

## CHECKLIST 1

### Identifying Established Blue Carbon Ecosystems Within Your Country

The first step in the process of evaluating blue carbon actions is identifying if your country currently has, or has had, any of the following blue carbon ecosystems (BCEs). BCEs fall into one of two categories: Established or Emerging.



#### **ESTABLISHED BLUE CARBON ECOSYSTEMS -**

Mangroves, seagrass beds, and salt marshes are recognized as falling into an established inventory category of wetlands. These ecosystems are considered "actionable" because they are eligible for Blue Carbon crediting instruments.



Salt Marshes – explore the UNEP Global Distribution of Salt Marshes map located at the link below. From the link you can download spatial data on the baseline inventory containing global seagrass distribution. Data used to develop this map covers studies from 1973 – 2015.

https://data.unep-wcmc.org/datasets/43



Seagrasses - explore the UNEP Global Distribution of Seagrass map located at the link below. From here, you can zoom to your country to view salt marsh distribution or download spatial data to view distribution across a customizable area. Data used to develop this map covers studies from 1934 – 2015.

https://www.unep.org/ resources/publication/globaldistribution-seagrasses



Mangroves – Global Mangrove
Watch (GMW) provides a
variety of data on the global
distribution of mangroves at
yearly intervals going back
to 1996. Using their online
mapping portal, you can view
the distribution of mangroves
within your country, as well as
a variety of different data layers
on carbon storage, mangrove
type, and mangrove area
change over time.

www.GlobalMangroveWatch.org



#### **EMERGING BLUE CARBON ECOSYSTEMS -**

The following BCEs are considered emerging as they are "likely" actionable, meaning they meet some of the actionability criteria. In the future, these ecosystems may be eligible for Blue Carbon crediting instruments. Currently, there is limited data on the global extent of emerging BCEs, and as such, there are few resources available for countries looking to assess national extent/area of these ecosystems.



### Resources for Gathering Required Data for GHG Inventories

**References:** The Blue Carbon Initiative's BC & NDC Guidelines on Enhanced Action, Landsat data available from the U.S. Geological Survey

There are several datasets required for the development of an effective GHG inventory. The requirements fall into two general categories:

Location and extent of BCEs, and activity data. No matter your level of capacity, the prevalence of global datasets and methodologies – such as the IPCC Wetlands Supplement – mean there are still actions your country can take to improve existing inventories and work towards policy and financing actions for your BCE(s).

**Location and Extent of BCEs –** For inventory reporting purposes, maps, or spatial data on the distribution of BCEs within your country is critical. This data can be used to calculate all required carbon stocks (above and belowground biomass and soil organic carbon (SOC)) and change in carbon stocks over time using default values from the IPCC Wetlands Supplement. This information is also valuable in determining carbon stock gains and losses over time when paired with land use and land use change (LULUCF) data, and for identifying a baseline for BCE location and extent. With knowledge of location and extent of BCE(s) within your country, you can then estimate the amount of carbon stored, sequestered and/or released from the BCE(s) based on land conversion or change.



- historic location and extent of BCE(s) Satellite imagery is an effective solution for this step.

  Note: Your country may already account for mangroves as part of their National Forest Inventory.
- **a.** Landsat (and similar satellites) supply free, open-source imagery at a global scale, and across various timeframes check the link below for further information:
  - https://landsat.gsfc.nasa.gov/data/where-to-get-data/
- b. Map the location and extent of all BCEs present within your country
  - Refer to Checklist 1 for resources on location of established BCEs
- c. Incorporate data from new technologies, such as drones, as they become available



- 2. Determine the baseline year for assessing location and extent your country's BCEs
- a. Identify the earliest year the Landsat imagery covers for your nation, ensuring this coverage includes any present BCEs
- **b.** This year will serve as your baseline year e.g, 2005 is the first year where you can clearly identify BCE within your country



3. Calculate changes in BCE location and extent over time

#### **ACTIVITY DATA -**

Activity data refers to rates of carbon accumulation and loss based on uses of, and impacts upon, BCEs. Specifically, activity data refers to the magnitude of human activities or actions which result in emissions or removals during a designated timer period. As a result, activity data is highly country specific.



