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GHANA

A **BLUE CARBON READINESS** ASSESSMENT

2024

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ABBREVIATIONS LIST

ACECoR	Africa Centre of Excellence in Coastal Resilience
AFOLU	Agriculture, Forestry, and Other Land-Use Sector
AGB	Aboveground Biomass
BCE	Blue Carbon Ecosystem
BCRF	Blue Carbon Readiness Framework (World Bank)
BGB	Belowground Biomass
BUR	Biennial Update Report
CBD	Convention on Biological Diversity
CBNRM	Community-Based Natural Resources Management
CCDR	World Bank's Country Climate and Development Report
CEMLAWS	Centre for Maritime Law and Security Africa
CMO	Ghana Carbon Market Office
CPAs	Community-Protected Areas
CRMC	Community Resource Management Committees
CREMA	Community Resource Management Area
DF	Dedicated Forests
EBSA	Ecologically or Biologically Significant Marine Area
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ER	Emission Reduction
ESG	Environment, Social, and Governance
FC	Forestry Commission
FCPF	Forest Carbon Partnership Facility
FLFP	Female Labor Force Participation
FREL	Forest Reference Emission Level
FPP	Forest Preservation Program
FIP	Ghana Forest Investment Program
G-CARP	Climate Ambitious Reporting Programme
GCFRP	Ghana Cocoa Forest REDD+ Programme
GIZ	German Agency for International Cooperation
GHG	Greenhouse Gases
GLB	Ghana Leads Blue
GMA	Ghana Maritime Authority
GMW	Global Mangrove Watch
GFPS	Ghana Forest Plantation Strategy
ICAT	Initiative for Climate Action Transparency
IPCC	Intergovernmental Panel on Climate Change
IMF	International Monetary Fund
ITMO	International Trading of Mitigation Outcome
IUCN	International Union for Conservation of Nature
KNUST	Kwame Nkrumah University of Science and Technology
LULC	National Land Use/Land Cover
LULUCF	Land Use, Land-Use Change and Forestry
LUSPA	Land Use and Spatial Planning Authority
MFAD or MOFAD	Ministry of Fisheries and Aquaculture Development
MFMP	Ghana's Fisheries Management Plan
MNLR	Ministry of Lands and Natural Resources
MESTI	Ministry of Environment, Science, Technology, and Innovation
MRV	Monitoring, Reporting and Verification
MOF	Ministry of Finance and Economic Planning
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NCCA	National Climate Change Adaptation Strategy
NCCP	National Climate Change Policy
NREG-TA	Ghana Natural Resources and Environmental Governance Technical Assistance Project
NDC	Nationally Determined Contribution
NDPC	National Development Planning Commission
NFMS	National Forest Monitoring Systems
NIMS	National Integrated Maritime Strategy
OECM	Other Effective Area-Based Conservation Measure
PES	Payment for Ecosystem Services
PFM	Participatory Forest Management
PPMED	Policy Planning and Monitoring and Evaluation Directorate
PPP	Public-Private Partnership
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RMSC	Resource Management Support Centre
SDGs	Sustainable Development Goals
SBI	Standard Blue Investments
SOC	Soil Organic Carbon
tCO_2e	tons of Carbon Dioxide equivalent
UEW	Winneba-Ghana
UNEP	United Nations Environment Programme
UNEP-WCMC	UN Environment Programme World Conservation Monitoring Centre
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VCM	Voluntary Carbon Markets
VCMCC	Program for Voluntary Community Mangrove Carbon Credits
WD	Wildlife Division
WACA	West Africa Coastal Areas Management Program
WS13	2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (Wetlands Supplement)

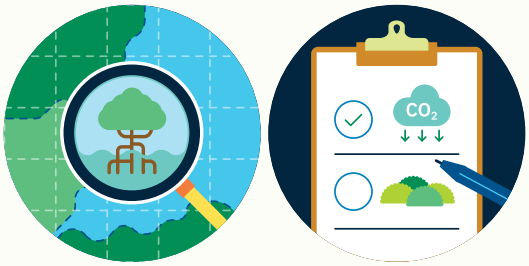
I. EXECUTIVE SUMMARY

The world has a pressing need to accelerate climate mitigation, enhance climate resilience, and transition to a more productive and resilient "Blue Economy."

Blue Carbon ecosystems, as powerful carbon sinks, can play a vital role in supporting economies, jobs, and livelihoods. For these reasons, the World Bank Group prepared the flagship report "Unlocking Blue Carbon Development: Investment Readiness Framework for Governments," which aims to support governments on their pathway towards Blue Carbon readiness and to scale up public and private sector investments in coastal Blue Carbon.

Ghana is a country with a high potential for accelerating Blue Carbon action and support, including through carbon finance. It already has experience in carbon finance in general – notably under Article 6 of the Paris Agreement – as well as in results-based finance – notably REDD+. This puts Ghana in the list of countries where the global Blue Carbon Readiness Framework is not a concept but a tested reality.

This report, "Ghana: A Blue Carbon Readiness Assessment," applies the global Blue Carbon Readiness Framework to help Ghana further tap its Blue Carbon potential by addressing technical, institutional, regulatory, and financial challenges in parallel. The report builds on three intervention pillars to promote and scale Blue Carbon action. These are



PILLAR 1

DATA AND ANALYTICS

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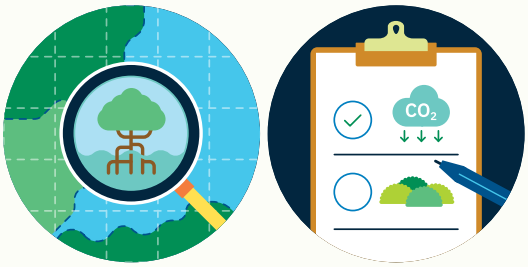
FINANCE

The assessment shows that while considerable gaps persist in Ghana across the pillars, each also has strong elements. In sum, there is a clear pathway for reaching Blue Carbon readiness. Furthermore, Ghana can and should take on these challenges simultaneously — for instance, while data capacity is being improved, the Government can address questions of policy, institutions, and finances.



PILLAR 1:

DATA AND ANALYTICS

Ghana's status concerning data quality and progress for Pillar 1 is considered moderate (lower end).

There is basic understanding of the national extent of all three BCEs (mangrove, seagrass, and tidal wetlands), provided from global datasets which are supplemented with in-country research carried out by the government and research institutions for mangroves, and by regional research for seagrass beds. Data on BCE extent and area are partially robust for mangrove ecosystems, but for seagrass beds are in the early stages, only available via regional (West African) studies. While Ghana has substantial salt marsh ecosystems, no national data on extent and area are available about them.

At the same time, Ghana has become a regional hub for Blue Carbon research. It notably boasts two flagship academic institutions – the University of Ghana and the University of Cape Coast – that dedicate sizable resources to marine science and the Blue Economy.

Ghana's Forestry Commission has overseen development of the National Forest Monitoring System (NFMS), as well as the Forest Preservation Program (FPP). As the NFMS continues to expand, it has potential to provide scalable data to monitor mangroves as a separate class of land cover. Ghana's REDD+ program, meanwhile, has scored several notable successes on data capacity. These include development of a REDD+ strategy, a sub-national Forest Reference Emission Levels (FREL) that is currently slated to transition to a national FREL, and a national Forest Reference Level (FRL).

Solid datasets exist for monitoring habitat changes, including human-induced land conversions and drivers of degradation. Ghana's Blue Carbon ecosystems, specifically mangroves, suffer high rates of degradation. The main drivers are unsustainable logging, predominantly for charcoal.

Though Government agencies and non-state actors have not created a comprehensive accounting system for Blue Carbon-generated ecosystem services, informative site-specific valuation exercises have been carried out. These have helped inform stakeholders, including local communities, on the economics of conservation versus the economics of degradation.

Concerning greenhouse gas (GHG) data management, including measuring, reporting and verification (MRV), gaps persist. They concern the lack of procedure and capacity to use the 2013 Wetlands Supplement for inventory reporting and to account for organic soil carbon; inability to disaggregate the information on land use area and change of use for mangrove ecosystems; and the absence of solid data on seagrass beds and salt marshes. Across the board, MRV capabilities need improvement. This includes enhancing coordination between key agencies such as the Forestry Commission (FC), the Environmental Protection Agency (EPA), and, importantly, the Ministry of Fisheries and Aquaculture Development (MOFAD).

PILLAR 2:

POLICY AND INSTITUTIONS

Ghana is moderately advanced on Blue Carbon policy development and governance (Pillar 2).

The country's regulatory framework includes protective measures for forests, including mangrove forests, though there are few regulatory data points speaking to the protection of seagrass beds and salt marshes.

Ghana's Nationally Determined Contribution (NDC) sets out quantifiable LULUCF targets, which include, at least in theory, emissions and removals from mangroves. The country's commitment to using carbon markets for interventions across sectors is significant (see below, Pillar 3), though the land sector in general and the Blue Carbon sector more specifically come with complex governance and tenure systems. These require regulatory attention. Recognition of unambiguous rights to generate a carbon asset (carbon rights) as well as a participatory approach to benefit sharing are critical.

Ghana does not have a formal marine spatial policy or plan (MSP), relying instead on a range of policies and regulations to promote marine planning and the Blue Economy. However, in 2022, the Government unveiled the country's first National Integrated Maritime Strategy (2022/NIMS), which puts the protection of Ghana's marine and coastal environment at its center. With World Bank support, a Sustainable Oceans Plan (SOP) is also in preparation as part of Ghana's engagement in the High Level Panel for a Sustainable Ocean Economy (the Ocean Panel). Concerning aquaculture, the government is about to release an Aquaculture Development Plan (2024-2027), which opens the door to inclusion of sustainable development in a key sector that is causing BCE deforestation and degradation.

At the institutional level, Ghana's Blue Carbon habitats fall under the remit of several key ministries. The Ministry of Lands and Natural Resources (MLNR) is the lead agency concerning REDD+ activities, and it manages forest activities, through its Forestry Commission, on the ground. The Ministry of Environment, Science, Technology, and Innovation (MESTI) and the Environment Protection Agency (EPA) have shown a firm grip in NDC implementation,

monitoring, and the use of carbon markets. The Ministry of Fisheries and Aquaculture Development (MOFAD), meanwhile, combines coastal zone management with the emerging policy design of the Blue Economy. On the ground, communities hold distinct governance powers through the Community Resource Management Area (CREMA) mechanism, a Ghana-specific system of community-based management of natural resources.

Ghana has several important opportunities for improvement of policy and institutions. The recent NDC lacks definitive commitments to use the 2013 Wetlands Supplement, and therefore renders the NDC mitigation targets and accounting for BCEs opaque. Also, mangrove forests are inconsistently considered due to the exclusion of soil carbon from the NDC. Similarly, seagrass beds and salt marshes are entirely overlooked. Although Ghana has some action-driven targets towards BCE protection, they lack specific enforcing commands (e.g., to create "X" number of MPAs by 2030).

For NDC implementation, the main government plan – the Ghana National Climate Change Master Plan 2015–2020 – has expired and needs renewal. Concrete legal and policy instruments to steer better protection and enhancement of Blue Carbon habitats are scarce and, where they exist, are burdened by lackluster coordination and capacity. While Ghana has created a number of marine protected areas, including six Ramsar sites, management capacities (planning, regulatory implementation, staffing, finance, and enforcement) are not robust and the relevant regulatory framework lacks sanctions muscle. Mangrove conservation is also weakened by Ghana's concept of tree tenure, which distinguishes naturally growing trees (deemed property of the Government) from planted/restored trees (deemed largely the property of the person or entity responsible for the planting/restoration). The government sets incentives for planting new trees but proves unable to support communities that have invested their own time and resources in sustainable forest management.

The need for gender equity in land management has been recognized in various policies and statutes, but in practice, women continue to face discrimination in land access, management, and benefit sharing. Gender-smart policies, including those that favor female hiring and channel funding to women organizations, are still widely missing.

PILLAR 3:

FINANCE

Ghana has been remarkably successful at testing and implementing several results-based finance and carbon finance-based tools and mechanisms.

In 2015, Ghana unveiled its 20-year National REDD+ Strategy, aimed at tackling drivers of deforestation and degradation, including agricultural expansion, wood harvesting, population and development pressures, and mining. A key part of its REDD+ approach is results-based finance. To date, the country has accessed these funds through two government-driven terrestrial REDD+ programs. A third program, specifically targeting mangrove forests, has been announced but not yet designed or implemented.

Ghana is also pursuing Blue Carbon finance opportunities through a combination of public and private funding instruments, including voluntary carbon markets. The West Africa Coastal Areas Management Program (WACA), a World Bank-financed regional integration program, is providing co-financing for Ghana's Mangrove Blue Pilot Program, including through a grant from the PROBLUE Trust Fund, government sources, upfront payments from the private sector, and a carbon crediting scheme.

Article 6 of the Paris Agreement inaugurated a new era in international emissions trading. This provision enables countries to work together to achieve their Nationally Determined Contributions (NDCs) by engaging in the international trading of mitigation outcomes (ITMOs). Currently, the Framework does not explicitly consider Blue Carbon as an eligible mitigation activity for issuing ITMOs. But Blue Carbon may be included in the Framework's whitelist in the future, as a conditional measure with automatic recognition of additionality.

Ghana's Blue Carbon finance achievements are laudable, but remain project-driven and follow an almost ad-hoc script. Risks remain for long-term attention, planning and investment. A comprehensive blue finance strategy is missing, as is institutional financial facilitation.

While proposals are on the table for establishing a publicly constituted National Wetland Trust Fund to channel finance into wetland development, so far no body has been created.

RECOMMENDATIONS FOR ENHANCED BLUE CARBON READINESS

Pillar 1 – Data & Inventories: Ghana would benefit deeply by refining data management and establishing an accessible, easily updatable data repository for Blue Carbon Ecosystems (BCEs), available across government agencies and organized in an integrative manner. In the short or mid-term, implementing the 2013 Wetlands Supplement, along with robust habitat valuation and creation of a restoration monitoring tool, are essential steps. In the long term, the methods of the National Forest Monitoring System (NFMS) need to recognize mangroves as a distinct forest type/land cover class, separate from terrestrial forests. In addition, comprehensive research into seagrass beds and salt marsh ecosystems, coupled with reinforcement of regional transitional research and data management, will give Ghana a more resilient and prepared Blue Carbon strategy.

Pillar 2 – Policy: Ghana should focus on formulating Blue Carbon-specific commitments in the NDC of 2025 and beyond, as well as on designing a bespoke Blue Carbon implementation plan as part of a new Ghana National Climate Change Master Plan (short- and mid-term measures). Concerning legal implementation, the country would gain by scaling marine protected areas and other area-based conservation measures with a dedicated focus on BCE and by strengthening actual protection both in protected areas and outside (mid- to long-term measures). This would involve firm law guarantees (notably with respect to sanctions) as well as management and funding guarantees. Further long-term gains would come from reforming tree tenure, defining carbon rights to incentivize stewardship activities in BCE, and including marginalized groups (women, youth, and traditional communities) in decision-making through capacity building and inclusive policies.

Pillar 3 – Finance: Together with a Blue Carbon implementation plan (see above), Ghana should design a comprehensive financing strategy and provide for institutional facilitation, either via a financial window for Blue Carbon within the proposed Ghana Green Fund or through a wetland-dedicated trust fund.[1] There is a clear opportunity for crafting diverse financing tools in line with Ghana's needs and capabilities and for institutionalizing those that work in practice. If the Mangrove Blue Pilot Program proves successful, its careful approach of combining horizontal planning and public-private governance with blended financing should be replicated in the future.

1 UNDP 2021.

II. THE BLUE CARBON CONTEXT

Blue Carbon encompasses the carbon stored in coastal and marine ecosystems – including mangroves, salt marshes, seagrass meadows, macroalgae (such as kelp), and benthic sediments – that provide vital ecosystem services to the benefit of humanity.

These ecosystems help in climate change mitigation by burying three to five times more carbon per unit of area than tropical forests, while also offering adaptation benefits such as flood and storm protection, freshwater filtration, soil fertilization, and food.

Despite their economic, environmental, and social importance, Blue Carbon ecosystems (BCE) are under severe pressure from a range of degradation drivers, including agriculture, aquaculture, infrastructure, and urban development. Rapid, substantial action is needed to scale targeted protection and restoration measures and provide the necessary funding.

While the benefits of sustained Blue Carbon action – environmental, social, and economic – outweigh the costs by far, achieving them will require considerable resources in terms of data,

science, finance, and tailored and institutional interventions. Governments – in their role as regulators, administrators, law enforcers, landowners, and social and economic mediators – are center stage in this process.

Amidst the pressing need to tackle climate mitigation, enhance climate resilience, and transition to a more productive and resilient Blue Economy, the World Bank Group produced the flagship report "Coastal Blue Carbon Opportunities for Blue Economy Development." It aims to support government readiness to catalyze and scale up public and private sector investments in coastal Blue Carbon. The current report, "Ghana: Blue Carbon Readiness Assessment," applies the global Blue Carbon Readiness Framework to the Ghanaian context.

Ghana is a country with high potential for coastal Blue Carbon development, and the Blue Carbon Readiness Framework provides a harmonized path for it to tap this potential by simultaneously taking on technical, institutional, regulatory, and financial challenges. The Framework builds on three intervention pillars to promote and scale Blue Carbon action. These are data and analytics (Pillar 1), policy and institutions (Pillar 2), and finance (Pillar 3). The analysis builds in part on the Ghana Country Climate and Development Report, released by the World Bank in 2022.

Appendix 1 of this report contains a decision tree and checklist to help countries navigate the steps and action items on process and content. The further they move along, the greater the upside they enjoy in terms of robust and refined data, predictable and effective policies, and broad and efficient funding streams capable of crowding in the various sectors of private finance.

The current report summarizes the findings from a piloting exercise. The exercise included a mission to the country in early November 2023 led by the World Bank team as part of the West Africa Coastal Areas Management Program (WACA).

III. READINESS STRUCTURE

The readiness findings are structured under the three pillars: Data and analytics (Pillar 1, divided into 1-A and 1-B), policy and institutions (Pillar 2), and finance (Pillar 3), and are organized along the decision tree.

Overall, the decision tree proved helpful in navigating the in-country discussions, including a workshop conducted at Bank premises, and the assessment itself (see Figures 1, 4, 5, and 6).

The summary tables at the start of each of the following subsections include a grading exercise that is to be understood more as shorthand for overall findings on the specific section and less as a firm and final ranking on the readiness scale. More importantly, none of the grades are meant to be read as supporting any binary judgment on readiness (ready versus not ready). We the authors understand readiness as both a growth curve and a moving target. With this in mind, we have used the following guidance when assessing the grades (the amplitudes in each case indicating a spectrum): "low" means that relevant data, policy, and finance benchmarks and elements are not yet met or not yet in place; "moderate" means that several core benchmarks and readiness elements are met or that there is a clear pathway for meeting them; and "high" means that across data, policy, and finance points, relevant benchmarks and elements are met or in place. We also added the overall readiness status of each of the pillars.

