

Building knowledge to weave the protection and restoration of coastal Blue Carbon ecosystems into decision making on mitigation and adaptation to climate change.

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Coastal Blue Carbon ecosystems – **mangroves, tidal marshes, and seagrasses** – are highly productive coastal ecosystems that are particularly important for their capacity to store carbon within the plants themselves and in the sediments below. Coastal blue carbon ecosystems are found on every continent except Antarctica. Mangroves, tidal marshes and seagrasses cover between 13.8 and 15.2 million hectares (Mha), 2.2 and 40 Mha, and 17.7 and 60 Mha, respectively. Despite the proven importance for ocean health and human wellbeing, **20-50 % of coastal blue carbon ecosystems have been converted or destroyed¹**.

Coastal Blue Carbon ecosystems and Nationally Determined Contributions (NDCs)

Nature-based Solutions (NbS), including protection, conservation and restoration of coastal Blue Carbon ecosystems, are an integral component to the achievement of reaching the 1.5-degree Celsius objective laid out by the Paris Agreement. Countries with coastal Blue Carbon ecosystems can recognize the values provided by these ecosystems as a potentially **significant contribution to both the mitigation and adaptation goals of their NDC**. This value is additional and complementary, not a substitute, to the critical need for countries to reduce their emissions from other sectors such as energy and transport.

- **Mitigation benefits:** Coastal Blue Carbon ecosystems can sequester two to four times more carbon than terrestrial forests. Their loss and degradation are equivalent to 10% of CO₂ emissions from terrestrial deforestation because of their high carbon stocks per hectare².
- **Adaptation benefits:** Coastal Blue Carbon ecosystems provide services essential for climate change adaptation, including protection from storm surges, flooding, sea-level rise, and coastal erosion, and create economic opportunities for local communities and beyond.

From Science to Policy

Countries that choose to include coastal Blue Carbon ecosystems in their NDCs may want to ensure that their inventories accurately report emissions and removals from coastal Blue Carbon ecosystems. In 2013, the Intergovernmental Panel on Climate Change released technical guidance on **including wetlands in national greenhouse gas inventories (NGGI)**, including mangrove forests, tidal marshes and seagrass meadows.

Yet, given the technical challenges involved, to date only a handful of countries have started this endeavor³. The Blue Carbon Initiative and the International Partnership for Blue Carbon provide platforms to connect, share and collaborate to build solutions, take actions and benefit from the experience and expertise of the global community, supporting scientists and countries to increase ambition directed towards the inclusion of coastal Blue Carbon ecosystems in decision-making on mitigation and adaptation to climate change.

¹ Pendleton, L., Donato, D.C., Murray, B.C., Crooks, S., Jenkins, W.A., Sifleet, S., Craft, C., Fourqurean, J.W., Kauffman, J.B., Marbà, N. and Megonigal, P., 2012. Estimating global “blue carbon” emissions from conversion and degradation of vegetated coastal ecosystems. *PloS one*, 7(9), p.e43542.

² Donato, D.C., Kauffman, J.B., Murdiyoso, D., Kurnianto, K., Stidham, M. and Kanninen, M., 2011. Mangroves among the most carbon-rich forests in the tropics. *Nature Geoscience* 4:293–2978.

³ 28 countries’ NDCs include a reference to coastal wetlands in terms of mitigation and 59 countries are including coastal ecosystems and the coastal zone in their adaptation strategies (Herr, D. and Landis, E. 2016).

Global distribution of coastal Blue Carbon ecosystems



Figure 1 Global distribution of coastal Blue Carbon ecosystems. Source: UNEP-WCMC.

The **Blue Carbon Initiative (BCI)** – co-organized by IOC-UNESCO, Conservation International and the International Union for Conservation of Nature (IUCN) – works to develop comprehensive methods for assessing blue carbon stocks and emissions, which can be implemented by projects around the world that demonstrate the feasibility of blue carbon accounting, management and incentive agreements.

The **International Partnership for Blue Carbon (IPBC)** provides an open forum for government agencies, non-governmental organizations, intergovernmental organizations and research institutions to connect, share and collaborate to build solutions, take actions, and benefit from the experience and expertise of the global community. The Partnership was launched at COP21 in Paris in 2015 by nine founding Partners and has since expanded to more than 40 Partners in 2021. The Blue Carbon Initiative is Partner of the IPBC and provides technical and policy expertise to the Partnership and its Partners.