Obtain spatial layers on land use and land use change (LULUCF) for regions of your country where BCE(s) are present



- Follow guidance laid out in Chapter 4 of the Wetland Supplement to estimate activity data
- Established BCEs are included within the Wetlands Supplement in the "Coastal Wetlands" category. Emissions factors and methodologies are provided for various categories of BCE use/ impacts upon BCEs such as mangrove management practices, revegetation, aquaculture, and drainage.



### CHECKLIST 3

### **Applying the IPCC Tier 1 Default Values**

References: The Blue Carbon Initiative's BC & NDC Guidelines on Enhanced Action

#### TIER 1 DEFAULT EMISSION FACTORS -

Chapter 4 of the IPCC Wetlands Supplement provides global default emission factors for designated activities within established BCEs: mangroves, salt marshes and seagrasses. These global default values are referred to as Tier 1 estimates. Tier 1 emission factors can be used in conjunction with data on BCE extent and change in extent over time to estimate carbon stock values at a national level. Tier 1 factors as especially important when it comes to estimates of SOC stocks or changes in stocks, as lack of data on SOC is a common bottleneck country run into.

#### TIER 2/3 DEFAULT EMISSION FACTORS –

When available, country specific emission factors can provide more accurate estimates of national BCE carbon stocks.

## CHECKLIST 4

### **Updating & Improving GHG Inventories**

References: The Blue Carbon Initiative's BC & NDC Guidelines on Enhanced Action

Accurate reporting and accounting of emissions and removals of coastal wetlands must be complete before a country can incorporate coastal wetlands within the mitigation section of their NDCs. Development and continued maintenance of GHG Inventories is an important tool in meeting evidence-based climate mitigation policy requirements.



- 1. Determine the location and extent of the BCE(s) habitat within your country
- a. Calculate the approximate area of the habitat



- 2. Map the distribution and change of the BCE habitat coverage over time
- a. Identify a baseline year commonly the earliest year with complete data on ecosystem extent and compare extent from subsequent years to this baseline.
- **b.** Quantifying change over time is important for inventory and reporting purposes.



- 3. Estimate the BCE's existing carbon stock now that we know the habitat extent and change over time, it is important to understand the amount of carbon sequestered and stored by the BCE(s).
- a. Gather data on the relevant carbon pools pertaining to the BCE(s) (ex: aboveground biomass, soil organic carbon (SOC), standing deadwood, etc.).
- **b.** Utilize the calculated area of the BCE(s) to estimate a carbon stock value



4. Estimate the BCE's emissions rates



- **5.** Estimate the rate of carbon accumulation and loss over time
- a. Pay attention to potential changes in land use, and how this will affect existing and future carbon stocks



## CHECKLIST 5

### **Accounting for BCE in NDCs**

**References:** NDC Guidelines on Enhanced Action; NDC Partnership: Opportunities for Ocean-Based Climate Action

There are various options for countries to include BCE in their NDC accounting framework. Depending on the state of the GHG inventory and the capacity to report emissions and removals in line with the 2013 Wetlands Supplement, countries may include BCE within their economy-wide target or not. In the latter case, countries can still present stand-alone, action-based targets for BCE. They can and should also set out a timeframe for when they will be able to report GHG emissions and removals from coastal wetlands in their inventory and, hence, when they will be able to account for emissions and removals from BCE under their NDC.



1. Check Government Roles and Responsibilities over BCEs

- a. Does your country have a central agency for coordinating ocean/coastal and BCE management
- b. Is there a clear division of roles and responsibilities regarding BCE management and protection among relevant government entities and other stakeholders
- c. Are there comprehensive laws and regulations, at various levels, that specifically protect or conserve BCEs?
- d. Which agency(ies) are responsible for enforcing such laws and regulations, and are they adequately resourced and mandated to do so?