3.1

DATA AND ANALYTICS: BLUE CARBON ECOSYSTEMS (PILLAR 1A)

FIGURE 1. SUMMARY TABLE OF PILLAR 1A BASED ON DECISION TREE FRAMEWORK.

▼ DECISION TREE PATHWAY	▼ STATUS	▼ STATUS EXPLANATION
 Does your country currently have any of the following Blue Carbon ecosystems (BCEs)?	H 	Yes – mangrove, seagrass, and salt marsh. Mangroves serve as primary BCE due to data availability.
 Do you have data on the following for BCEs within your country: extent/ area, human activity data?	M 	Strong understanding of mangrove extent in specific coastal areas. Robust data on drivers of mangrove loss.
		Comprehensive national mapping of salt marsh and seagrass ecosystems has not been conducted. Activity data are only available for mangroves.

PILLAR 1A OVERALL STATUS: MODERATE.

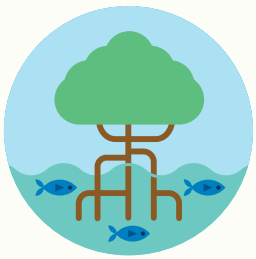
QUALITY L M H — LOW HIGH

PROGRESS → → — LIMITED ADVANCED

ACHIEVEMENTS 

MISSING 

3.1.1 GHANA'S BLUE CARBON ECOSYSTEMS



MANGROVES

Ghana hosts some of West Africa's most extensive mangrove ecosystems, covering an estimated 18,000 ha as of 2020.[2] Mangrove extent data provided by the Global Mangrove Watch (GMW) platform serve as the primary dataset for assessing Ghana's mangrove ecosystems. The platform provides comprehensive data on the spatial extent,

2 GMW 2023.

net change over time, and carbon stock estimates for biomass and soil. An interactive land use and land cover map was developed for Ghana in 2019, which provides disaggregated data for mangroves as their own land cover type (distinct from terrestrial forests). In addition, ongoing and completed projects with a focus on mangrove restoration, and conservation within the country enhance existing estimations of mangrove extent for specific areas.

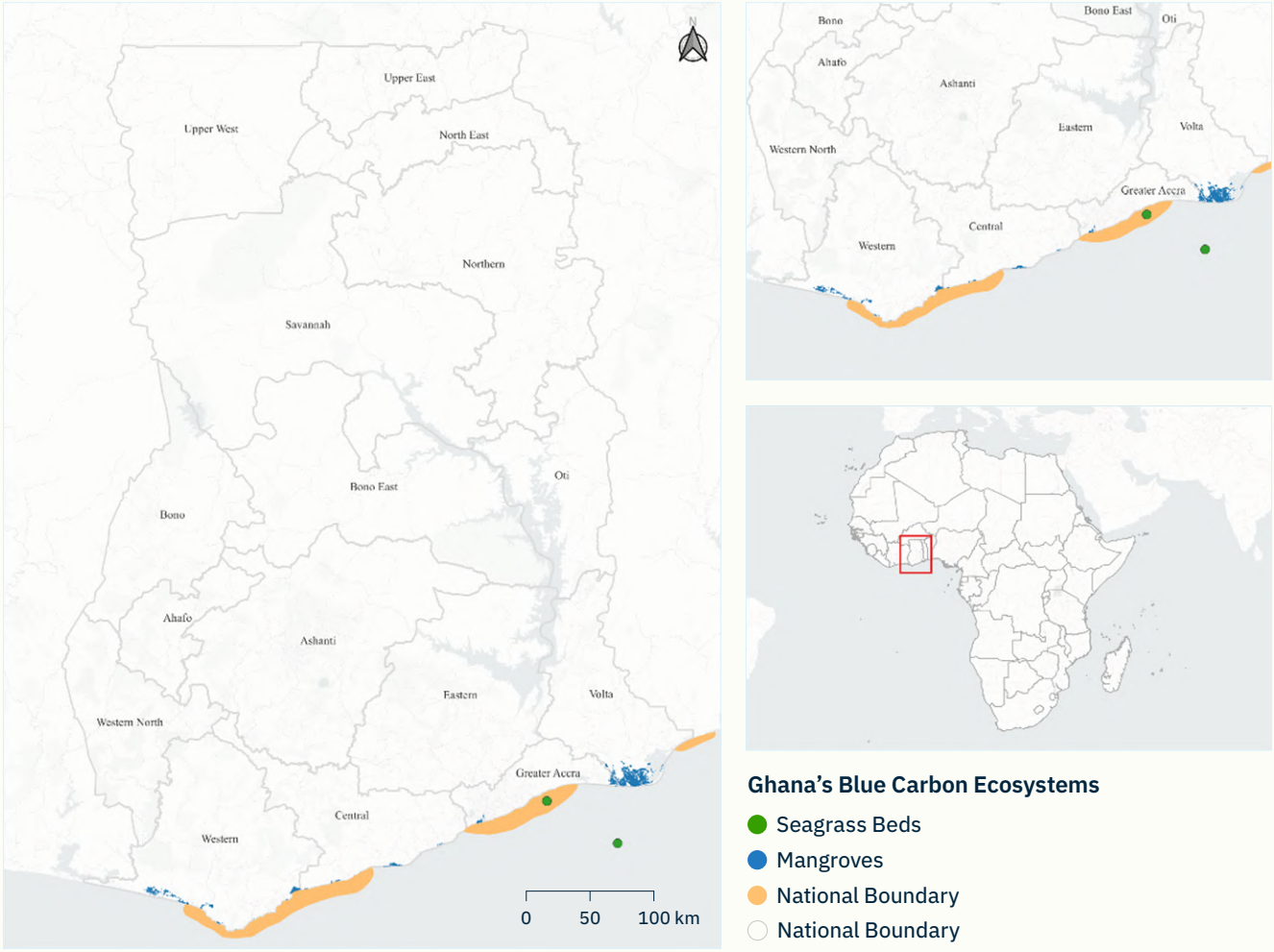
The Keta Lagoon Ramsar site, with recognized ecological significance, has been a focal point for restoration and conservation initiatives—and research. It is an important example of how Ghana's lagoons (brackish ecosystems situated on the coastline) support thriving mangrove ecosystems. In recent years, these have drawn attention and resources for conservation. Overall, mangroves have received a greater focus for research and data collection than other forms of BCEs.

Activity data surrounding deforestation are available for Ghana's mangroves in the latest Forest (emission) Reference Level FREL/FRL but they are not disaggregated from activity data for terrestrial forests, and soil carbon is not accounted for. Despite doubling as a source of GHG emissions/removals, mangroves have not been considered independently in the country's forest inventory or Ghana's GHG inventory, where they are traced as part of the land use, land-use change, and forestry (LULUCF) category. Soil organic carbon remains excluded as a carbon pool from either inventory.

Several studies have assessed mangrove biomass carbon stocks in certain regions of Ghana's coast. One study measured mangrove biomass (AGB and BGB) of adult and juvenile mangroves along the Amanzule River, which reaches the sea at Ghana's southwestern coast. In 2015, the total area occupied by mangroves in this region was roughly 374 ha. Mangrove biomass carbon stock was estimated at 4,139 tons of carbon per hectare (tC/ha-1), with a total biomass carbon stock estimate for 2015 of roughly 1,550,295 tC, or 5,689,581 tons of carbon dioxide equivalent (tCO_2e).[3] Nationally, the total biomass carbon stock for Ghana's mangroves was estimated to be roughly 417.6 tC/ha, representing a total biomass carbon stock of 3.2 million tCO_2 for the estimated 7,600 ha of mangroves.[4] Data on soil carbon stocks are available but limited to specific locations and plots. Soil organic carbon stock was specifically estimated for mangroves in two different ecosystems: the Amanzule Forest in the West and the Kakum in the central part of Ghana.[5]

3 Yevugah et al. 2017.
4 Bryan et al. 2020.
5 Adotey et al. 2022.

FIGURE 2. MAPS OF GHANA'S BLUE CARBON ECOSYSTEMS.



Source: *World Bank 2023.*

SEAGRASS BEDS

At the national level, no comprehensive mapping to delineate seagrass bed extent or area has been carried out. While seagrass presence has been reported regionally within Ghana, it is worth noting that these reports were from ecological studies conducted more than twenty years ago, and seagrass area/extent was not measured.[6] A feasibility assessment for Blue Carbon conservation in West Africa estimates seagrass extent within Ghana to be 271,858 ha,[7] though the report is not clear on whether this estimate is for the historic or current extent.

6 Sidi Cheikh et al. 2023.
7 Bryan et al. 2020.

The only source currently available for assessing national seagrass extent is a map from UNEP-WCMC on the global distribution of seagrass. This map provides some insights into the extent, and change in extent, over time of Ghana's seagrass beds. Increased research on current and historic national seagrass areas and extent would enable firm estimates of carbon stocks and development of activity data, filling key gaps in knowledge.

SALT MARSHES

At the national level, no comprehensive mapping to delineate salt marsh extent or area has been carried out. Salt marsh ecosystems have not received priority for research nationally, or regionally in West Africa. At the global level, the UNEP-WCMC Global Distribution of Salt Marshes provides some insights on their extent in Ghana.[8]

3.1.2 DATA CAPACITY

Data capacity for mangroves stands out as relatively robust compared to other BCEs in Ghana. Ghana classifies mangroves as forest land. While not individually addressed as their own type of land cover, mangroves are included in Ghana's REDD+ strategy and the latest version of its FRL and regional FREL, aggregated with terrestrial forests. Ghana's REDD+ MRV System plays a crucial role in monitoring greenhouse gas emissions from the country's terrestrial forests. Operated by the National REDD+ Secretariat within the Forestry Commission, the Ghana REDD+ Datahub serves as an online database providing easily accessible and transparent data on greenhouse gas emissions from Ghana's forests. Development of this new database is in line with Ghana's transition to the implementation phase of its National REDD+ Program. Records stored in the Datahub include data used to estimate GHG emissions, information on emissions reduction and forest protection programs, and carbon credits generated as a result of these efforts.

Expansion of the MRV System led to development of a National Forest Monitoring System (NFMS) in 2018, overseen by the Forestry Commission.[9] The NFMS[10] provides trends in forest and land cover for the years 2018-2022 and will continue to be updated annually as data become available. This scalable dataset is an asset for Ghana from a data capacity and MRV standpoint and will enable an improved understanding of mangrove extent and activity should disaggregation occur.

8 Mcowen et al. 2017.
9 NFMS. bigdataghana.com
10 National Forest Monitoring System

In 2011 the Resource Management Support Centre (RMSC) of the Forestry Commission produced a satellite-based biomass map but has not provided any updates since. In 2013 as part of the Forest Preservation Program (FPP), the RMSC led a team that carried out a comprehensive assessment of biomass inventory at the national level, based on IPCC land categories which consider mangroves as part of broader classes such as forests. These data are currently used in the latest versions of Ghana's FREL/FRL as well as the GHG inventory.

The RMSC, with support from the Kwame Nkrumah University of Science and Technology (KNUST) and international partners, including Ecometrica and the University of Leicester as part of the Forests 2020 project, generated the Ghana National Land Use/Land Cover (LULC) Interactive Map containing LULUCF data for forest reserve areas. Land cover maps exist only for 1990, 2000, 2012, and 2015, which indicates the limitations of using the maps for annual insight into land use and land cover changes.[11] The layers included in the LULC map do, however, disaggregate forests, making mangroves stand alone as a land cover class. The first iteration of this map was released in 2019. Improvements are in the works to address inconsistencies in the dissemination of land cover information.

Currently, no national data on soil carbon stock (SOC) are available for any of Ghana's BCEs. It is unclear whether the Forest Protection Program estimated forest SOC stocks, in which case SOC estimates for mangroves could be included in estimates for terrestrial forests. Leveraging a regional assessment of West African seagrass extent[12] with Tier 1 values from the 2013 Wetlands supplement could enable estimates of seagrass biomass and carbon stock. Over time, measurements taken as part of VCM markets can improve knowledge (see Section 3.3 for further details on carbon markets).

Limited data on Ghana's salt marshes means biomass carbon and SOC estimates would require a major upgrade in the capacity of regional or national research. At present, no activity data are available for salt marsh or seagrass beds within Ghana. Calculation of such would require an increased understanding of national salt marsh extent, and the establishment of baseline extents for both ecosystems before carbon stock estimates could take place. it is unclear whether these ecosystems are included in Ghana's roadmap towards increased research of BCEs.

While the government has been outspoken about improving MRV systems for forest habitats, including mangroves, and while it has assigned management capacity to the FC, non-forest coastal ecosystems (including seagrasses and salt marshes) lack this kind of technical and administrative attention. MOFAD has not participated in the existing MRV system[13,14] (see section 3.10.1 on MRV responsibilities). The Climate Ambitious Reporting Programme (G-CARP), launched by the

11 Ghana National Land Use/Land Cover Map https://ghana-national-landuse.knust.ourecosystem.com/interface/
12 Bryan et al. 2020.
13 CAT 2013.
14 ICAT 2017.

government in 2013 to create a domestic MRV system across sectors, may eventually address the non-forest coastal wetland gap, but progress has been limited.[15]

3.1.3 LOSS DRIVERS

Blue carbon ecosystems in Ghana, mangroves in particular, suffer high rates of degradation, with the main drivers being unsustainable logging, predominantly for fuels (firewood, charcoal, and wood for fish smoking), agriculture, urban development, salt production, aquaculture, land tenure, and mining.[16] Mangroves are harvested for direct use, which includes timber and fuelwood, and indirect use for fisheries, hunting of animals, and tourism.[17] Mangroves as fuelwood are used in-country, while also exploited on a commercial basis for export to countries such as Cameroon and Benin. Communities in and around the Keta Lagoon Complex Ramsar site consider mangrove plantations as a farming system where they harvest and sell fuel to cater to their domestic needs.

Experts believe that harvesting by local people persists because there is no active management plan, little law enforcement, and inadequate education about the long-term harm of mangrove loss. For some families, mangrove farming has been the primary source of income for years.[18] People who prepare smoked fish prefer mangrove fuelwood, saying it gives good taste and color to the fish. They also believe that the wood burns longer and, by producing little smoke, increases the shelf life of the smoked fish.

Between 1980 and 2006, Ghana lost some 25 percent of the mangrove coverage along its coast. The rate of deforestation reflects growth in population, which generates ever-increasing pressure to expand agriculture into new lands.[19] Mangroves also fall victim to mineral exploitation, which releases harmful chemicals into the ecosystems. In coastal areas that are undergoing urbanization and industrial development, particularly regions with ports and tourist cities, residents often remove mangroves to make way for the building of roads, ports, hotels, and houses.[20]

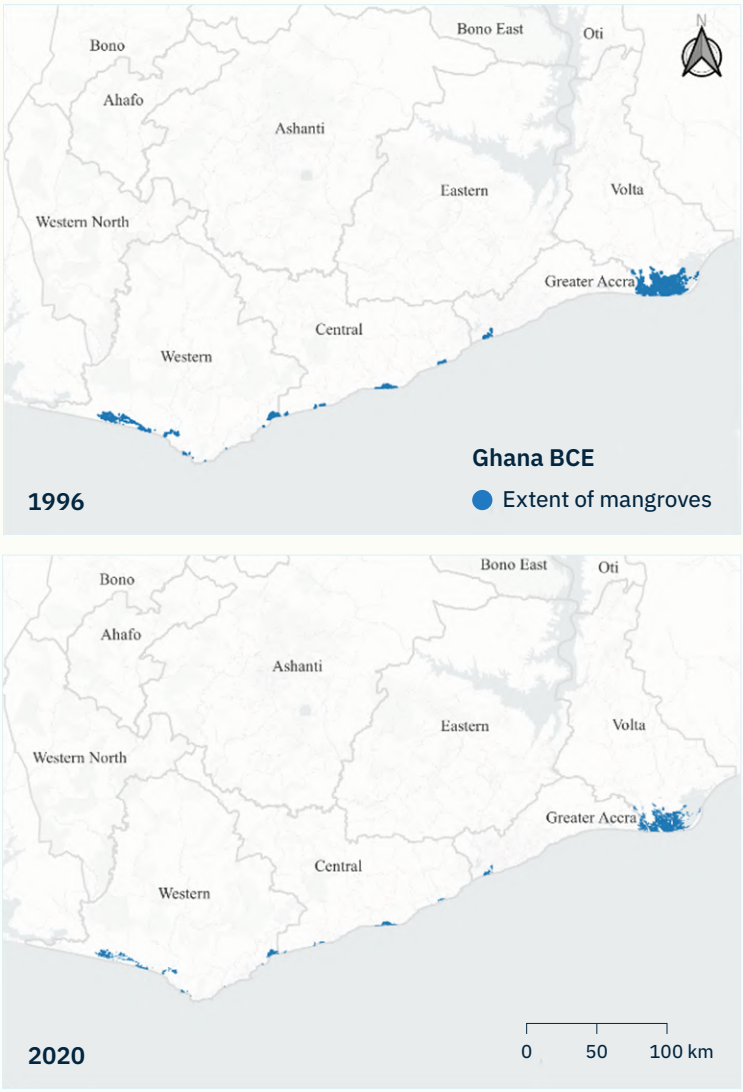
That aside, mangrove governance issues such as land tenure and ownership are also considered a driver of mangrove loss.[21] Mangroves are usually under the ownership of chiefs, communities, clans, and individuals, as well as joint ownership of families and the forestry commission

15 See, however, the recent recap of the G-CARP state of play in the BUR4 (2024); see also the discussion of Ghana's capacity to move to the Enhanced Transparency Framework at https://climate-transparency-platform.org/sites/default/files/2024-03/MRV_ETF_SA_Peer2peer_final%20Juliana%20Bempah.pdf (2024).
16 Ofori et al. 2023.
17 World Bank 2023b.
18 Ibid.
19 Nunoo and Agyekumhene 2022 and Ofori et al. 2023.
20 Ofori et al. 2023.
21 Asante et al. 2017.

(for details see section 3.8). At the Keta Ramsar Site, mangrove lands are typically owned by clans, while the trees planted on them are owned in most cases by individuals who have the right to harvest. In parts of the Keta and Songor Ramsar sites, individuals sometimes claim ownership of mangroves by rights of cultivation or land inheritance, which increases exploitation and conversion, and may interfere with restoration efforts. Also, in the Densu Delta Ramsar site, more than 50 percent of the land is owned by Panbros Salt Industries, a mining company whose large-scale salt production can cause loss of mangrove lands.

