>Conservation, protection and restoration efforts</p> <p>Coastal zone management for climate adaptation</p> <p>Adaptation in</p>		<p>Mangroves role in adaptation recognised, with restoration and management of mangroves and protection and management of the coastline identified adaptation measures.</p> <p>"Adaptation: . . . Protection and management of the shoreline against the effects of climate change; Restoration and management of mangroves; Utilisation of resources; Adaptation of infrastructures."</p>

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