Check if BCE are (already) included in a country's NDC accounting scope.

- a. Refer to explicit language ("all sectors" include in scope, as well as "2013 Supplement").
- b. In case all sectors fall within the abstract scope, but IPCC guidance is not referenced beyond the 2006 Guidance, there is a good chance that the de facto accounting framework ignores GHG emissions and removals from wetlands.



2. Confirm that BCE are included or clarify that they will be by a certain date, referencing the capacity to use the 2013 Supplement.



3. Check if BCE habitats are covered in your REDD+ framework (and target setting), if applicable (see below, Checklist 6).

If full BCE inventory reporting occurs, a mitigation target may be included in a country's cross-economic or cross-sector target.



- Describe the type of BCE-related (mitigation) target, applying principles of clarity, unambiguity, and ambition.
- If full BCE inventory reporting does not occur or if a country wants to highlight a specific target for BCE, check which action-based targets you can set out:
- Consider a commitment to a complete halt of deforestation (mangroves) and/or degradation (all BCE).
- Alternatively, consider a commitment to net-zero deforestation of degradation, or BCE-positive conservation.
- In addition, set restoration targets for BCE habitats (ideally, expressed in hectares)
- iv. In addition, make a commitment for BCE area coverage under sustainable management.



### CHECKLIST 6

### **Accounting for BCEs in your NDCs as a REDD+ Country**

References: The Blue Carbon Initiative's BC & NDC Guidelines on Enhanced Action

REDD+ countries are well placed to expand their NDCs to include BCEs. The following steps can be taken when considering how to account for BCEs in existing and upcoming NDCs



Determine if mangrove forests are accounted for in existing NDCs and as part of your country's REDD+ program using the following questions as a guide:

- Review your National Forest Definition are mangroves referenced or included?
- Is the project area included in the RAMSAR list of wetlands of international importance?
- Does the Forest Reference Layer incorporate all relevant mangrove carbon pools, including soil carbon? Are there separate measures specifically for soil carbon stocks that can be included within the NDC?
  - Note: Often REDD+ reference levels will exclude soil carbon pools
- Are there MRV/FREL or alternative GHG accounting methodologies used within the REDD+ program for my country that can be applied?



2. Identify the following:

- a. which governmental department(s) oversee forests and coastal ecosystems and GHG reporting to ensure streamlined action for including this data within new/existing NDCs
- **b.** relevant legal/policy governance involving BCE(s)
- c. clear division of roles and responsibilities among BCE entities and stakeholders
- d. BCE agencies are adequately resource



B. Determine how to effectively keep data on GHG emissions/ removals relevant – source new data as it becomes available, identify ways to improve existing data sources so they account for all carbon pools, especially soil organic carbon.



### CHECKLIST 7

### **NDC Implementation**

Implementing your NDC targets for BCE usually requires concise and multi-layered planning and the creation of an inducive regulatory and institutional (governance) framework. Please take into consideration the time-frame required to strengthen the legal and governance systems. Relevant steps include:



1. Review the integration of BCE in your REDD+ framework (if applicable).

- a. Often, mangroves are included in REDD+ approaches, and it is important to clarify to what extent BCE-specific targets on conservation and restoration are compatible with REDD+ targets and whether reference level calculations include BCE (or mangroves) in full.
- b. Often, soil carbon accounting is excluded from REDD+ forest reference levels. Make sure that are included and specify dates by when this will happen.



Develop a bespoke Blue Carbon strategy that includes a list of actions as well as financing opportunities (see below Checklist 9).

- a. The strategy should come with a list of (priority) interventions and project-sites.
- b. It should clarify administrative responsibilities and mandates, including for engaging in RBCF and/or blue carbon project finance, if applicable.
- c. It should set out predictable investment parameters for the private sector, which include clarity on land-based carbon rights and the authority to transfer emission reductions/removals and the underlying carbon rights, as well as clarity on land tenure, community involvement, and benefit sharing.
- d. It should address structural drivers of degradation and conflicting land use. And
- e. It should present a template for how to use the Blue Carbon investment framework (see Checklist 9 below).