Fish farming and other aquaculture activities have caused substantial mangrove loss at the Songor Ramsar site.[22] Mangrove forests often occupy viable spots for aquaculture because of the accessibility of water, making it tempting to clear the trees. Ghana's draft Aquaculture Development Plan, which is in effect between 2024 and 2028, aims to increase fish farming output from 89,376 tons in 2021 to 211,697 tons by 2027. Another objective is to raise the market share of fish raised for commercial purposes from 14 percent in 2021 to 25 percent in 2027. In most cases, increasing fish farming involves unsustainable clearing of mangroves for ponds, which leads to the release of stored carbon into the atmosphere. The main challenge of the aquaculture industry as it grows is to strike a balance between the economic benefits of fish farming and the preservation of ecosystems such as mangroves.

FIGURE 3. MAP OF MANGROVE EXTENT OVER TIME USING DATA FROM GMW.



Source: *World Bank 2023.*

22 Ofori et al. 2023.

Seagrass meadows are suffering a 7 percent annual loss globally.[23] While specific data for Ghana are not available, global and regional trends confirm that the country's seagrass beds are under threat. Four main seagrass species – Cymodocea nodosa, Halodule wrightii, Ruppia maritima, and Zostera noltei – cover a total area of 62,108 ha across countries in West Africa (including Ghana).[24] The major drivers of this loss are direct and indirect impacts such as alteration of water quality, nutrient and sediment loading in water, dredging, filling, pollution, upland development, and certain fishing practices.[25] To date, few studies have looked into the state of seagrass meadows in Ghana. More efforts are urgently required. By protecting seagrass meadows in Ghana, ecosystem goods and services such as carbon sequestration and nutrient cycling can be maintained, along with habitats for a wide range of marine species, while supporting the livelihoods and subsistence of local communities.

3.1.4 SOCIOECONOMIC VALUATION OF BCES

Socioeconomic value has been assessed for specific mangrove ecosystems in Ghana. Studies have valued benefits that include carbon stocks from these ecosystems, returns on the sale of timber harvested from mangroves, gains from fisheries in mangrove areas, and tourism attractions. In the Kakum and Pra mangrove areas, economic valuation was estimated, based on discussions with residents, mainly for forestry and fish resources obtained from the ecosystem.[26] Fish resources including periwinkles and crabs contributed to income obtained from mangroves. Residents also reported obtaining income from mangrove fuelwood and timber. Of these two uses, timber was the less important, because it is harvested irregularly and usually upon request, while demand for fuelwood is consistently high.

Along the Volta coastline specifically in the Anyanui area, researchers conducted an economic assessment of mangrove wood harvesting.[27] The assessment was quantified based on the monetary investment and returns from wood harvested in a year by the Anyanui community-based mangrove planters' association. The mangrove wood business was depicted as a lucrative one that benefits both the planter and the trader. For planters, the annual investment cost is US$814.12 per ha/year, which covers seedlings, knives, boots, food, and weeding. The planters sell their mangrove wood for US$1,197.24 and make a profit of US$383.12 per ha/year. The study found that the investment cost for traders was US$5,758.73 per ha, which covers the cost of wood, cutting/picking, bundling, transportation to markets, and packing at markets. The output value of the harvested wood from traders was US$10,583.61 with a profit of US$4,824.88 per ha/year. Tables 1 and 2 below present details from the study.

23 Vinaccia et al. 2022.
24 Sidi Cheikh et al. 2023.
25 Parenti et al. 2009.
26 Dali et al. 2023.
27 Aheto et al. 2016.

TABLE 1. ECONOMIC BENEFITS FROM MANGROVE WOOD FROM PLANTERS' PERSPECTIVE.

ITEM	AMOUNT (US$/HA/ANNUM)
Mangrove Planting	
Collection of seedlings	$59.86
Wellington boots	$10.34
Knives	$12.40
Other	
Food	$239.45
Weeding (once per year)	$119.72
Investment cost	$814.12
Selling price	$1,197.24
Net benefit	$383.12

Source: *Aheto et al. 2016.*

TABLE 2. ECONOMIC BENEFITS FROM MANGROVE WOOD FROM TRADERS' PERSPECTIVE.

ITEM	AMOUNT (US$/HA/ANNUM)
Cost of wood	$1,197.24
Cutting/picking	$3,591.72
Bundling	$754.26
Transportation to markets	$131.70
Packing at market	$83.81
Total	$5,758.73
Output value of harvested wood	$10,583.61
Net income	$4,824.88

Source: *Aheto et al. 2016.*

Economic valuation of selected mangrove ecosystem services in the Greater Cape Three Points and the Princess Town of Ghana was conducted through community engagement.[28] The services considered were food, habitat provision as a nursery for marine species, tourism attractions such as monkey sightseeing, boat tours and bird watching, spiritual, decomposition, nutrient fixing, and climate regulation. The study site, covering an area of 265.8 ha, was valued at US$237,994.78/year based on the various ecosystem services. The mangroves' carbon stock was estimated for the area and multiplied by the unit price of US$27/t$CO_2$. However, the carbon stock estimate and its corresponding economic value for mangroves were not highlighted in the study.[29]

Despite the tangible monetary value attributed to services like food, tourism, and carbon credits, most community residents found it difficult to state an amount they would be willing to pay or receive for intangible services. Indeed, the study emphasized the inherent challenges in assigning value to all ecosystem services. Estimates have an inherent drawback in that some individuals do not place monetary value on resources that they harvest for their subsistence. This implies that mangrove harvesting possibly provides more gains than the estimates calculated so far. Simply stated, the benefits of mangroves cause people to harvest them for sale, subsistence, or both. People deserve alternative sources of livelihood if pressure on the mangrove ecosystems are to be reduced. To that end, mangrove value chains need increased research, part of an effort to improve transparency.

Mangroves provide private use value, social use value, social option value, and social non-use value. The total economic value of mangrove benefits has been estimated in the West Coast and Volta regions of Ghana.[30] Evidence has emerged that private-use direct value constitutes only a small fraction of the total economic benefits that mangroves provide. Private-use direct value provides relatively high economic benefits compared to private-use indirect value (see Table 3 below for details). These values may fall over time as storms rise in frequency and intensity in Africa, including Ghana, a trend that is magnifying the stress on ecosystem resources and causing socioeconomic concerns.[31]

28 Sagoe et al. 2021.
29 Ibid.
30 World Bank 2023b.
31 U.S. Department of Agriculture 2023.

TABLE 3. TOTAL BENEFITS FROM MANGROVES IN GHANA PER HECTARE IN 2020.

ANNUAL TOTAL BENEFITS	MEAN VALUE (US$/HA/ANNUM)
Private Direct Use	
Timber	$151
Fuelwood	$2,422
Total wood	$2,498
Private Indirect Use	
Fisheries	$719
Hunting	$82
Investment cost	$46
Social Use	
Carbon sequestration	$480
Flood protection	$1,120
Water purification	$327
Social Option and Non-Use	
Biodiversity	$1,281

Source: *World Bank 2023b and Sagoe et al. 2021.*

3.2

DATA AND ANALYTICS: GHG INVENTORY (PILLAR 1B)

FIGURE 4. SUMMARY TABLE OF PILLAR 1B STATUS-BASED ON DECISION TREE FRAMEWORK.

▼ DECISION TREE PATHWAY	▼ STATUS	▼ STATUS EXPLANATION
Are BCEs included in your country's GHG inventory?	M	Yes – Mangroves are included (biomass only).
		Disaggregation of mangrove data from forests has not been carried out. Biomass estimates for seagrass and salt marshes are not included, and SOC estimates are not included for any BCEs.
Does your country apply the 2013 Wetlands Supplement (WS13)/2019 Refinement (R19)?	M	No – currently using the 2006 IPCC guidelines. No clear guidance on future applications of WS13.
Has your country submitted a Forest Reference Level (FRL) or Forest Reference Emission Level (FREL)?	H	Yes – the **latest FREL** was submitted in 2021 and includes mangrove biomass (AGB, BGB) and dead organic matter. Ghana has a robust REDD+ strategy for 2016-2035.
		FREL uses data from 2001-2015 only and does not include SOC data.

PILLAR 1B OVERALL STATUS: MODERATE

QUALITY L M H — LOW HIGH

PROGRESS → → — LIMITED ADVANCED

ACHIEVEMENTS **MISSING**

3.2.1 GREENHOUSE GAS INVENTORY

The fifth iteration of Ghana's GHG Inventory Report was released in 2021.[32] The Inventory accounts for mangrove biomass carbon stocks (AGB, BGB, and litter and deadwood) as part of terrestrial forests but does not account for seagrass or salt marsh ecosystems, or SOC for any of Ghana's BCEs. This has remained true for all five iterations of Ghana's GHG Inventory.[33] The biomass carbon stock estimates for Ghana's forests, meanwhile, were calculated by the Forest Preservation Program (FPP), led by Ghana's Forestry Commission. The initial assessment by the FPP was conducted in 2013, released in 2014, and has not been updated since – though improvements are on the way.

The FPP's carbon stock estimates for biomass were carried out using the 2006 IPCC accounting guidelines, and there are currently no plans to use the 2013 Wetlands Supplement in future iterations. Activity data utilized in the inventory was sourced from the most recent FRL and regional FREL. Results from the 2021 FREL/FRL will inform the next GHG inventory submission.

The current GHG inventory provides a strong platform to build upon as Ghana explores improvement in data capacity and monitoring efforts. By leveraging efforts by the NFMS, FPP, and the National LULC Map, Ghana's GHG inventory can move to disaggregate both extent and activity data for mangroves and provide scalable estimates for future inventory iterations. Building off regional studies of seagrass, Ghana can leverage extent/area estimates along with guidance from the 2013 Wetlands Supplement to include biomass and SOC carbon estimates in the next iteration of its inventory. As research on salt marsh ecosystems increases nationally or regionally (West Africa), it will be possible to include salt marshes in future inventory iterations. The current lack of robust extent/area data for Ghana's seagrass and salt marsh ecosystems indicates that their integration into future GHG inventories will take time and rely on increased capacity for research.

3.2.2 REDD+ AND FOREST REFERENCE LEVEL (FRL)

Ghana released its first REDD+ strategy in 2016, with guidelines and projections through the year 2035.[34] A FREL is relevant for Ghana's climate mitigation strategies and aligns with the country's commitments under international accords such as the Paris Agreement. It will facilitate its access to financial incentives and support mechanisms and smooth the way toward sustainable land use and forest conservation.

32 Ghana EPA 2022.
33
34 NRS 2016.

In 2021, Ghana submitted a revised FRL and sub-national FREL, covering the years 2001-2015, as part of its REDD+ initiative. In the latest version of the FRL, Ghana changed its methodology for assessing activity data, charting sample points on a systematic grid across the country and using Collect Earth as a platform. This new methodology has given the country a more complete inventory of its carbon assets.

The current FREL/FRL includes carbon stock estimates for biomass (AGB and BGB) and litter and deadwood. Like the 2021 GHG inventory, all carbon stock calculations were carried out by Ghana's Forest Preservation Program using 2006 IPCC methods. Under the FREL/FRL, mangroves are one of seven land classes that fall broadly under the IPCC category of "dry semideciduous forests." As a result, no disaggregation of carbon stock data from the other land classes within this IPCC category is available for mangroves. This limits carbon stock estimates, as well as activity data from deforestation for Ghana's mangrove ecosystems. The country is currently acting on guidance from the Coalition of Rainforest Nations to advance its sub-national FREL to the national level.[35]

3.2.3 ACHIEVEMENT AND AREAS FOR IMPROVEMENT

Ghana's status with regards to data quality and progress for Pillar 1 (Sections A and B) is considered moderate (low-end). Data on BCE extent and area are partially robust, with mangroves serving as the primary BCE due to extensive datasets and research.

ACHIEVEMENTS

- Ghana has a basic understanding of the national extent of all three BCEs, derived from global datasets supplemented with in-country research by the government and research institutions for mangroves, and by regional research for seagrass beds.
- Ghana has become a regional hub for Blue Carbon research that links government institutions and academia, notably the University of Ghana and the Cape Coast University.
- Mangrove carbon stock data (biomass) are available from area-specific research initiatives.
- Ghana's Forestry Commission has overseen the development of the National Forest Monitoring System (NFMS), as well as the Forest Preservation Program (FPP). As the NFMS expands, it has the potential to provide scalable data to monitor mangroves as a separate land-cover class.

35 Ghana REDD+ 2021.

- Ghana's REDD+ program has achieved several notable successes including development of a REDD+ strategy, a sub-national FREL that is currently slated to transition to a national FREL, and a national FRL.
- Ghana submitted a FREL report in 2021, a Biennial Update Report (BUR) in 2021 (BUR 3) and 2024 (BUR 4). The latest National Greenhouse Gas Emissions Report is from 2021/2022 indicating active involvement in GHG inventory.

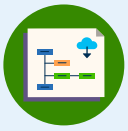
AREAS FOR IMPROVEMENT

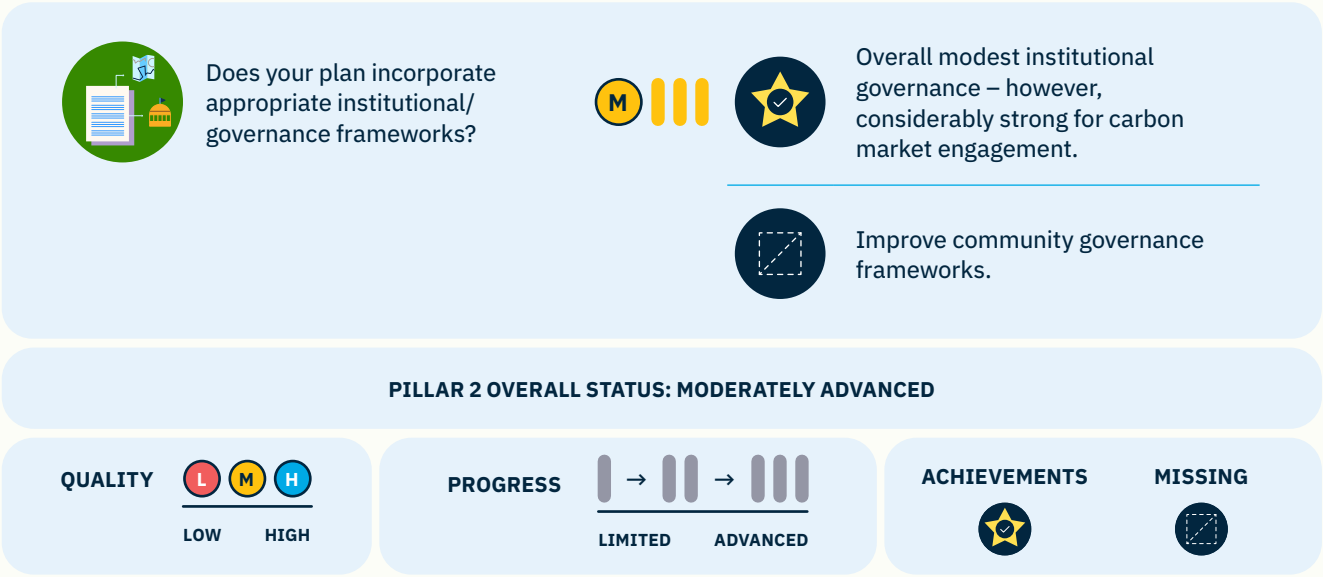
- Assess whether the current activity data allow disaggregating information on land use area and change of use for mangrove ecosystems.
- Foster increased capacity – nationally and regionally through research partnerships and government programs – for research on area/extent and activity for seagrass beds and salt marsh ecosystems.
- As data capacity increases, work towards including SOC estimates for mangroves in future FRELs/FRLs, and for all three BCEs in future GHG Inventory iterations.
- Integrate the 2013 Wetlands Supplement in place of the 2006 IPCC accounting guidelines for the calculation of carbon stock estimates for mangroves and seagrass beds.
- Although the NFMS plays a crucial role in monitoring GHG inventory in Ghana, work to provide a continuous tracking of GHGs to better understand the dynamics of emissions as well as to inform policies and decision-making.
- Improve capacity for data collection by developing clear designations within Ghana's institutional framework for the monitoring and management of Ghana's mangroves, as well as other BCEs.
- Strengthen the MRV system, notably by including MOFAD in its administrative set-up and extending the active focus to non-forest (non-mangrove) coastal wetlands. The aim is to expand on the 2013 Climate Ambitious Reporting Programme (G-CARP) and include functionalities across Blue Carbon habitats.
- Strengthen Ghana's status as a Blue Carbon research hub and enhance a science and data network that connects Ghana with other countries in West Africa.
- Upgrade research on the socioeconomic values of mangroves, and other BCEs present in Ghana, to increase understanding and improve transparency in mangrove value chains, and how they are influenced.
- For communities, consider ways to foster sustainable harvesting of mangroves.

3.3

POLICY AND INSTITUTIONS (PILLAR 2)

FIGURE 5. SUMMARY TABLE OF PILLAR 2 STATUS BASED ON DECISION TREE FRAMEWORK.

▼ DECISION TREE PATHWAY	▼ STATUS	▼ STATUS EXPLANATION
 Are emissions and removals from BCE(s) included in your NDC?	M	**GHG Accounting** BCEs are not directly addressed in the NDC, but the LULUCF sector is included, and therefore mangrove biomass is contemplated in theory.
		Other BCE(s) not included. WS13 is not currently integrated.
	H	**Action-Based Targets** Action-driven targets relevant to BCEs exist (including landscape restoration).
	M	**REDD+** REDD+ includes mangroves (but not sufficiently focused on BCEs to drive action).
		Other BCE(s) not integrated.
 Do you have an NDC implementation plan?	M	Range of policies addressing BCE(s), mostly indirectly: • Implementation Plan • REDD+ Strategy, Plantation Strategy • Wetlands policies, National Maritime Strategy (NIMS)
		Updates are needed to many policies. Prescriptive regulations are necessary.



Ghana is moderately advanced in Blue Carbon policy development and governance (Pillar 2). The country's regulatory framework (see Figure 5) includes protective measures for forests, including mangrove forests. There are few regulatory data points addressing protection of seagrass beds and salt marshes. However, they get some protection if they fall within the boundaries of protected areas.

Ghana's Nationally Determined Contribution (NDC) sets out quantifiable LULUCF targets, which include, at least in theory, emissions and removals from mangroves. The country's commitment to using carbon markets for interventions across sectors is significant (see below in Pillar 3). Carbon rights – a concept that underpins emissions trading and carbon asset generation, notably from land – are not comprehensively recognized, however. Regulatory efforts to create wider carbon pricing initiatives are underway, and Ghanaian officials have stressed that customary land titles will be respected, including through regulating carbon benefits. With the country now on the path to an improved regulatory framework, communities are allowed to have customary or statutory land rights, including in coastal areas.

