



## Incorporating coastal wetlands in inventories

Coastal wetlands ecosystems support fisheries, water quality, coastal protection, and climate change mitigation. Mangroves, tidal marshes, and seagrass have high levels of carbon stocks, particularly in their soils, which when degraded can lead to greenhouse gas (GHG) emissions. These ecosystems are highly threatened. Mangrove deforestation is estimated to contribute as much as **10 per cent of emissions from deforestation globally**. Conservation and restoration can lead to avoided emissions and increased carbon sequestration within these ecosystems. These ecosystems can sequester **two to four times more carbon than terrestrial forests on an area basis**.

Improved management of coastal wetlands can contribute to countries' efforts to reduce emissions under the UNFCCC. This includes **Nationally Determined Contributions** under the Paris Agreement and REDD+. These ecosystems are also important under other policy frameworks including the Sustainable Development Goals and Ramsar Convention on Wetlands of International Importance.

To support policy development, countries need to be able to understand the location and extent of their coastal ecosystems, their dynamics, and activities impacting them. Recent guidance from the Intergovernmental Panel on Climate Change provides the underpinning science to aid this process. The *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (the Wetlands Supplement)* provides guidance to countries on reporting for emissions associated with changes in the land-use of coastal wetlands, including both their conversion and degradation, as well as their restoration. For countries submitting inventory reports under the UNFCCC, it is voluntary to use the *Wetlands Supplement*. However, this is the most up-to-date guidance and extends other guidance – the *2006 Guidelines*.

Few countries have implemented the Chapter 4 Coastal Wetlands guidance from the *Wetlands Supplement*. A recent exchange gathered countries, scientists and NGOs<sup>1</sup> to:

- 1) **document the process** of including coastal wetlands within national inventory reports by early adopters; and
- 2) **discover challenges** to using the *Wetlands Supplement*;
- 3) develop solutions and **share knowledge** to help others to start using the *Wetlands Supplement*.

<sup>1</sup> This document draws on the outcomes of a workshop held by the International Partnership for Blue Carbon and University of Queensland in Brisbane, Australia, July 2018. Government representatives from Australia, Cambodia, Fiji, Malaysia, Mexico, Papua New Guinea, Thailand, United Arab Emirates and the United States joined scientists, non-government organisations to share information at the event.

The USA, Australia and the UAE have all made progress to adopt components of the Wetlands Supplement, while Indonesia has significant mangrove holdings included under its forest area in its inventory. These countries shared their different approaches at the exchange and reiterated the importance of beginning the process and refining it over time.

USA	UAE	Australia	Indonesia
<p>Reports mangroves and marshes</p> <p>Interagency working group supported collaboration</p>	<p>Calculated potential emissions of 62m tonnes of carbon dioxide from removed mangroves and seagrasses</p> <p>Findings informed forest management policy</p>	<p>Reports mangroves, marshes, seagrasses – about 5% of carbon stocks in forest sector</p> <p>A technical expert panel informs inventory development</p>	<p>Includes mangroves under forestry but not soil carbon</p> <p>Aiming for consistency between inventory and REDD+</p>

## Lessons Learned

	Key Lessons Learned
<b>Reporting</b>	<ul style="list-style-type: none"> <li>IPCC worksheets and reporting tables are not user friendly for coastal wetlands.</li> <li>Initiating application of the <i>Wetlands Supplement</i> is difficult, countries should focus on what is available and improve the account as new data is identified.</li> </ul>
<b>Technology &amp; Activity Data</b>	<ul style="list-style-type: none"> <li>Activity data can be difficult to obtain.</li> <li>Countries could combine resources and use Tier 1 default values and emission factors when country-specific information is not available.</li> </ul>
<b>Modelling</b>	<ul style="list-style-type: none"> <li>Tier 3 (country specific and spatially explicit) models for emissions and removals from coastal wetlands are emerging but not available for all countries and require regional, national and subnational calibration.</li> <li>Many global datasets are available.</li> </ul>
<b>Policy</b>	<ul style="list-style-type: none"> <li>Coordination between inventory teams with other government institutions that are responsible for providing data can be challenging.</li> <li>Inclusion of coastal wetlands within an inventory can inform policy.</li> <li>Non-governmental organizations can support country activities.</li> </ul>

## Next Steps and Conclusion

A number of recommendations were identified to assist with implementation of the *Wetlands Supplement* Chapter 4, Coastal Wetlands. These included:

- Training workshops to provide technical knowledge in using existing and emerging tools for inventory compilers and linking inventory compilers with scientists and applicable science.
- Training in interpreting remotely sensed data, assessing major drivers influencing coastal wetland inventories and use of models.
- Peer-to-peer exchange and the establishment of technical reference groups.
- The improvement or development of 'guides' to working with IPCC worksheets and tables and the development of regional emission factor databases or repositories of information for inventory compilers.
- Increase consideration of mangroves, including remote sensing and analysis, to support better coverage of mangroves under REDD+.
- New research needs to include an expansion of the range of emission factors and activity data across regions and settings.

The exchange demonstrated the value of international communication and collaboration to identify common challenges, discuss solutions, and establish connections as the process of developing inventories progresses. The International Partnership for Blue Carbon will continue to support knowledge sharing activities on coastal wetlands.