3. BCE needs to be valuated for the ecosystem services they provide. That includes GHG mitigation services but covers adaptation-focused services as well as other services to coastal communities and others. CWON 2.0 has made a strong start with valuating mangroves. It should be extended to cover other BCE in the future.

spatial planning (MSP) and integrated coastal zone management (ICZM).

It is recommended to use the Marine Spatial Planning Toolkit: <a href="https://www.worldbank.org/en/programs/problue/publication/marine-spatial-planning-for-a-resilient-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-blue-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-and-inclusive-an

economy-toolkit



- b. Check to what extent BCE conservation, restoration and management are part of these procedures and enshrined as decisive planning and management objectives.
- c. Check what role valuation plays for MSP/ICZM.
- d. Check what level of regulatory compliance MSP/ICZM gives rise to and how compliance for BCE conservation and restoration targets can be improved.



The recognition of land tenure and community tenure is essential for the success of many planned BC interventions.

- a. Check how land tenure over BCE is defined in your country.
- **b.** Check what role fishing and other coastal communities have for BCE use and management.
- c. Check community governance and stewardship options.



of bottlenecks and concerns and keep the list updated through implementation.

- a. Lack of planning capacity and funding are often systemic and should be tackled as a priority (see this Checklist 7 and Checklist 8).
- b. Uncertain and limited legal protection including with respect to special protection regimes (marine protected areas or "MPAs" and community governance represent another frequent bottleneck of structural nature.
- c. So do gaps in knowledge (of BCE maps, drivers and magnitude of degradation, economic value), and so do limitations in comprehensive monitoring.



### CHECKLIST 8

### **Developing and Incorporating Governance Models**

Successful governance models will commonly incorporate the following:

#### **1** T

### TECHNICAL GOVERNANCE -

It is important to employ a team to handle all necessary data, such as carbon stock values or spatial data on ecosystem extent. This team is integral to ensuring Section 1 of the decision tree is fully built out. This unit will handle: FRL/ FRLE calculations, MRV, and other activities.

### 2 POLICY GOVERNANCE-

This team will guide implementation, focus on creating a functional decision-making process and will help ensure inter-magisterial cooperation and participation. Effective communication with all magisterial groups managing or working nearby coastal wetlands will be critical to ensuring permanence of carbon stocks in restoration or conservation projects, as one example.

## 3 FINANCIAL GOVERNANCE-

Focus on distributing funding in line with appropriate benefits sharing arrangements.

### 4 PRIVATE SECTOR ENGAGEMENT-

It is paramount to set out investment parameters and the governance framework for engaging the private sector (establishing the "rules and the structures of the game") defining involvement in planning and decision making and address key aspects, notably carbon rights, the authority to, and the terms for (including in terms of taxes), transfer(ing) emission reductions/removals and the underlying carbon rights, and that define models for the involvement of communities and benefit sharing.

### 5 COMMUNITY GOVERNANCE -

Community involvement, input and engagement are crucial, and identifying a community role within any project is important to ensure the permanence of carbon stocks, especially when restoration or conservation is involved.



### CHECKLIST 9

### Developing a Carbon Finance and Investment Framework

Any such framework should start with an assessment of how existing funding flows (including government, and private funded ones) benefit or disadvantage BCE. It is recommended to apply the Blue Public Expenditure Review: <a href="https://documents1.worldbank.org/curated/">https://documents1.worldbank.org/curated/</a> en/789491639977748921/pdf/Blue-Public-Expenditure-Review-Guidance-Note.pdf



1. Check for positive flows:

- a. MPA design and management
- **b.** Law enforcement
- c. Capacity-building
- d. Sustainable supply chain investment, and more



Check for negative flows:
recommended publication as guidance <a href="https://openknowledge.">https://openknowledge.</a>
worldbank.org/entities/
publication/4217c71d-6cbc46b6-942c-3e4651900d29

- a. Subsidies into industrial fishing
- b. Subsidies for non-sustainable aquaculture
- c. Agricultural subsidies that incentivize the extension of farmland
- d. Agricultural subsidies that incentivize the overuse of fertilizers
- e. Other.