3.3.1 NDC COMMITMENTS

While Ghana is not among countries that put forward Blue Carbon-specific pledges in their Nationally Determined Contributions (NDCs), the mitigation and adaptation commitments in its latest NDC (2021) have important ramifications for BCEs. Emissions from land use, land-use change, and forests (LULUCF) fall within the NDC's mitigation scope, and thus, the emissions and removals from BCEs are (in theory) covered in Ghana's target to achieve "absolute emission reductions of 64 $MtCO_2e$ by 2030." Of this amount, 24.6 $MtCO_2e$ should be achieved regardless

of international support (unconditional target). In practice, however, only mangrove biomass qualifies, given the limitations of Ghana's inventory—see above, Section 2.1, for further details on Ghana's GHG Inventory.

Ghana's NDC also establishes a set of action-driven targets, among them to "enhance landscape restoration." Specific pledges include "[building] resilience and [promoting] livelihood opportunities for the youth and women in climate vulnerable agriculture landscapes and food systems," as well as promoting "gender-responsive sustainable forest management." Furthermore, Ghana intends to highlight expected mitigation co-benefits in the agriculture sector by, among other actions, using "nature-based solutions for promoting eco-tourism as a means for enhancing biodiversity through forest conservation and landscape restoration" and pursuing "the Green Ghana initiative that incorporates the planting [of trees], [which] will contribute to the maintenance of the vegetation or landscape and serve as an adaptation measure against the increasing number of extreme weather events in urban areas." This said, there are no clear results-based targets concerning Blue Carbon ecosystems, such as targets to plant, say, 5,000 ha of mangrove forests by 2030. This contributes to the perception that the policy's objectives are vague.

Ghana has become a pioneer in the use of carbon markets under Article 6 of the Paris Agreement. Its NDC particularly pledges "to use voluntary cooperation under Article 6.2 of the Paris Agreement to achieve up to 55% [about 24 million tons] of its conditional absolute emission reductions."[36] The pledge may have specific relevance for Blue Carbon activities in the years to come (see Pillar 3).

3.3.2 NDC IMPLEMENTATION

Ghana has adopted key policy documents in recent years highlighting the importance of protecting and restoring coastal wetlands (mangroves in particular) and anticipating some of the commitments later made in its NDC. The 1999 National Wetlands Conservation Strategy recognizes that wetlands have important functions. These include "flood and erosion prevention," "storm protection" (including mangroves explicitly), "water purification," and "micro-climate stabilization." Wetlands are also recognized for their role in nurturing

36 MESTI 2021.

agricultural resources such as rice, as well as opportunities for tourism and recreation. However, in the face of criticism of being vague and lacking detailed directions for meeting Ghana's obligations under the Ramsar Convention, the policy came under review in 2006.[37] Subsequently, a new instrument was launched as an action plan, titled "Managing Ghana's Wetlands: A National Wetlands Conservation Strategy and Action Plan (2007–2016)."[38] This plan sought to address nine priority issues, including "participation in wetlands management," "wetlands inventory, research and monitoring," and "wetlands rehabilitation and restoration."

The 1999 National Land Policy states that "inland and coastal wetlands are environmental conservation areas." Under the policy, the term means "any land area reserved under legislative or executive Instrument for the purpose of wildlife, forestry or biodiversity conservation." In wetlands, the policy considers a series of uses to be "incompatible with their ecosystem maintenance and natural productivity [and] strictly prohibited." These include "physical draining of wetland waters; damming of streams and water courses feeding the wetlands; human settlements and their related infrastructural development in wetlands; disposal of solid waste and effluents in wetlands; [and] mining in wetlands." Despite wetlands' classification as conservation areas, however, the policy states that using them "for farming, grazing, fishing, timber production and salt-winning will be encouraged provided that such uses tend to conserve the ecosystem, biodiversity and sustainable productivity of wetlands."

The 2012 Forest and Wildlife Policy states that the management and enhancement of the ecological integrity of wetlands and other ecosystems are among its main objectives. The policy explicitly supports the obligations assumed by Ghana under the Ramsar Convention and aims for "the conservation and sustainable development of forest and wildlife resources." It further provides a "strategic direction for wetlands development," including to "promote sustainable management of mangroves to safeguard the wetlands and also protect endangered species like the marine turtles." Policy strategies that support this action include "enacting legislation to support the implementation of the national wetland conservation strategy" and "supporting the mainstreaming of wetland management in district and community level natural resource management planning."[39]

The 2013 National Climate Change Policy (NCCP) includes mangrove forests as part of the goal to increase carbon sinks. Among policy actions for carbon sinks, NCCP calls for measures to "reduce the pressure on forests and mangroves for wood fuels by improving the efficiency of production, harvesting, conversion and use of wood fuels." The policy also states a goal to "improve management and resilience of terrestrial, aquatic and marine ecosystems," as well as including "natural resource management" as a priority area for intervention.

37 Shapovalova 2021.
38 Ramsar 2007.
39 Ministry of Land & Natural Resources 2012.

Ghana's National Climate Change Master Plan (2015–2020) establishes numerous objectives relevant to protection of BCEs. This includes a goal to "develop marine and coastal zone sustainable management and development policy," to "operationalize existing policies and strategies, for example,...the Wetlands Conservation Strategy," and to "establish marine protected areas."

The plan also includes objectives to "protect coastal wetlands and mangroves including Ramsar sites to enhance coastal resilience."[40] Mangroves figure extensively as important ecosystems in the plan, which provides for Ghana to "construct climate-resilient key coastal infrastructure to protect the communities from storm surges, coastal flooding, sea level rise and ecosystem degradation such as deforestation." One of the recommended tasks toward this goal is to "establish forests along the coast (e. g. coastal mangrove forests) and ensure the safety of wetland." An important gap, however, is that the policy implementation period ended in 2020 and therefore needs renewal.

The Forestry Development Master Plan (2016/2036), which provides guidelines for sustainable development in the forestry sector, includes "sustainable management of wetland resources" among its components and programs. Particularly it aims "to mainstream wetland management into the national land-use planning policy and promote the wise use of wetlands for farming, grazing, fishing, wood fuel production, and salt-winning." It further adds strategic targets for sustainable wetlands management to be achieved by 2025. These include

i

to "revise, map, inventory and document all potential wetlands of global significance in all the ecological zones of Ghana,"

ii

to review and update "participatory wetland management plans for the Ramsar site and other wetlands of national significance" and

iii

to "promote community mangrove reservation and rehabilitation of all degraded wetlands for mangrove restoration and marine protection using the CREMA governance system."[41]

General policy support for healthy BCE, however, has not necessarily translated into specific government action. If it has, it is not adequately reported. The most recent Annual Progress Report (2022) of the National Development Planning Commission (NDPC), the government entity tracking Ghana's forestry and coastal management objectives (see Section 3.10.1), does not reference any activities on coastal wetlands or mangroves (see also Section 1.2).

40 MESTI 2015.
41 Ministry of Land and Natural Resources 2016b.

3.3.3 NATIONAL FOREST PLANTATION STRATEGY

The Ghana Forest Plantation Strategy (2016-2040/ GFPS) sets restoration targets for forests and includes mangrove forests in its scope. Specifically, the policy establishes that "a total area of 1,480 ha will be planted annually for environmental purposes," which includes "watershed plantings, green firebreaks, slope stabilization plantings, rehabilitation of mined sites, restoration of mangroves, biodiversity offsets, etc." The Strategy also acknowledges that the "restoration of mangroves is particularly considered due to the important role they play in the ecosystem and livelihood of coastal communities." Beyond the 1,480-ha target, the Strategy sets a broad forestry objective towards "the establishment and management of 625,000 ha of forest plantations" and the "enrichment planting of 100,000 ha of poorly-stocked and degraded forest reserve compartments." However, it does not specify how much of this total would include BCEs (notably mangrove trees). Furthermore, there is no separate action and funding stream for mangrove restoration. Therefore the planting target set by the GFPS is relatively vague for driving Blue Carbon action. This is reflected in the last GFPS annual report (2021), which does not expressly show any plantation involving mangroves.

3.3.4 GHANA'S REDD+ STRATEGY

Ghana places significant emphasis on its REDD+ sector, which includes mangrove forests in its scope. The legal framework for REDD+ derives from the 1992 Constitution, which prescribes that "the State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for purposes of protecting the wider international environment for mankind."[42] This is confirmed in the National REDD+ Strategy (2016-2035).

The REDD+ Strategy sets out numerous "key interventions to reduce deforestation and degradation" that can help protect Blue Carbon forests. These include to "reduce the conversion of all kinds of forests into other land uses," "improve the quality of fire-affected forests and rangelands," "improve sustainability of fuel wood harvest and use," "mitigate effects of agricultural expansion," "improve land tenure regimes and secure benefit rights," "improve the quality of multi-stakeholder dialogue and decision making," and "strengthen local decentralized management of natural resources." The overall commitment is towards "the full scope of REDD+ interventions as part of its strategy," including reducing emissions from deforestation (RED), carbon stock enhancement (CSE), sustainable forest management (SFM), biodiversity conservation, avoided deforestation (AD), and avoided forest degradation (ADD). However, implementation is conditioned to the "availability of resources to implement the associated activities and the capacity to monitor and measure emission reductions or removals."

42 Article 36 (9), Constitution (1992).

The REDD+ Strategy also explicitly mentions the need to create an "Emission Reductions Programme for the Coastal Mangroves." With this, the Strategy is in lockstep with Ghana's National Climate Change Policy Master Plan (2015-2020), which calls for measures to "reduce the pressure on forests and mangroves for wood fuels by improving the efficiency of production, harvesting, conversion and use of wood fuels…"

However, the Emission Reductions Programme has yet to be put into action, with the National REDD+ Secretariat (NRS) recently noting undue delays in implementation. The REDD+ Strategy is explicit on the need for subnational action to fight drivers of degradation such as "cutting mangroves for fuelwood, settlement expansion and development, [and] pollution." However, implementation has been slow. The secretariat publicly stated that despite "the fact that mangroves are highly threatened natural forest ecosystem along Ghana's coasts and inland waterways, to date they have not been the focus of any serious national REDD+ consideration." It added that the "magnitude of carbon stocks coupled with an existing threat to these unique and environmentally important forest types creates a strong imperative for REDD+ action."[43]

3.3.5 ADAPTATION AND BIODIVERSITY STRATEGIES

Ghana recognizes BCE in its bespoke adaptation and biodiversity policies, albeit within limits. The 2016 National Biodiversity and Strategy Plan, whose main goal is better management to address biodiversity loss in Ghana, includes mangrove forests in its scope. As part of the "national strategy," the plan includes an objective to "strengthen the legal and regulatory framework for the protection of coral reefs, mangrove ecosystems, estuaries, and community protected areas." In addition, the plan establishes "national targets" to "develop and enforce relevant regulations protecting mangrove ecosystems and estuaries" and to "develop regulations to protect coral reefs" (the latter being relevant for the connection with seagrass ecosystems). The policy also recognizes the potential of mangroves to enhance the benefits to all from biodiversity and ecosystem services. It sets a broad national target to "establish marine protected areas" and "protect important wetlands."

Similarly, the 2012 National Climate Change Adaptation Strategy (NCCAS/ 2010-2020) sets a goal "to enhance Ghana's current and future development to climate change impacts by strengthening its adaptive capacity and building resilience of the society and ecosystems." This Strategy also contains synergetic objectives regarding land use, sustainable development, and fisheries management, as well as prescribing the preservation/conservation of water resources. However, gaps remain – starting with the policy implementation period which ended in 2020 and has since not been renewed. Furthermore, although ecosystems are broadly included in the NCCAS, BCEs are not expressly mentioned or directly addressed through specific actions.

43 NRS 2023.

Ghana has a draft Aquaculture Development Plan, developed for Cabinet approval, to be implemented between 2024 and 2028, which aims to incorporate sustainable development into the aquaculture sector as one of main sectors driving BCE exploitation. According to Ghana's Medium Term Expenditure Framework (MTEF) for 2024-2027, released by MOFAD, the Aquaculture Development Plan is expected to "provide strategic direction to expand, utilize, manage and regulate the sustainable development and management of the aquaculture subsector."[44] Originally envisaged for the period of 2023-2027, the plan is yet to be released.[45] Ghana also intends to release an "Aquaculture Guidelines and Code of Practice and Guidelines for the Introduction and Management of Exotic Fish Species" to govern the presence of these species in Ghanaian waters.[46,47]

3.3.6 MARINE SPATIAL PLANNING AND THE BLUE ECONOMY

Ghana has no formal MSP policy or plan, relying instead on a range of policies and regulations to promote marine planning and the Blue Economy, but certain relevant issues are covered by the country's first National Integrated Maritime Strategy (2022/NIMS), introduced in September 2023 by President Nana Addo Dankwa Akufo-Addo.[48] The NIMS establishes six strategic objectives, including

1

Strengthen the framework for maritime governance;

2

Ensure the safety and security of Ghana's maritime domain;

3

Develop a thriving Blue Economy;

4

Protect Ghana's marine and coastal environment;

5

Promote capacity-building, research, awareness, and knowledge-sharing; and

6

Develop dynamic and diversified regional and international cooperation."

44 MOFAD 2024.
45 Ibid.
46 MOFAD 2024.
47 See also E. Abbey 2024 and IFPRI 2024.
48 The document has not yet been made publicly available.

While an important instrument for the nurturing of the Blue Economy in Ghana, the NIMS has encountered a number of challenges. According to the Centre for Maritime Law and Security Africa (CEMLAWS Africa) –the research institution that provided technical support for elaboration of the policy – "there has been delay in its endorsement at the highest political level," as well as funding issues – particularly for the "transition from the development of the Strategy (and its Implementation Plan) to actual implementation and execution."[49]

Other policies relevant to the MSP process in Ghana involve the 2016 Land Use and Spatial Planning Act (Act 925) and the 2002 Ghana Maritime Authority Act (GMA Act 630). The first establishes the Land Use and Spatial Planning Authority or LUSPA under the Ministry of Environment, Science, Technology and Innovation MESTI. That Act also provides for regulation of interference in environmentally sensitive areas. The second Act grants wider powers to the GMA to regulate, monitor, and co-ordinate activities in the maritime industry, including for the purpose of protecting coastal environments.[50] These laws allocate general administrative responsibilities for specific issues, but are silent on specific regulatory powers concerning the protection and enhancement of BCEs.

The legislation was built on research and policy advice dating back to the 1990s. In a World Bank-assisted program in 1995, Ghana began the design of its Integrated Coastal Zone Management (ICZM) Strategy, with the objective to "identify economically, socially and environmentally appropriate interventions and projects in the coastal zone that improve the prospects for human development."[51] Various ICZM priority issues were established -- among them wetlands and mangrove degradation, fisheries degradation, industrial water pollution, and erosion. Specific interventions also contemplated "mangrove planting."

A key program developed at the time was the MAMI WATA regional program, also known by the name Enhancing Marine Management in West, Central and Southern Africa through Training and Application. The program helped countries identify key strategies and needs for MSP development, including "the contribution of sustainable economic growth by ensuring an integrated management of Ghana's coastal and marine environment." The importance of "adopting an ICZM approach, centered around ecosystem protection, as a low-cost, high yield strategy" is highlighted in the World Bank's Country Climate and Development Report (CCDR) for Ghana. The report further recommends the development of a "Blue Economy framework" as a policy action in the near term.[52]

49 CEMLAWS Africa 2023.
50 Articles 2-4, GMA Act 630.
51 Hewawasam 1995.
52 World Bank 2022.

3.3.6.1 HIGH LEVEL PANEL FOR A SUSTAINABLE OCEAN ECONOMY

Ghana has been actively seeking bilateral and regional partnerships in order to unlock positive outcomes in MSP and the Blue Economy. A recent example is Ghana's participation in the High Level Panel for a Sustainable Ocean Economy (Ocean Panel), demonstrating the political will to engage in a transnational perspective on better protection of coastal areas (including BCEs). The Ocean Panel, established in 2018 and currently led by eighteen countries, aims to build a sustainable ocean economy through effective protection, sustainable production, and equitable prosperity.

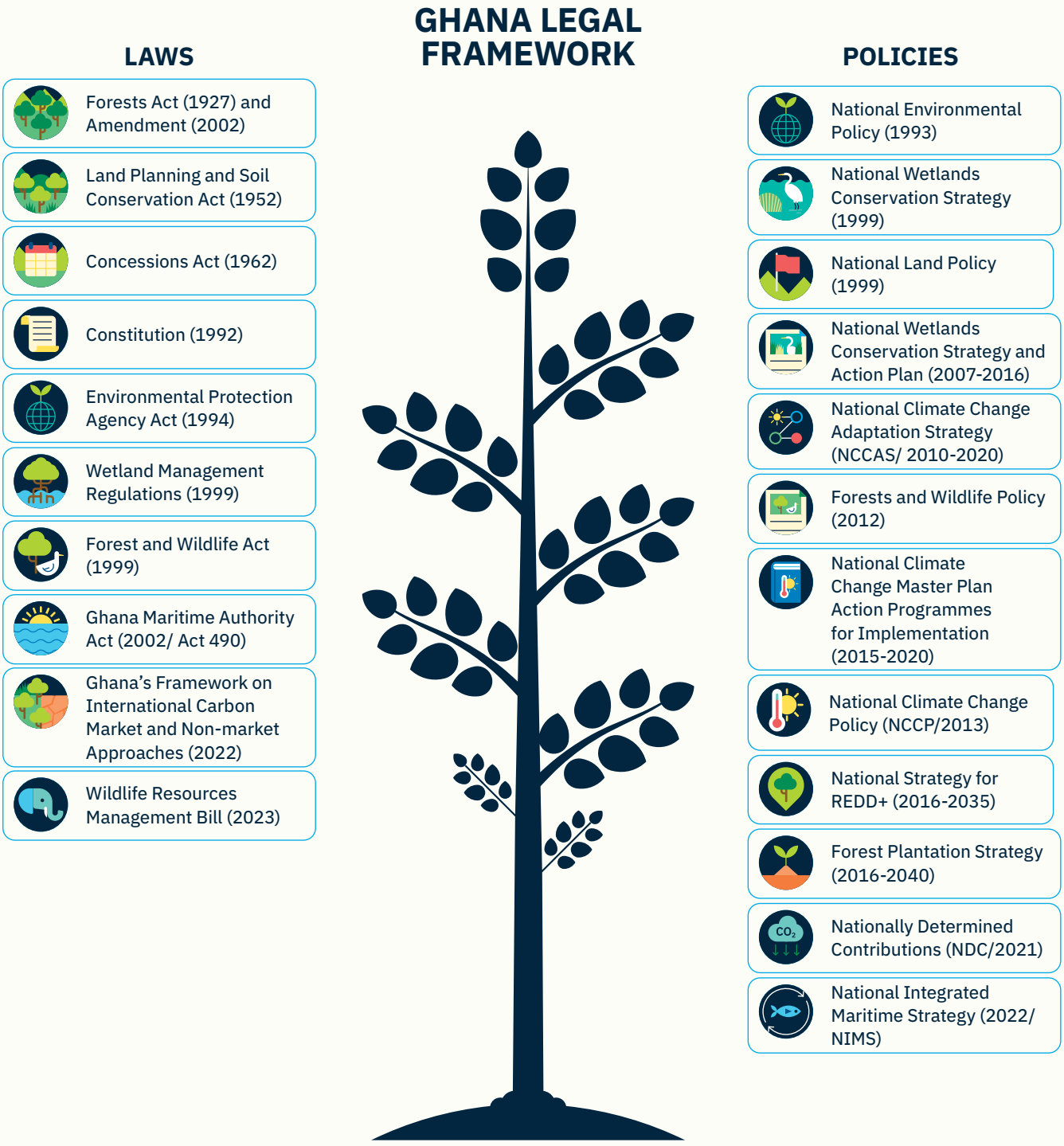
In 2022, the Panel identified the preparation of a marine spatial plan for Ghana as a priority for collaboration, along with combating illegal, unregulated, unreported fishing (IUU) and marine pollution.[53] A Sustainable Oceans Plan (SOP) is also in preparation as part of Ghana's engagement. The plan includes a "clear call for effective collaboration among regulators, researchers, industry players and coastal communities, including traditional authorities, to manage resource exploitation."[54] The identification of these priorities can direct Blue Carbon action towards where it is most needed.

As a member of the High Level Panel, Ghana also recognizes the ocean's pivotal role as the life source of the planet and its significance for a thriving global economy. The country further committed to the sustainable management of 100 percent of its ocean area under national jurisdiction, which is in line with the Global Biodiversity Framework (GBF) vision and in particular Target 3.[55] The Panel identified five key criteria for achieving this goal, one of which is ocean finance. Within that criterion, a primary focus is to support voluntary mechanisms led by the private sector and multilateral financial institutions in recovery and stimulus efforts. The aim is to guide, de-risk, incentivize, and monitor investments in sustainable ocean activities. This approach is designed to enhance transparency and ensure reporting consistency. Consequently, Ghana, as a panel member, can leverage its position to unlock additional investments and contribute to the realization of these ocean initiatives.

53 The Ocean Panel 2022.
54 Articles 2-4, GMA Act 630.
55 Target 3 refers to the Kunming-Montreal Global Biodiversity Framework 2022.

3.3.7 TENURE AND LEGAL PROTECTION FOR BLUE CARBON ECOSYSTEMS

FIGURE 6: GHANA'S LEGAL FRAMEWORK: BLUE CARBON.



Source: *Blue Carbon World Bank 2023.*

Ghana's legal ownership regime for lands and all natural resources – including BCEs – is pluralistic, where customary and statutory laws coexist. Under the 1992 Constitution, the State is in charge of guaranteeing "the ownership of property" and recognizing the "ownership and possession of land." Broadly, land ownership can be divided into five types:

PUBLIC (i)

State lands,

VESTED LANDS (ii)

where the State acts as trustee for the stool landowners,

STOOL LANDS (iii)

a specifically Ghanaian concept, in which lands, also known as skin lands, are claimed by traditional owners or by the community represented by a chief,

FAMILY LAND (iv)

lands owned by a family and represented by the head of the family, and

PRIVATE LANDS (v)

land purchased by an individual or a group; once that individual dies, the land becomes family land.[56]

56 Ministry of Land and Natural Resources 2016.

In 2021, the Ministry of Lands estimated that at least 20 percent of the country's lands were owned by the State and governed by statutory law, while the other 80 percent were under customary tenure arrangements in the hands of chiefs and other customary authorities. This includes fish landing sites along the coast, which usually fall under customary ownership.[57]

The majority of Ghana's BCEs that are designated as protected areas are owned by the State. As of 2021, almost 97 percent of land included in protected areas were the property of the federal government or a national ministry or agency and come with certain mandatory rules on the management of their vegetation.[58] However, there is no automatic link between (State) land tenure and protection status. The REDD+ Strategy expressly states that "protection and management of the forest estate does not affect land and forest ownership," meaning that forest reserves land can be owned by non-government actors such as communities. Under the Forest Act (1927), forests reserves can be created by the President in government lands, stool lands, and other lands – upon advice of the Forestry Commission. The Act also establishes that "a forest reserve shall be managed by (a) the owner under the direction of the Forestry Commission, or (b) the Government for the benefit of the owner."[59] The REDD+ Strategy reiterates this provision.

Typically, mangrove areas are under the customary ownership of traditional authorities, who manage these areas on behalf of communities.[60] However, Ghana's pluralistic tenure regime, while supporting a fishing community's ancestral claim to an area, also exposes the community to potential disenfranchisement. This risk arises from competing claims by other coastal users, who may have significant political influence.

Beyond land tenure, Ghana has a separate "tree tenure" practice that grants to the government the ownership of all "naturally occurring" trees, including mangrove trees. Under the 1962 Concessions Act (Act 124), the government has a right to all naturally grown trees, including in lands privately held under customary title. Landowners are left to obtain a license from the government in order to cut trees for commercial purposes.[61] The statute applies to all forest trees – including mangroves.

The 2016-2035 REDD+ Strategy pointed out that government ownership of all trees creates "perverse incentives" to deforestation and degradation. This is because land users, including landowners, may see no reason to protect trees that do not belong to them. On the contrary, they have an incentive to cut naturally growing trees and replace them with planted ones, because they acquire ownership over those.

57 FAO 2021.
58 UNDP 2021 Aichi Biodiversity Target 11 Country Dossier: Ghana, p. 26.
59 Articles 2 and 17, Forests Act 1927.
60 Boakye et al. 2007.
61 Section 16, (4),1962 Concessions Act (Act 124).

Creation of a "national tree registry" would be an attempt to reform the tree tenure policy. Through this mechanism, landowners would register titles to planted trees on their land. Failure to register them would result in automatic ownership by the government. The proposed system has drawn criticism as "unrealistic and unsustainable," especially due to its high costs.[62]

3.3.7.1 PROTECTION AREAS

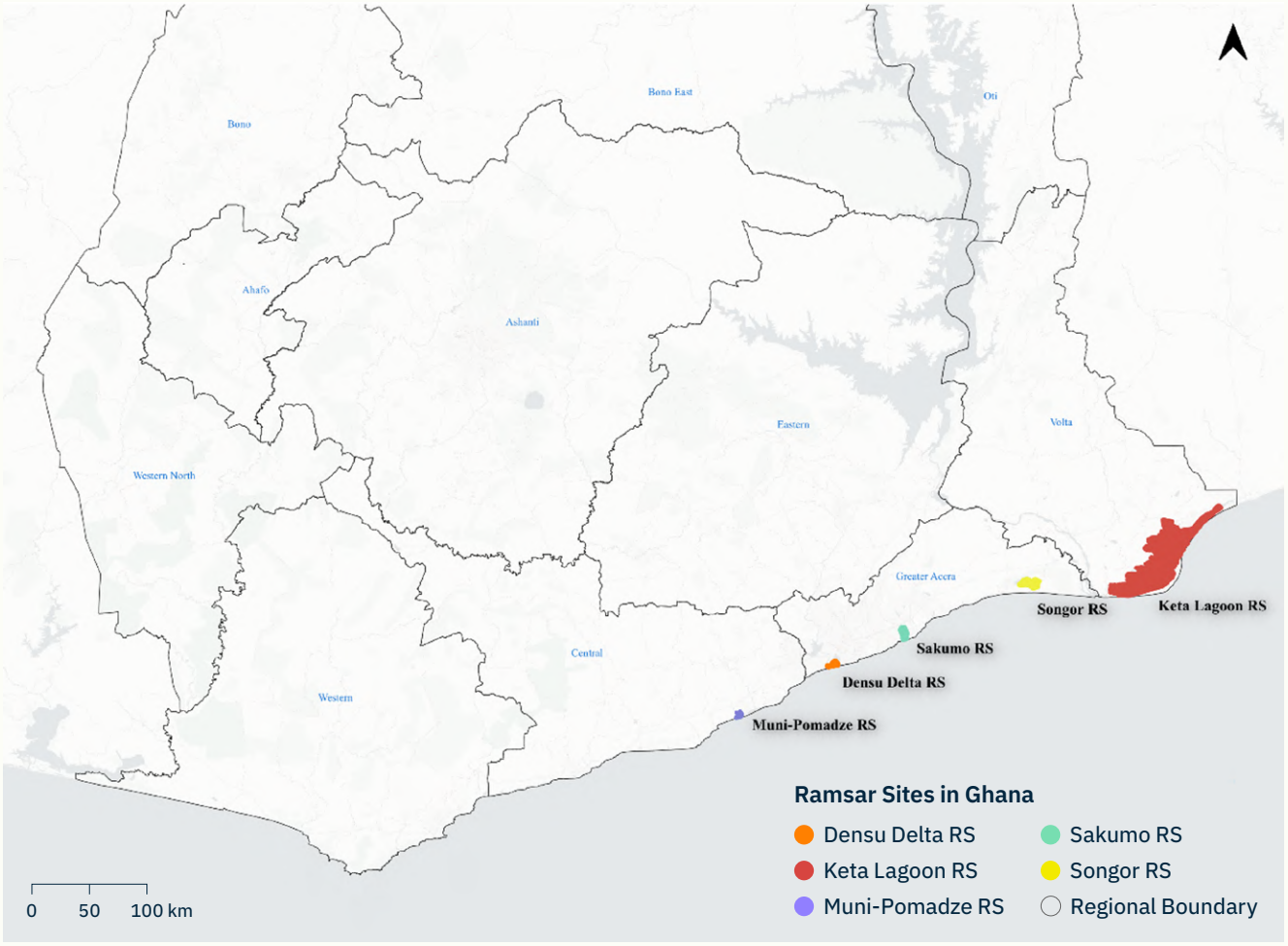
Ghana relies on a mix of hard and soft law instruments to promote BCEs protection. Although these numerous instruments mean that the framework is fragmented, they serve as an important basis for BCE protection. They include the 1927 Forest Act, 1952, the Land Planning and Soil Conservation Act, the 1974 Forests Protection Act (and a 2002 Amendment), the 1999 National Wetlands Conservation Strategy, the 1999 National Land Policy, and the 2023 Wildlife Resources Management Bill. The 2002 Fisheries Act (Act 625), meanwhile, regulates fishing activities in coastal areas and the 2016 Maritime Pollution Act (Act 932) protects ecosystems against marine pollution (particularly from ships). Similarly, the Fisheries Management Plan (2022 – 2026/ MFMP) targets the protection of marine habitats and biodiversity. This is in addition to protection given to wetlands broadly.

While the law prescribes a certain level of habitat protection, in practice Ghana's BCEs are not consistently protected, due in part to limited enforcement. Enforcement generally takes place only in areas demarcated as protected (including "forest reserve, "wildlife protected area," marine protected area (MPA), and/or Ramsar site (sometimes simultaneously). Coastal protection areas include the Songhor lagoon and the Sakumo and Anlo-Keta lagoon complex (including the Keta Lagoon).[63]

In total, Ghana has five Ramsar sites that include BCEs – in particular, mangroves.[64] The sites are the Keta Lagoon, Songhor Lagoon, Sakumo Lagoon, Muni Pomadze, and the Densu Delta.[65] They are within the small proportion of Ghana's territorial waters – only 0.1 percent of the total in 2022 – that are categorized as areas reserved by law or other means to protect a marine enclosed environment.[66] See Figure 7.

62 USAID 2021.
63 Protected Areas Navigation 2023.
64 Ramsar database, Access in November 2023. https://rsis.ramsar.org/ris-search/?solrsort=designationdate_dt%20desc&f%5B0%5D=regionCountry_en_ss%3AGhana&pagetab=1
65 IUCN 2016 and Ghana Wildlife Division, 2023. https://ghanawildlife.org/ .
66 UNEP-WCMC 2024.

FIGURE 7. RAMSAR SITES IN GHANA.



Source: *World Bank 2023.*

In terms of management regimes, Ghana has several classifications for protected areas. These include the four main forest management regimes: protection forests,[67] production forest reserves, off-reserve areas, and community forests. Concurrently, a straightforward classification distinguishes them simply as "reserve" and "off-reserve" forests. "[T]rees on farms, community resource management areas (CREMA) and community forests are designated as off-reserve areas while protection and production forests are designated as forest reserves."[68] (See Section 3.8 for definition of CREMA.)

The country also has "sacred groves," which are "isolated, very small patches of forest" outside of protected areas, preserved due to their religious and cultural importance.[69] The 1993 Environmental Act refers to sacred groves as being "Community-protected areas (CPAs)."

67 Protection forests also include Globally Significant Biodiversity Areas (GSBAs).
68 Ministry of Land and Natural Resources 2016.
69 IUCN 2103.

The Ghana government has considered both CREMAs and sacred groves as potential areas for inclusion in Other Effective Area-Based Conservation Measures – OECMs.[70,71]

Ghana has made significant progress in enacting laws and regulations aimed at assuring the integrity of protected areas. Under the Forests Protection Act (1974) and Amendment (2002), deforestation and other degradation activities in forests reserves are generally punishable acts. The 1999 Wetland Management Regulations sharply restricts the scope of tolerated activities in Ramsar sites. Permits for specific activities may be granted by the Forestry Commission (FC).[72] Industrial and semi-industrial fishing and aquaculture usually require a license from the Director of Fisheries (under the Ministry of Fisheries).[73] And the 2023 Wildlife Resources Management Bill, passed recently into law by the Ghanaian parliament, introduces higher penalties for wildlife offences to protect wildlife resources and consolidates laws relating to wildlife protected areas (including the Ramsar sites).

However, enforcement remains persistently lax — Ghana has plenty of room to better combat illegal usage of BCE areas, by systematically enforcing current laws and strengthening coordination among key government stakeholders, including beyond protection areas.[74,75] In practice violations of protection laws are common. The sanctions regime, mostly consisting of low-level fines,[76] is weak. An EPA study of the Western region of Ghana found that all three of the most dominant species of mangroves (red, white, and black) "are on the decline due to over-harvesting and habitat conversions" (SoME 2022).[77] It also identifies illegal sand mining as a persistent problem, along with the "laxity in the enforcement of fisheries laws." Overall, the report highlights the need for greater law enforcement by relevant institutions, including to manage the overexploitation of fisheries.[78] A milestone in environmental law enforcement may come with the passage of the Environmental Protection Bill 2023. While the text of the bill – which completed its second reading in June 2024 – was not available at the time of writing, current reporting suggests that the act will improve EPA's capacity to cause arrests and prosecute violations of environmental provisions.[79]

70 OECMs are defined in the 1992 Convention on Biological Diversity (CBD) as "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio–economic, and other locally relevant values..." cf. CBD Decision 14/8.

71 UNDP 2021 Aichi Biodiversity Target 11 Country Dossier: Ghana.

72 Article 1, Forests Protection Act (1974) and Amendment (2002).

73 2002 Fisheries Act (Act 625)

74 The B&FT online, July 4, 2024. "Crackdown on illegal fishing: Who will enforce the law?" https://thebftonline.com/2024/07/04/crackdown-on-illegal-fishing-who-will-enforce-the-law/

75 The International Journal for Rural Development (2022). https://www.rural21.com/english/archive/2022/01/detail/article/evidence-based-regulation-for-sustainable-development-coastal-protection-in-ghana.html

76 Estrin et al. 2020.

77 EPA 2020.

78 Ibid.

79 https://ukgcc.com.gh/ghanas-environmental-protection-agency-to-become-an-authority-soon/.

3.3.8 COMMUNITY GOVERNANCE

Ghana has several legal instruments that include community governance as a tool for sustainable management of ecosystems. The 2012 Forest and Wildlife Policy, for instance, includes objectives "to promote the rehabilitation and restoration of degraded landscapes through forest plantation development, enrichment planting, and community forestry." The policy generally encourages community involvement in protecting forest resources. Through the 1999 National Wetlands Conservation Strategy, communities are given a key role as "directly responsible for the management and 'wise use' of wetland resources in their localities." The policy also lays down that "the Government of Ghana sees its role in wetlands management as best performed through partnership and co-operation with local people, governmental and non-governmental organizations and the private sector."

Furthermore, Ghana's strategy for REDD+ (2016-2035) "supports the use of community-based land-use management mechanisms." It acknowledges that "Ghana already has more than twenty years of experience with a range of community based natural resources management (CBNRM) mechanisms and processes, including Participatory Forest Management (PFM), Community Resource Management Committees (CRMC), Dedicated Forests (DF), and Community Resource Management Areas (CREMA), the most widely tested of these mechanisms."[80]

CREMA is a form of CBNRM,[81] characterized as "a stronger form of forest decentralization" compared to traditional government management of forests.[82] Under this mechanism, the Minister responsible for forests issues a "certificate of devolution" for a specific area (the CREMA) to signify its autonomy from the State and the responsibility of a particular community for its management. While the recent (2023) Wildlife Resources Management Bill expanded the administrative scope of CREMAs, the system suffers from a lack of financial capacity and support (from both the government and the private sector) to the CREMA's local resource managers, whose responsibilities include law enforcement.[83]

80 NRS 2016.

81 According to Fabricus and Collins 2007, CBNRM concerns "the collective management of ecosystems to improve human well-being. It aims to devolve authority for ecosystem management to the local (community) level, thereby empowering communities to manage their own resources without permanently damaging, depleting or degrading them."

82 Mawutor and Hajjar 2022.

83 Ibid.

Outside CREMA, Ghana has experience in creating public-private partnerships (PPPs) for the purpose of managing conservation areas[84] (including the 2020 PPP Act 1039[85]). However, gaps concerning horizontal governance (*with* communities, not *of*) and the equitable sharing of benefits persist and have caused roadblocks to community engagement. Primarily, issues arise under the tree tenure regime, where benefit sharing to government authorities is clearly established but the allocation of benefits to communities is elusive. The REDD+ Strategy notes that "at its core, the problem with the existing benefit-sharing arrangement is that tree tenure … and benefit sharing regimes have been structured to only recognize the rights of the Forestry Commission, the stools, the district assemblies, the traditional authorities, and office of the administrator of stool land (OASL) without recognizing the rights and key roles of the land users and *de facto* managers of the trees." Moreover, the dual tenure regime can complicate benefit sharing, because it allows traditional authorities, who hold land ownership in trust for communities, to have their customary rights contested by other coastal users, who may have strong political influence. (See Section 3.7).