3. Then, survey financing approaches and sources/instruments
Recommended literature
as guidance: <a href="https://thedocs.worldbank.org/en/">https://thedocs.worldbank.org/en/</a>

thedocs.worldbank.org/en/ doc/916781601304630850-

0120022020/original

FinanceforNature28Se

<u>pwebversion.pdf</u>

https://documents1.

worldbank.org/curated/ en/099060123121542587/pdf/

- a. Existing, planed, or potential investments in restoration, conservation, or sustainable management of BCEs.
  - **Note:** Promote private sector initiatives and create institutional structures for private sector and community involvement. Use of mechanisms such as Article 6
- **b.** Jurisdictional REDD+/RBCF
- c. Concessional instruments (including blended finance models)
- d. Non-concessional models (including payment for ecosystem services and innovative business)



4. Set out stable investment parameters for the private sector

- a. Carbon finance and the use of markets
- **b.** Taxes, fees, charges
- c. Definition and allocation of carbon rights
- d. Government mandate for carbon trading (especially for government owned coastal lands)
- e. Models for community involvement and benefit sharing for Benefit sharing arrangements please visit <a href="https://www.worldbank.org/en/topic/climatechange/brief/enable-enhancing-access-to-benefits-while-lowering-emission">https://www.worldbank.org/en/topic/climatechange/brief/enable-enhancing-access-to-benefits-while-lowering-emission</a>



implementation and scale-up will be linked to the deployment of actual financing tools: government-driven and private sector-focused.

- a. Are there plans to use blended finance, i.e., funding that combines public and private funds?
- b. Can private finance be mobilized for blue carbon project development? (consider private sector engagement for operational costs, restoration, management, etc) Recommended IFC report: Deep Blue: Opportunities for blue carbon finance in coastal ecosystems <a href="https://climatefocus.com/wp-content/uploads/2023/05/">https://climatefocus.com/wp-content/uploads/2023/05/</a>
  DeepBlue-OpportunitiesforBlueCarbonFinanceinCoastalEcosystems-Optimized.pdf
- b. Are structures and templates available to guide the design and implementation of blended finance opportunities?
- i. Is a regulatory framework in place for public-private partnerships?
- ii. Can you use MDB-funded programs to promote blended finance opportunities for BCE?
- c. Are independent debt finance solutions being drawn up, or can they been drawn up? Blue bonds and debt-for-nature swap agreements with a focus on BCE would be prominent examples.



Does your country plan to use carbon markets for BCE interventions?

Consider prioritizing BCE for Article 6 Paris Agreement programs Consider prioritizing **BCE for Article 6 Paris** Agreement programs and transactions. and transactions.

- Can the current legal and regulatory framework accommodate Article 6 transactions, and is this desirable?
- What needs to be put in place to create enabling environment for Article 6 transactions?
- iii. Should rules be adopted regarding approval of programs, monitoring, reporting and verification (MRV) of blue carbon ERs, authorization of ITMOs, registries, corresponding adjustments for Article 6 activities?
- Is there a comprehensive legal and regulatory framework that specifies who owns blue carbon ERs, and how related property rights and interests can be transferred domestically and/or internationally?
- Does the relevant agency have the capacity to access blue carbon ER markets, engage with potential buyers or brokers, and negotiate agreements for their sale?
- Consider incentivizing the development of voluntary carbon projects through

- Earmarking government-owned land for carbon market integration
- Creating administrative powers and responsibilities to engage in voluntary carbon markets
- iii. Consider the adoption of a BCE project recognition procedure that provides developers with a guarantee to perform corresponding adjustments.

## BLUE ECONOMY



**MORE INFORMATION** 

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