3.3.9 COMMUNITY BENEFIT SHARING AND CARBON RIGHTS

Benefit sharing arrangements in Ghana are primarily known from cocoa and timber plantations – but lessons apply to BCEs. Currently, the biggest example of a REDD+ benefit sharing plan is the Ghana Cocoa Forest REDD+ Programme (GCFRP), an emissions reduction (ER) program registered to the Forest Carbon Partnership Facility (FCPF) of the World Bank. The program aims to reduce forest degradation in general and deforestation in cocoa forests in particular. MoF is responsible for receiving payments from the Fund on behalf of other beneficiaries. The benefit sharing plan then distributes carbon and non-carbon benefits to several parties, including farmers, traditional councils, and communities, as well as government agencies such as the FC. Net carbon benefits are channeled at a proportion of 69 percent towards farmers groups, traditional authorities, and local communities.[86] GCFRP uses the CREMA mechanism as "a key avenue to give farmers rights to trees and resources within the boundaries of the CREMA" – i.e., as a means to channel benefits to the communities (albeit indirectly, through MoF).[87]

In 2017, the World Bank proposed solutions to issues related to tree tenure and benefit-sharing through its Ghana Natural Resources and Environmental Governance Technical Assistance Project (NREG-TA).[88] Focused broadly on forests, the project suggested amendments for off-reserve timber trees. Among the proposed interventions were to create "public and institutional awareness on the Forest and Wildlife Policy, 2012 directions and roles and responsibilities of all stakeholders." This would be accomplished through steps including "consultations and

84 Camille Rebelo 2022 and World Bank 2022. https://blogs.worldbank.org/en/ppps/forestry-ghana-novel-sustainable-use-public-private-partnership
85 https://mofep.gov.gh/sites/default/files/acts/PPP-ACT-1039.pdf
86 Forestry Commission 2020.
87 Ibid.
88 World Bank 2017.

development of recommended legislative reforms to support the implementation of the Forest and Wildlife Policy" and the "implementation of the Forestry Development Master Plan" as a "blueprint for sustainable forest management in Ghana" from 2016 to 2036. This work has led to the Additional Financing for Ghana Forest Investment Program (FIP) - Enhancing Natural Forest and Agroforest Landscapes Project, which focuses on improving "forest and tree management practices by cocoa farmers, CREMA communities, and forest reserve managers."[89]

Currently Ghana has no legislation in place to regulate carbon rights, but concerning cocoa, the GCFRP took pains in its design to show that carbon rights are respected through contractual arrangements and can be rightfully transferred among stakeholders. The importance of carbon rights was pointed out in the 2012 Forest and Wildlife Policy. It emphasized the need to "enact the necessary legislation to guide allocation of carbon rights and related matters." So far, legislative steps have not been taken, however. In 2023, the UN-REDD Program noted the lack of legislative follow-up and suggested that "legal options to clarify carbon rights might include updating legislation or agreeing upon how rights associated with Emission Reductions (ERs), or benefit allocation arrangements, will be established in compliance with the law and REDD+ safeguards."[90]

3.3.9.1 GENDER EQUITY

Access to BCE and BCE benefits remains restricted for the most part to men. Despite having a central role in mangrove activites (e.g., oyster picking, fish processing, and wood harvesting), women have fewer opportunities of access to formal tenure arrangements than men.[91]

The need for gender equity has been recognized in various policies and statutes. Ghana's 2020 Land Act provides specifically for the "prohibition of discriminatory practice," including discrimination on grounds of gender (Article 11). The act declares that concerning land under customary tenure, decisions or practices which discriminate against gender equity should be considered "void." Furthermore, it provides that Customary Land Secretariats should "appoint the required staff on merit and in accordance with best human resource management practice and gender considerations."

89 https://projects.worldbank.org/en/projects-operations/project-detail/P163745
90 "Strengthening the forestry legal framework in Ghana." https://www.un-redd.org/post/strengthening-forestry-legal-framework-ghana
91 World Bank 2023b.

Recent data suggest that these legislative instructions have not yet led to material changes on the ground. To tackle gender discrimination with regards to land and land benefit access and resources management (including Blue Carbon), the World Bank's CCDR argues for the strengthening of human capital management by the Customary Land Secretariats, with inclusive hiring and procurement efforts. It also recommends investing in gender-smart climate and biodiversity action (including through capital flows to women organizations).[92, 93]

3.3.10 INSTITUTIONAL FRAMEWORK

The main stakeholders in issues of Blue Carbon are government agencies, communities, and research and investment institutions.

3.3.10.1 STAKEHOLDER GROUP 1: GOVERNMENT AGENCIES

Blue Carbon habitats fall directly or indirectly into the remit of multiple ministries and agencies. The Ministry of Lands and Natural Resources (MNLR) is the lead national entity for oversight and direction of REDD+ activities, as well as of the Ramsar sites. The Forestry Commission (FC), an agency under the MNLR, is responsible for the management of lands, forests, wildlife, and mineral resources (including forest reserves). Its technical arm – the Wildlife Division (WD) of the FC – promotes the conservation and management of wildlife and protected areas. It is also designated as the Ramsar administrative authority and is responsible for the management of wildlife protected areas. The Ministry of Fisheries and Aquaculture Development (MFAD or MOFAD), meanwhile, holds management powers over the marine zone, with the intertidal zone (think mangroves) falling under a dual remit of MNLR and MOFAD. The Fisheries Commission, an implementing agency under MoFAD, is responsible for monitoring, control, surveillance, evaluation, and compliance functions in all areas of fisheries development and management in Ghana.

Ghana's EPA enforces regulations and monitors compliance related to mangroves protection, including by providing opinions to other government entities in environmental impact assessments. Permits and licenses for coastal uses can be issued by various institutions, including the FC, EPA, and Ministry of Fisheries and Aquaculture Development (MFAD or MOFAD). Fishing and aquaculture practices require a license, even at small scale. Licenses are usually granted for a maximum of one year, renewable for an equal period.

92 World Bank 2022.

93 See also PROBLUE and Biodiversity, Factsheet. https://thedocs.worldbank.org/en/doc/dcb50c3383110e23850603bdf92fe065-0320072023/original/PROBLUE-GBF-CLEARED-and-FINAL-May-31.pdf

The country's governance structure for measuring progress against climate change pledges involves several key entities. Overall coordination is the job of the Ministry of Environment, Science, Technology and Innovation (MESTI). This agency plays a central role in updating NDCs and the Climate Change Agenda. It advocates for resource allocation at both the Cabinet and parliamentary levels. MESTI is also responsible for operationalizing carbon pricing measures, including Article 6 and other international carbon market instruments (see Pillar 3). EPA collaborates with MESTI in coordinating the achievement of NDC targets, particularly those related to the LULUCF sector. Monitoring and evaluation for the development of mitigation initiatives is supported by the National Development Planning Commission (NDPC). Furthermore, each ministry contributes to the process through its Policy Planning and Monitoring and Evaluation Directorate (PPMED). PPMEDs are directly in charge of monitoring, evaluating, and tracking progress against NDC targets. In addition, the MoF plays a crucial role by mobilizing and tracking inflows from the government, development partners, and the private sector to implement NDCs.

The governance framework for marine spatial planning and the Blue Economy sector also involves diverse actors. MOFAD is responsible for the sustainable management of fisheries resources, including regulating Blue Carbon areas and wetlands. The Ghana Maritime Authority (GMA), which functions under the Ministry of Transport, is the main regulator and coordinator of Ghana's maritime industry (particularly shipping). The Ministry of Transport plays an important role in the Blue Economy. Further, the Land Use and Spatial Planning Authority (LUSPA), operating under MESTI, controls any physical development (i.e., activity or construction) in sensitive areas, such as forest reserves, nature reserves, and coastal wetlands.

Another key activity—Monitoring, Reporting, and Verification (MRV) – for the development of BCE climate efforts is led by a collection of government agencies. Notably, the FC deals with the forestry inventory, including managing the National Forest Monitoring System (NFMS), and is responsible for "forestry mitigation projects." The EPA deals with climate change data, including BURs, National Communications, Environmental Impact Assessments (EIAs), and annual climate change reports. The National Development Planning Commission manages progress reports on Sustainable Development Goals (SDGs) while the Ministry of Food and Agriculture deals with "agriculture facts and figures." At higher levels, implementation of climate targets is overseen by various ministries, including MOF, MNLR, MESTI, and the Ministry of Agriculture and Food.[94,95]

94 ICAT 2017.
95 ICAT 2021.

3.3.10.2 STAKEHOLDER GROUP 2: COASTAL COMMUNITIES

While the law recognizes customary land title of coastal communities, overall management of Blue Carbon habitats is still in the hands of MNLR unless a form of community governance – specifically CREMA – is agreed. Several CREMAs can be found along the coast, with communities establishing bylaws and bespoke governance rules.

But communities can also function as degradation drivers. Notably, BCEs areas are under constant threat of deforestation and degradation as local people use them for fish smoking, rice production, fuel wood, salt pans, and aquaculture, among others. This is despite the fact that most wetlands – and BCEs within them – have stricter policy (soft law) protections and that legal sustainable productivity and uses are broadly encouraged in activities such as farming, fishing, and producing salt and timber.

3.3.10.3 STAKEHOLDER GROUP 3: BLUE CARBON RESEARCH AND INVESTMENT INSTITUTIONS

Multiple donors and the private sector are actively supporting Blue Carbon initiatives in Ghana. This group acts by providing dedicated funds or acting as finance facilitators. It includes prominent multilateral entities (such as the World Bank) and development agencies (such as USAID). The private sector role in mangrove restoration began in 2020 with entry of Seawater Solutions and later Terraformation. More recently, the Danish Energy company Ørsted has taken up a role. See below, Pillar 3.

On the national front, key players include research institutions such as the Cape Coast University – particularly through its Africa Centre of Excellence in Coastal Resilience (ACECoR), recognized as a "center of excellence" by the World Bank in 2019. Other research institutions include the University of Ghana, the Kwame Nkrumah University of Science and Technology (KNUST), and the Centre for Maritime Law and Security Africa (CEMLAWS Africa). These institutions play a vital role in researching and mapping coastal ecosystems in Ghana, although seagrass-specific research remains rare. An example of their work is technical support that ACECoR and CEMLAWS provided to the development of the recent maritime policy.[96]

96 NIMS 2022.

3.3.11 ACHIEVEMENTS AND AREAS OF IMPROVEMENT

ACHIEVEMENTS

Gauging Ghana's performance against the benchmarks of the Blue Carbon Readiness Framework for Pillar 2, several achievements stand out. The NDC includes mangroves in the wider LULUCF scope and spells out action-driven targets to promote coastal resilience and protection of BCE. The country's clear commitment to utilizing Article 6 engagement offers concrete opportunities for enhanced Blue Carbon engagement.

For NDC implementation, Ghana has devised a detailed action plan and several policies to support commitments, as well as a unique governance structure for NDC tracking. REDD+ is an area of significant impact in Ghana, including through current consideration of an Emission Reduction Program for Coastal Mangroves.

Ghana soft law provisions regarding wetlands (particularly coastal Ramsar sites) and biodiversity (including BCEs in the sites) is encouraging for promoting protection. This is true especially for laws arising from the 1999 National Lands Policy, the 1999 Wetlands Conservation Strategy, and the 2023 Wildlife Resources Management bill.

The country has several robust institutional structures and actors. MLNR is the lead agency concerning REDD+ activities. It manages forest activities, through its Forestry Commission. MESTI and EPA have shown a firm grip on NDC implementation, monitoring, and the use of carbon markets. MOFAD combines coastal zone management with the emerging policy design of the Blue Economy. On the ground in coastal areas, multiple communities hold distinct governance powers through the CREMA mechanism.

AREAS OF IMPROVEMENT

The recent NDC lacks definitive commitments to use the 2013 Wetlands Supplement. That makes the NDC mitigation targets and the accounting for BCEs opaque.

Mangrove forests are inconsistently considered due to the exclusion of SOC from the NDC. Seagrass beds and salt marshes, meanwhile, are entirely overlooked. Although there are some action-driven targets towards BCE protection, the country lacks specific enforcing commands (such as to create "X" number of MPAs by 2030).

For NDC implementation, the main government plan, the Ghana National Climate Change Master Plan Action Programmes for Implementation 2015–2020, has expired and needs renewal. Bringing the plan up to date with a holistic approach would establish a robust Blue Carbon valuation, delineate conservation and restoration targets for short-, mid-, and long-term objectives, and articulate clear priorities and firm action commitments (targeting policy, community, and finance aspects to ensure comprehensive action). Other BCE-relevant policies also require updates. These include the National Climate Change Adaptation Strategy (2010-2020) and the National Wetlands Conservation Strategy and Action Plan (2007–2016). The plan should be detailed so it can serve as a basis and guidance for specific project decisions. Furthermore, the Forestry Development Master Plan (2016/2036) should be effectively implemented as a blueprint for the forestry sector.

In terms of legal protection, Ghana could do considerably more to create clear, transparent, and enforceable frameworks stretching across all BCEs. While the number and size of marine protected areas – and other area-based conservation measures (OECMs) – should be expanded as a priority and with inclusion of sensitive BCEs as a target, legal protection should be put in place for all BCEs along the coast. Clear legal responsibilities should be defined and enforcement capacities should be strengthened across the board. Relevant agencies, including the Forestry and Fisheries commissions and the different Ministries (including MESTI, MOFAD, and MNLR), should closely coordinate.

Ghana needs better-designed and implemented regulations and administration to curb high levels of degradation and deforestation in BCEs. New tools have recently been created with the 2023 Wildlife Management bill to empower CREMAs and the 2022 NIMS to promote the Blue Economy and MSP. These should be effectively put into action. The draft of the Aquaculture Development Plan (2024-2028) is also an opportunity to ringfence sustainable development into the aquaculture sector, particularly within mangrove areas, preventing unsustainable degradation and deforestation. The same logic applies to the upcoming Aquaculture Guidelines and Code of Practice, as well as the Guidelines for the Introduction and Management of Exotic Fish Species. Better protection can also result from establishment of public-private partnerships, including for the co-management of protected areas and cooperation with communities.

A strong case exists for reforming the current concept of tree tenure with its problematic impacts on habitats and communities. The matter can be combined with a recognition of carbon rights linked to the stewardship of the forest (and the BCE), whether primary or secondary.

The Government should spell out specific incentive regimes for BCE conservation and restoration. This may be a government-led REDD+, such as the long-planned Emission Reduction for the Coastal Mangroves Program, which is yet to be rolled out. It may be a bottom-up REDD+ program, with communities (e.g., CREMA-based ones) and other non-state actors given the opportunity to develop REDD+ projects and programs. Or it may be through Article 6 engagement (see below, Pillar 3). While all paths are feasible, it is important that the Government decides as soon as possible and creates regulatory certainty. Any such decision should come with a principled approach to the integration of communities (including particularly women, but also youth and marginalized groups) and benefit sharing arrangements. Clear rules on participation and land access requirements for Blue Carbon initiatives and general rules on the distribution of investment (notably carbon) proceeds are welcome. It is crucial to enhance policies for Female Labor Force Participation (FLFP) in the Blue Economy, empower women (including for leadership roles and decision-making), and address the gender-Blue Carbon and gender-blue biodiversity nexus. In addition, scaling up financing for gender-smart climate and biodiversity action should involve directing capital towards women-led initiatives and ensuring the inclusion of women, youth, and marginalized groups in shaping investment priorities for locally-led initiatives.[97]

97 World Bank 2023b and World Bank 2022.

3.4

FINANCE (PILLAR 3)

FIGURE 6. SUMMARY TABLE FOR PILLAR 3 STATUS BASED ON DECISION TREE FRAMEWORK.

▼ DECISION TREE PATHWAY	▼ STATUS	▼ STATUS EXPLANATION
Does your country have a Blue Carbon finance and investment strategy in place?	L	Ghana has an opportunity to develop a Blue Carbon finance and investment strategy.
Has your country operationalized specific funding tools?	M	Several financial tools have been implemented: • REDD+ National Strategy • Blended finance through WACA • Article 6 Framework Ghana could consider using other funding tools, such as blue bonds.
Does your country intend to use carbon markets as a means of investment?	H	Mangrove biomass activities are eligible to generate ITMOs as activities outside NDC. Article 6 Framework is already being implemented. Mangrove SOC, seagrass, and saltmarshes are not yet included in Article 6 Framework.

PILLAR 3 OVERALL STATUS: MODERATELY ADVANCED

QUALITY L M H — LOW HIGH

PROGRESS I → II → III — LIMITED ADVANCED

ACHIEVEMENTS **MISSING**

3.4.1 BLUE CARBON FINANCE STRATEGY

Though Ghana is actively leveraging diverse financial resources to restore forestry ecosystems, including blue ecosystems, it has no specific Blue Carbon Finance Strategy in place. The country has successfully secured funding through various channels, such as REDD+, blended finance, grants, and, more recently, Article 6 of the Paris Agreement. While these tools have helped mobilize funds (see below), they are not the result of a firm financing strategy tailored to coastal habitats, which puts their longevity and sustainability in jeopardy. Ghana would benefit from developing a clear blue finance strategy to enhance its ability both to mobilize and allocate further funding.

3.4.2 OPERATIONALIZED FUNDING TOOLS

Between 2013 and 2017, Ghana received US$776.5 million to support 405 projects focused on mitigation activities.[98] But the World Bank estimates that Ghana will face adaptation costs ranging between US$300 and US$400 million per year. This indicates a gap in the financial support received for climate change activities, especially for adaptation efforts.

To bridge this shortfall, Ghana must strengthen efforts to attract additional funding for adaptation costs, as outlined by the World Bank. Ghana has demonstrated ability to secure funding for forestry and blue ecosystems through mechanisms such as REDD+, blended finance, grants, and Article 6 of the Paris Agreement. However, the country clearly needs to put more effort into securing financial support for the significant adaptation costs.

3.4.3 NATIONAL REDD+ STRATEGY

Ghana has gained extensive experience from the implementation of REDD+ programs. In 2015, Ghana unveiled its twenty-year National REDD+ Strategy, aimed at tackling drivers of deforestation and degradation, including agricultural expansion, wood harvesting, population and development pressures, and mining.[99] The strategy revolves around three key projects:

98 Civic Response 2020.
99 NRS 2016.

i

the Cocoa Forest REDD+ Programme, addressing emissions reductions in the Cocoa Forest Mosaic Landscape,

ii

the Shea Savanna Woodland Programme, focused on emission reductions in the Shea Landscape of the Northern Savanna Woodland, and

iii

The Policy and Legislative Reform Program, dedicated to reforms of tree tenure and carbon rights in Ghana.

The Cocoa Forest REDD+ Programme, initiated in 2019, promotes climate-smart cocoa production methods. It emphasizes intensification and yield enhancement. Under the World Bank's Forest Carbon Facility Program (FCFP), the project targets the generation of 10 million tons of carbon emission reductions over six years. In 2023, Ghana received its initial payment for reductions. The Forest Carbon Partnership Facility (FCPF) disbursed $4,862,280 to it for reducing CO_2 emissions by 972,456 tons during the first monitoring period of the program,[100] equivalent to US$5 per ton of CO_2.

The Ghana Shea Emission Reductions Program aims to restore savannah forests and woodlands through self-financing community management. This initiative, now under implementation, aims to increase forest carbon stocks through actions that include rehabilitating 200,000 ha of off-reserve savannah forests/woodlands under community management, rehabilitating 100,000 ha of degraded shea parklands, establishing 25,500 ha of modified taungya system/forest plantation in degraded reserves, and putting in place an integrated monitoring system. Anticipated outcomes include a total of 6.139 million tCO_2e in emission reductions and removals within the first seven years and 25.24 million tCO_2e over 20 years.[101] The program is primarily funded by the Green Climate Fund.[102]

These initiatives underscore Ghana's commitment to sustainable environmental practices and the use of new and innovative financing tools. They serve as a promising model for other climate actions and funding. Indeed, plans have been put forward for developing a new REDD+ program which would target mangroves, the Emission Reductions Program for the Coastal Mangroves. The program has not been described in detail, yet given the REDD+ experience gained over recent years, it seems to offer a tangible path for effective Blue Carbon mitigation.

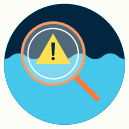
100 https://www.un-redd.org/post/ghana-receives-its-first-payment-emissions-reductions
101 https://reddsis.fcghana.org/single-project.php?proj_id=3
102 https://www.greenclimate.fund/project/fp137#investment

3.4.4 BLENDED FINANCE

The West Africa Coastal Areas Management Program (WACA)[103] is a regional integration program supported with World Bank finance to nine countries in West Africa. Developed in partnership with people who live on the continent's west coast and depend on it for their livelihoods, food, and prosperity, the WACA program draws on US$477 million in IPF funding to help countries better manage their shared coastal resources and reduce the natural and manmade risks that coastal communities face. The program consists of country-level IPF projects and a regional platform that promotes integration, the sharing of knowledge, and political dialogue between member countries. The platform also mobilizes public and private finance to tackle coastal erosion, flooding, pollution, and climate change adaptation.

Within the WACA program, Ghana secured co-finance funding for a pilot project aimed at conserving and restoring extensive mangrove areas, the Mangrove Blue Carbon Pilot Program. Its total value is US$13.5 million—US$2 million from the International Development Association (IDA), US$3 million from PROBLUE (the multi-donor trust fund of the World Bank), and US$8.5 million from the Danish energy company Ørsted.[104] These funds will go toward planting, technical assistance, and maintenance of at least 3,000 ha of Ghanaian mangroves over a 20-year period.

With this program, Ghana is making strides in implementing sustainable coastal protection strategies, as a Multisectoral Investment Plan (MSIP) is being prepared for the country as an "action plan." The MSIP will include



1

a risk assessment of coastal hazards (flooding and erosion),

2

an identification of intervention sites ("hotspots" – coastal communities, critical infrastructure, and economic activities highly vulnerable to flooding, erosion, and pollution), based on technical analyses and consultations with stakeholders, and

3

development of specific investment needs (and intervention options) for strengthened coastal resilience.[105]

103 West Africa Coastal Areas Management Program. Managed by the World Bank Group. www.wacaprogram.org
104 https://www.worldbank.org/en/news/press-release/2022/11/16/world-bank-announces-new-blue-economy-financing-program-for-african-countries
105 https://www.wacaprogram.org/country/ghana

In partnership with MESTI and IUCN, WACA (including the Mangrove Blue Carbon Pilot Program) is set to finance site-specific interventions for coastal protection, including green infrastructure solutions. According to the WACA website, managed by the World Bank, these will include "submerged native aquatic vegetation, mangrove protection and reforestation to serve as a buffer to inundation and sea-level rise, and/or sand fill to restore shorelines between communities and the sea." Pre-feasibility studies are taking place in priority sites, notably communities in the Pra River Estuary and the left bank of the Volta River Mouth, including the Anyanui-Agbledomi-Dzita stretch of coast.[106] Special attention will go to creating opportunities for marginalized groups, including women and indigenous peoples.[107,108]

106 https://www.wacaprogram.org/country/ghana
107 See also https://www.wacaprogram.org/knowledge/impact-stories-coastal-protection
108 See further: https://mesti.gov.gh/wp-content/uploads/2022/10/Environmental-and-Social-Management-Framework.pdf

3.4.5 DONOR FUNDING

Ghana has implemented mangrove restoration projects through donor funding as illustrated in Figure 7.

FIGURE 7: DONORS' SUPPORT TO GHANA'S POLICIES.

PROJECT DEVELOPER/ PARTNER	PROJECT NAME	YEAR	DESCRIPTION	LOCATION	SIZE	STATUS
Friends of the Earth Ghana. WRI, One Tree Planted, and Realize Impact.[109]	**Keta-Anlo Mangrove Restoration Initiative (KAMRI)[110]**	2023- to date	Restoration of degraded mangroves. WRI, One Tree Planted, and Realize Impact allocated US$15 million to support 100 locally led community organizations and entrepreneurs in Africa through individual grants and loans ranging from US$50,000 to US$500,000.	Keta-Anlo	110 ha	Ongoing, planned to conclude by end of 2024. After 6 months of careful screening, the funders have selected 80 community projects and 20 enterprises for restoration projects across Africa. The cohort of selected enterprises in Ghana includes EcoCare Ghana, CERATH Development Organization, Friends of the Earth-Ghana, Goshen Global Vision, Hen Mpoano, Herp-Ghana, Institute of Green Growth Solutions (IGGS), Institute of Nature and Environmental Conservation (INEC Ghana), Sustainable Agroforestry Initiative (SAFI), PADO Investments Limited, and Tilaa Ltd.[111,112]
Canada Fund for Local Initiative (CFLI) and A Rocha Ghana	**Winneba Ghana Project**	September 2016 to February 2017	Aimed to empower women in sustainable management of mangrove resources, among other activities.	N/A	N/A	Concluded: The study site's mangrove forests were mapped, characterized, and zoned, with the establishment of mangrove nurseries and the planting of seedlings for the restoration of degraded mangrove areas.

109 https://www.wri.org/update/terrafund-afr100-selection-process
110 https://foeghana.org/
111 https://www.wri.org/update/terrafund-afr100-selection-process
112 See also: https://www.wri.org/news/release-landscape-restoration-champions-across-africa-receive-usd-178-million-financing

PROJECT DEVELOPER/ PARTNER	PROJECT NAME	YEAR	DESCRIPTION	LOCATION	SIZE	STATUS
A Rocha Ghana IUCN	**"Mono-Volta Mangroves Project"** **PAPBio Project**	2019- 2024	Halt degradative trends in the Keta Lagoon Ramsar Site. Nurse and plant 30,000 mangrove trees, while 10,000 woodlot species are planted.[113] Funded by the European Union through the International Union for Conservation of Nature (IUCN), the initiative is part of Management of Mangrove Forests from Senegal to Benin: The PAPBio C1-MANGROVES, a €9.9 million four-year project.[114]	Ramsar sites of the Songor Lagoon and Anlo-Keta Lagoon Complex in Ghana	N/A	Concluded. Workshop for closure of Project held in June 2024 "to share lessons, challenges, experiences for upscaling and policy integration." Outcomes of the assessment, reported by Media Platform on Environment and Climate Change (MPEC), include that: "the project has achieved a lot of success including restoration of degraded mangroves sites, capacity development and provision of diverse livelihoods enhancing opportunities for five (5) communities in the Keta Lagoon Complex Ramsar Site Management" and "these efforts have been mainstreamed into local level plans to ensure sustainability."[115]
USAID and the Chief of the Community	**Sustainable Fisheries Management Project**	2014 (12-month project)	Restoration of degraded mangroves. USAID granted US$24 million.[116]	Sanwoma	N/A	Concluded: Within 12 months after the "study tour" (site visit done by the fishing communities in areas where mangroves were restored), a total of 8,200 mangrove seedlings were shown successfully replanted, covering approximately 45 percent of the previously degraded area.[117]
USAID and U.S. Forest Service	**Coastal Sustainable Landscapes Project (CSLP)**	2013-2018	Capacity building on mangrove governance.	West Coast of Ghana	N/A	Concluded: 24 Wetland Conservation Committees were formed to champion the co-management of wetlands and mangroves.[118]

113 https://ghana.arocha.org/news/scaling-up-mangrove-protection-and-conservation-around-the-klcrs/
114 https://www.papbio.org/UICN+-+Mangroves+-+US#:~:text=%22PAPBio%20C1%2DMangroves%22,enhanced%20resilience%20to%20climate%20change.
115 https://mpecgh.org/2024/06/04/mangrove-project-closure-workshop-in-accra-ghana/
116 https://www.globalwaters.org/HowWeWork/Activities/sustainable-fisheries-management-project
117 https://pdf.usaid.gov/pdf_docs/PA00WJ5X.pdf
118 https://ghanalinks.org/web/cslp

PROJECT DEVELOPER/ PARTNER	PROJECT NAME	YEAR	DESCRIPTION	LOCATION	SIZE	STATUS
Wildlife Division,local NGOs, communities and Conservation Alliance International (CA)	**Korle Lagoon Rehabilitation Project**	2007	Rehabilitation and protection of wetlands - including Ramsar sites.[119]	Songor Ramsar Site	N/A	Concluded. A Management Plan was established for the Songor Ramsar site.[120] In addition, "communal restoration activities have been undertaken in partnership with civil society organisations, government entities, the private sector, and academia, amongst others, as recommended in the Songor Ramsar Site Management Plan." A large part of the success of the initiative attributed to effective community engagement – including community education on conservation measures, assistance on community restoration efforts, and evaluation of this work, all undertaken in collaboration with Conservation Alliance International (CA).[121]

119 https://www.itto.int/files/itto_project_db_input/2798/Competition/Final%20Report%20-%20Tenure%20report%20convert.pdf
120 https://www.ramsar.org/sites/default/files/documents/2014/national-reports/COP12/cop12_nr_ghana.pdf
121 R. Owusu-Achiaw and Y. Osei-Owusu 2023.

3.4.6 CARBON MARKETS AS MEANS OF INVESTMENT

3.4.6.1 ARTICLE 6 OF THE PARIS AGREEMENT

Article 6 of the Paris Agreement introduced a new era in international emissions trading. This provision enables countries to work together to achieve their Nationally Determined Contributions (NDCs) by engaging in the international trading of mitigation outcomes (ITMOs).

Ghana's NDC aims to mitigate an absolute of 64 $MtCO_2e$ by 2030, with a specific target of 24 $MtCO_2e$ from unconditional support and 39.4 $MtCO_2e$ from conditional support.[122] The NDC underscores Ghana's commitment to achieve up to 55 percent of its conditional absolute emissions reductions under Article 6.2 of the Paris Agreement.

Ghana's efforts to date make it a leading country in the implementation of Article 6. In 2022, Ghana's commitment to a cooperative approach became clear with the publication of the country's Framework on International Carbon Markets and Non-Market Approaches under the EPA Act 490.[123] Volume 1 of this framework provides policy, regulatory, and operational insights into the country's engagement in the Article 6.2 cooperative approach and the voluntary market. Under the Framework, Ghana facilitated the world's first bilateral ITMOs transaction.[124] The project involves the retraining of rice farmers using eco-friendly agricultural techniques to diminish the rice sector's carbon footprint and mitigate methane emissions. Encompassing almost 80 percent of Ghana's rice production, the initiative is projected to achieve a reduction of over 1 million tons of carbon dioxide equivalent by 2030. Switzerland intends to incorporate these emissions savings into its climate plan to achieve greenhouse gas emissions reductions. Switzerland's bilateral agreement with Ghana, negotiated through the Swiss motor fuel importers' KliK Foundation, does not refer explicitly to blue carbon (or any other specific mitigation activity). However, it could allow Switzerland to facilitate blue carbon projects in Ghana.[125]

Ghana's Framework allows mangrove projects (biomass only) to generate ITMOs, but only as activities *outside the NDC*. This is because the framework provides that activities outside the NDC can issue ITMOs if they are included in Ghana's latest National Greenhouse Gas Inventory and an agreement is established with a participating party. Since mangrove biomass is included in the last inventory, these projects can generate ITMOs. This is applicable to projects under the VCM, which can generate ITMOs as activities outside the NDC. Although Blue Carbon to

122 MESTI 2021.
123 CMO 2022.
124 https://carboncredits.com/first-ever-emissions-trading-itmo/
125 https://cmo.epa.gov.gh/index.php/ghana-swiss-cooperative-approach-under-article-6-2-of-the-paris-agreement/

date is not fully accounted for in the National Greenhouse Gas Inventory,[126] ongoing efforts by the EPA aim to incorporate it. For mangroves, only the soil carbon pool is missing in any case. Once integrated, mangroves (or Blue Carbon at large) could become fully eligible for Article 6 transactions.

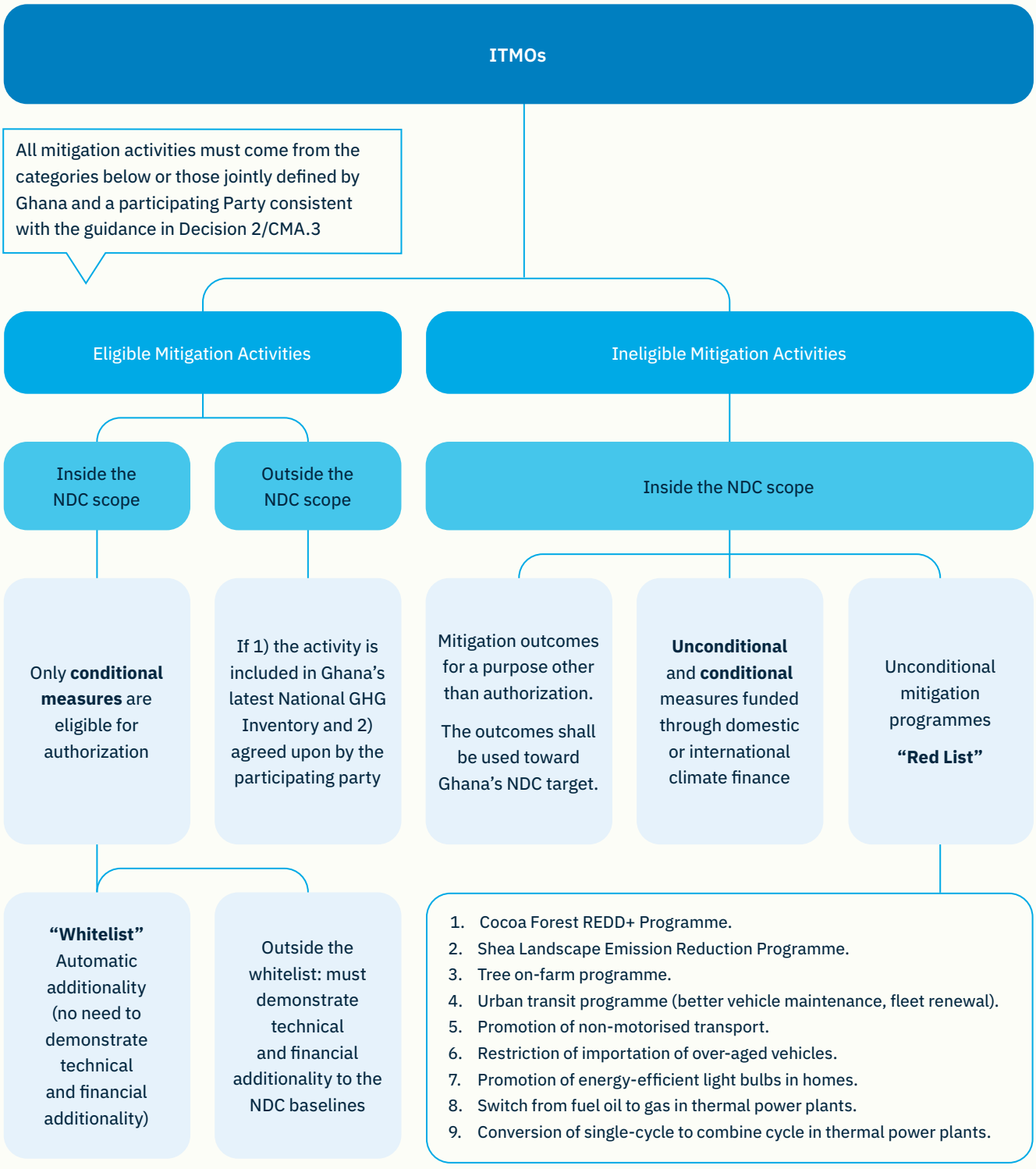
For *sectors within the NDC* – and therefore to count towards NDC achievement – the Ghanaian Framework does not yet foresee Blue Carbon as eligible mitigation activity. On one side, "forest conservation and forest plantation" (think mangroves) are included in Criteria 1 of Section 3.4.2.1 (this criterion lies outside of the NDC sectors which can be part of the whitelist). However, the subsequent Section 3.4.2.2 excludes the forestry sector for the first whitelist period (2022-2025). This is because this current whitelist only allows activities from the waste sector, renewable energy, and sustainable cooking to generate ITMOs, and only if arising from conditional NDC targets.

Ideally, Blue Carbon should be included in Ghana's Article 6 Framework's whitelist as a conditional measure with automatic additionality (i.e., no need to prove additionality to the NDC baseline). Until the whitelist is updated, the full Article 6 opportunities for blue carbon remain locked. Nevertheless, Blue Carbon projects can take part in voluntary carbon transactions under other market mechanisms, beyond the Paris Agreement (see further in Section 4.6.2).

For details on eligible and ineligible mitigation activities, see Figure 8 below.

126 EPA 2022.

FIGURE 8. ELIGIBLE AND INELIGIBLE MITIGATION ACTIVITIES: GHANA'S FRAMEWORK ON INTERNATIONAL CARBON MARKETS AND NON-MARKET APPROACHES.



Source: *World Bank 2023.*

BOX 1. ARTICLE 6 GOVERNANCE – GHANA'S FRAMEWORK ON INTERNATIONAL CARBON MARKETS AND NON-MARKET APPROACHES.

Ghana's Framework establishes a multi-tiered governance system. The Carbon Market Inter-Ministerial Committee provides high-level strategic support and holds meetings every six months, overseeing the overall direction of Ghana's involvement in Article 6.2. In addition, a Governing Committee (CMC) formulates and approves transaction rules while executing mandates assigned by the Ministry of Environment, Science, Technology, and Innovation (MESTI). Day-to-day management responsibilities, including policy implementation on transactions, MRV, registry operations, ITMO creation and transfer, reporting, and corresponding adjustments, are handled by the Carbon Market Office (CMO).[127] The Office is part of the climate change unit of the Environmental Protection Agency (EPA). To further support the CMC and CMO, a Carbon Market Technical Committee provides assistance on authorization, approved methodologies, validation and verification entities, and the issuance of mitigation outcomes.[128]

127 https://cmo.epa.gov.gh/
128 https://www.goldstandard.org/blog-item/implementing-article-6-overview-preparations-selected-countries

3.4.6.2 VOLUNTARY CARBON MARKET

Ghana has multiple entities using the voluntary carbon market as a finance source in addition to the Article 6 cooperative approach. Standard Blue Investments (SBI) is a Ghanaian social enterprise leveraging financial flows from the VCM to provide long-term sustainable programs and infrastructure that improve the livelihoods of beneficiary communities. Ghana Leads Blue (GLB) is an SBI project that supports the reforestation of mangrove forests in the Keta Lagoon Complex, the Volta River Estuary, and the Songor Lagoon. This initially 24-month project aims to plant more than 5 million seedlings in 2,000 ha of degraded mangrove forests, 300 ha of bamboo and multi-crop farms, and more than 1,000 coconut trees.[129]

Since 2020, Seawater Solutions has been developing a carbon project in Keta lagoon (and it has later reached an agreement with Terraformation to support activities).[130] The project has conducted some planting, explored financing packages and engaged with clans and communities. It is being developed under the VCS standard, applying Ghana's Article 6 Framework. The Danish energy company Ørsted has made a voluntary commitment to the voluntary carbon market.

With funding support from the UK's Blue Planet Fund, the University of Education, Winneba-Ghana (UEW) and Hen Mpoano are conducting a pilot program for voluntary community mangrove carbon credits (VCMCC). The initiative aims to help farmers transition from logging to restoration by focusing on activities such as community engagements, mapping socio-economic status, providing loans for beekeeping and clam/oyster farming, and establishing a framework for carbon certifications. Following the pilot phase, the program plans to expand its efforts to scale sustainable mangrove farms and create an inclusive VCMCC market in other wetlands in Ghana and subsequently in other parts of West Africa.

129 https://standardblueinvest.com/ghana-leads-blue/
130 https://www.terraformation.com/projects/seawater-solutions

3.4.7 OTHER FUNDING OPPORTUNITIES

Ghana has made significant progress in establishing alternative funding mechanisms for climate-related initiatives. Notably, a national climate fund is under development, and the country is fostering international connections through a panel dedicated to the sustainable management of the ocean. Now, the country needs to demonstrate effective use of these tools to secure essential financing.

3.4.7.1 GHANA GREEN FUND

The German government, through GIZ, has assisted the Ministry of Finance in crafting preliminary legislation for a fund that is currently awaiting government review and approval. The fund is designed to streamline, co-finance, and direct investments necessary for the execution of established policies and laws concerning the environment and climate change. These investments encompass a broad spectrum, including climate change adaptation and mitigation, waste management, industrial pollution control, resource utilization, sustainable forestry, biodiversity and nature protection, and sustainable transport.[131]

3.4.8 ACHIEVEMENTS AND AREAS OF IMPROVEMENT

ACHIEVEMENTS

Utilizing the Blue Carbon Readiness Framework for Pillar 3, Ghana demonstrates notable strengths across multiple dimensions. The country has successfully tapped into international funding sources, including government, philanthropic, and results-based funding, to support a substantial portion of its blue ecosystems. Remarkably, this has been achieved in the absence of a clearly defined blue financial strategy.

Ghana can highlight its robust track record in securing REDD+ funding and the valuable expertise and experience gained through the successful implementation of Article 6. Leveraging this dual experience with both frameworks for blue ecosystems would place the country at a distinct advantage compared to other African nations.

131 UNDP Ghana 2021.

AREAS OF IMPROVEMENT

To effectively tackle the challenges of climate change, Ghana must amplify its financial resources. A crucial step is the formulation of a comprehensive blue finance strategy, aimed at creating a conducive environment to attract private investors. Classic grants (including official development assistance) should be used to prepare this environment. Public donor and philanthropy guarantee products should be used to de-risk private sector-driven investments.

Within this strategy, it is imperative to explore innovative financing sources including blue bonds,[132] debt-for-nature swaps,[133] and public-private partnerships—and pay specific attention to the design and operationalization of the Green Ghana Fund and the potential for including a "blue" window. At present, financial players and facilitators are lacking in Ghana. Compare the country to others, including Mozambique, which have established financial institutions targeting the Blue Economy and Blue Carbon habitats. Considering transnational platforms of finance – along with existing programs such as WACA – will further help develop predictable funding streams in Ghana.

To further bolster funding opportunities, Ghana should explore incorporation of Blue Carbon initiatives within the REDD+ Strategy or its Article 6 Framework. To facilitate this, the country will need to include Blue Carbon in its National Greenhouse Gas Inventory. These strategic measures will not only attract funding, but will position Ghana as a proactive and responsible participant in climate change mitigation and adaptation. Then, Ghana would do well to include Blue Carbon activities as eligible to generate ITMOs under Ghana's Article 6 Framework. This would be a conditional measure with automatic additionality, removing the current need to prove additionality to the NDC baseline.

132 Blue bonds are debt instruments issued by governments, development banks or others to raise capital to finance marine and ocean-based projects that have positive environmental, economic, and climate benefits.

133 Debt-for-nature swaps are financial transactions in which a portion of a country's foreign debt is purchased and converted into local currency. The funds obtained from this conversion are then used to finance environmental conservation projects within the debtor country.

IV. RECOMMENDATIONS

4.1

PILLAR 1: DATA AND ANALYTICS

RECOMMENDATION 1

Calculate national mangrove carbon stocks for inclusion in the next iteration of the National GHG Inventory.

S M L SHORT-TERM

→ Refer to Checklists 2 and 3 of the BCRF.

Ghana can leverage data on mangrove extent and area in tandem with Tier 1 Default values from the 2013 Wetlands Supplement to bolster understanding of mangrove ecosystems. By applying the supplement, Ghana could strengthen its understanding of mangrove carbon stocks, both biomass and soil, and enable calculation of carbon stock estimates. If this calculation is carried out across years – utilizing the mangrove extent data from GMW for several time series – Ghana could have access to broad-scale activity data. If these actions are paired with disaggregation of mangrove activity data from the existing FPP dataset, the resulting improved understanding could guide future iterations of FREL/FRLs as well as the GHG Inventory.

RECOMMENDATION 2

S (M) L MID-TERM

→ Refer to Checklist 2 of the BCRF.

Work towards disaggregation of mangrove activity data from terrestrial forests in the FPP Dataset.

The NFMS represents a huge opportunity for robust monitoring of mangrove ecosystems with a focus on drivers of degradation and restoration. NFMS Monitoring protocols are advanced, relying on in-situ and spatial data to provide a strong dataset, updated annually. If capacity allows, the NFMS should work to adjust its methods to recognize mangroves as their own land cover type/class outside of terrestrial forests. Existing research on drivers of mangrove degradation is robust within Ghana, nationally and within specific areas of the coast. Pairing these data with scaled activity data for mangroves from the NFMS would improve understanding of historic and future trends for mangrove areas.

RECOMMENDATION 3

S (M) L MID-TERM

→ Refer to Checklists 2 and 3 of the BCRF.

Strengthen the MRV system, improving knowledge sharing and coordination among agencies.

Mozambique could strengthen its MRV system, improving knowledge sharing and coordination among the various government actors responsible for MRV (FC, EPA, MESTI, MNLR, MOF, and the Ministry of Food and Agriculture, but also importantly MOFAD). Good MRV could inform better BCE policy revisions, and climate and finance decisions (including NDC targets) and facilitate domestic and international reporting using good-quality data, rigorous methodology and protocols for accounting, and tracking.

RECOMMENDATION 4

S M L SHORT TO MID-TERM

→ Refer to Checklists 2 and 3 of the BCRF.

Create a tracking system to account for Blue Carbon conservation and restoration, connecting stakeholders and sharing best practices.

Building on improved MRV capabilities, relevant agencies (namely EPA and the FC) could build capacity to trace Blue Carbon action and carbon stocks changes at the BCE project level. This would help gauge understanding of interventions, including success rates and best practices. A permanent Blue Carbon tracking system could streamline practices, including by connecting stakeholders, sharing experiences (including benefit-sharing practices), and broadening opportunities for finance. This should count with the support of various government agencies (perhaps centralizing management of a platform by either the FC or the EPA, but also coordinating efforts at a higher level, between MESTI, MNLR, and MOFAD).

RECOMMENDATION 5

S M L SHORT TO MID-TERM

→ Refer to Checklists 3 and 4 of the BCRF.

Improve data capacity for salt marsh and seagrass ecosystems.

Developing a framework with clear benchmarks for stronger research on salt marshes and seagrass would enable Ghana to integrate them into future iterations of their GHG inventory. Better data collection on area, extent, and historic activity deserves special attention. A regional West African seagrass study has provided data on seagrass extent for Ghana. While it is unclear if these data represent current or historic extent, carrying out initial carbon stock estimates for Ghana's seagrass beds leveraging Tier 1 default values from the 2013 Wetlands Supplement could provide initial estimates. These could in turn encourage future research. Scaling capacity in this area is a vital long-term goal, one which will pave the way for a robust inventory in the future.

RECOMMENDATION 6

S **M** L MID-TERM

→ Refer to Checklist 3 and 4 of the BCRF.

Improve research into the socioeconomic valuation of mangrove and BCE ecosystem services for communities in Ghana.

There is a pressing need to expand research to encompass seascape valuation, specifically exploring the intricate connection between seagrass and mangrove ecosystems. While studies on the socioeconomic valuation of Ghana's Blue Carbon Ecosystems (BCEs) do exist, they focus predominantly on mangrove ecosystems. Understanding the mutual benefits of their ecosystem services is crucial for coastal communities. One aspect that requires special heightened attention is the sustainable harvesting of mangrove materials. By emphasizing the responsible extraction of resources, we can ensure the long-term health and viability of these ecosystems. We know that mangroves contribute enormous socio-economic value to coastal communities in Ghana. Getting a precise quantifiable understanding of their importance could drive initiatives aimed at preserving them as a sustainable source of goods and income.

4.2

PILLAR 2: POLICY

RECOMMENDATION 1

(S) (M) (L) MID-TERM

→ Refer to Checklist 5 of the BCRF.

For the 2025 NDC, make a firm commitment to integrating the 2013 Wetlands Supplement when defining the NDC mitigation scope and the NDC accounting framework.

Ghana has an important opportunity to include firm and precise Blue Carbon commitments in the 2025 NDC. This means applying the 2013 Wetlands Supplement, as well as spelling out BC action-based targets (short-term/mid-term recommendation), including restoration targets (measurable through an appropriate metric such as tCO_2 or hectares by specific dates).

RECOMMENDATION 2

(S) (M) (L) SHORT TO LONG-TERM

→ Refer to Checklists 7 and 5.1 of the BCRF.

Create an NDC implementation plan in lockstep with the new NDC commitments (2025).

The NDC urgently needs an implementation plan. This plan – which could come as part of action programs for implementation of a new Ghana National Climate Change Master Plan – should operate at the national level, in lockstep with international commitments. It must encompass all Blue Carbon habitats, such as seagrass beds and salt marshes, ensuring a thorough assessment of socio-economic values. The plan should delineate conservation and restoration objectives for the short, mid-, and long terms, establishing priorities and firm commitments within a roadmap that addresses technical, policy, community, and financial dimensions. Designating a single institution as responsible for implementation of Blue Carbon projects would be another positive step.

RECOMMENDATION 3

S (M) (L) MID TO LONG-TERM

→ Refer to Checklist 7 of the BCRF.

Integrate seagrass and salt marshes protection into coastal regulations and embed Blue Carbon protection into MSP policies, and clarify and enforce institutional roles and responsibilities over BCE areas, including Ramsar sites and protected areas.

The number and size of marine protected areas – and other area-based conservation measures (OECMs) – should be expanded as a priority, with inclusion of sensitive BCEs as a specific target. All BCEs should be integrated into coastal regulations and MSP policies, including through establishment of hard laws to support enforcement. As with specific administrative areas, legal protection should be in place for all BCEs along the coast (including protected areas and Ramsar sites), clear legal responsibilities should be defined, enforcement capacities should be strengthened across the board, and relevant agencies (including the Forestry and the Fisheries Commission, MESTI, MNLR and other ministries) should closely coordinate. Better understanding of the needs of local communities in the exploration of Blue Carbon areas would be a plus, as would greater capacity to address the current lack of compliance with regulations and policies.

RECOMMENDATION 4

S (M) (L) LONG-TERM

→ Refer to Checklist 7 of the BCRF.

Strengthen collaboration between ministries and agencies and as well as monitoring and enforcement capacities, including MRV.

Strengthening inter-ministerial collaboration and monitoring and enforcement will lead to more effective implementation of Blue Carbon policies. Investing in robust monitoring and enforcement through training, resources, and advanced technologies will enhance agencies' ability to ensure compliance, track progress, and make data-driven adjustments. This includes the use of AI for data gathering, analytics, and community involvement in Blue Carbon investments. Moreover, agencies responsible for MRV should closely coordinate (notably, FC, EPA, MESTI, MNLR, MOF, and the Ministry of Food and Agriculture), including capacity building mainstreamed across the board.

RECOMMENDATION 5

S (M) L MID-TERM

→ Refer to Checklist 7.1 of the BCRF.

Operationalize existing tools of conservation management, including incorporating sustainable development concerns into key economic sectors.

Existing tools of conservation management—including those that prevent unsustainable BCE degradation and deforestation--should be assertively applied to bring down persistently high levels of mangrove deforestation and BCE degradation. These include tools provided by the 2023 Wildlife Management Act and 2022 NIMS to promote the Blue Economy and MSP, as well as the operationalization of the Emission Reduction Program for the Coastal Mangrove mentioned in the REDD+ Strategy. Any upcoming aquaculture plan should be viewed through a sustainability lens. These include the Aquaculture Development Plan (2024-2028), the Aquaculture Guidelines and Code of Practice, and the Guidelines for the Introduction and Management of Exotic Fish Species in Ghana. Furthermore, enforcement operations should be made part of a Blue Carbon Implementation or Blue Carbon Strategy, and monitoring should follow up to assure vigorous implementation.

RECOMMENDATION 6

S (M) L MID-TERM

→ Refer to Checklist 7.1 of the BCRF.

Set up a separate budget line and action stream for mangroves under the Ghana Forest Plantation Strategy (2016-2040/ GFPS).

The current GFPS (2016-2040) sets broad restoration targets for forests, but not mangroves specifically. Mangroves need dedicated action streams and funding to assure they will flourish in the long term.
The government should create a separate budget for mangrove restoration programs under GFPS. This would also facilitate the tracking and reporting of mangrove restoration efforts in the GFPS annual reports.

RECOMMENDATION **7**

S M L SHORT-TERM

→ Refer to Checklist 7 of the BCRF.

Integrate mangrove protection into REDD+ efforts and regulations, including clear guidance on community engagement in issues of land tenure and benefit sharing.

In line with recommendations by REDD+ policymakers, Ghana should reform the current concept of tree tenure to avoid its problematic impacts on habitats and communities. The matter can be combined with a recognition of carbon rights and the clarification of benefit sharing rules. Tenure and carbon rights should follow the stewardship of the forest – and of the BCE – irrespective of whether a tree is naturally grown or in a restoration area. In sum, mangrove protection needs to be incorporated into REDD+ initiatives and regulations, while providing clear guidance on land tenure, community engagement, and benefit sharing.

Then, specific incentive regimes for BCE conservation and restoration should be formulated. This may be a government-led or a bottom-up REDD+ program, with communities (e.g., CREMA-based ones) and other non-state actors given the opportunity to develop REDD+ projects and programs. Or it could be through Article 6 engagement (see further below, Pillar 3). While all paths are feasible, the Government needs to make a decision as soon as possible and create regulatory certainty.

Any such decision should come with a principled approach to the integration of communities (particularly underrepresented groups including women, youth, and traditional communities) and benefit-sharing arrangements. Clear rules on participation and land access for Blue Carbon initiatives and general rules on the distribution of investment (notably carbon) proceeds are vital. This would include concrete actions to facilitate and enhance women's empowerment, leadership, and decision making in climate and Blue Carbon action.

4.3

PILLAR 3: FINANCE

RECOMMENDATION 1

S M L SHORT-TERM

→ Refer to Checklist 9.6 of the BCRF.

Target bilateral and multilateral donor (grant) funding to enhance and test a Blue Carbon strategy.

Ghana should formulate a blue finance strategy that targets bilateral and multilateral grants. This strategy must articulate key sectors, delineate tools available for implementation, and identify fund-prioritized activities. The financial framework should detail how diverse financing alternatives and stakeholders will collaborate and complement each other. For instance, the strategy may advocate adopting instruments such as blue bonds[134] to promote sustainable financing. The Multisectoral Investment Plan (MSIP), in preparation under the WACA program, could be operationalized to attract further investment for Blue Carbon actions.

Simultaneously, in response to Ghana's increasing debt distress, underscored by the International Monetary Fund (IMF),[135] the country should prioritize receiving a higher proportion of grant-based support rather than loans. This adjustment aims to mitigate the potential harm of accumulating debt in Ghana's climate change initiatives. Further, the country might explore debt-for-nature swaps[136] as a means of addressing debt challenges while fostering environmental conservation. Furthermore, the strategy may identify government authorities that need greater budget outlays to enforce the status of protected areas, including to bolster ability to combat transgressions.

134 Blue bonds are debt instruments issued by governments, development banks, and other entities to raise capital for marine and ocean-based projects that have environmental, economic, and climate benefits.

135 IMF. List of LIC DSAs for PRGT-Eligible Countries. As of August 31, 2023. https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf

136 Debt-for-nature swaps are financial transactions in which a portion of a country's foreign debt is purchased and converted into local currency. The funds obtained from this conversion are then used to finance environmental conservation projects in the debtor country.

RECOMMENDATION 2

S (M) L MID-TERM

→ Refer to Checklists 9.3 and 9.4 of the BCRF.

Create a blue finance facilitator and develop transnational platforms to improve the availability of funding.

Creation of a blue finance facilitator should be a priority. The proposed Ghana Green Fund may take on the role of facilitator, though the remit would have to be clearly defined. Alternatively, a trust fund dedicated to wetland-related investment could be established. Transnational platforms of finance – along with existing programs such as WACA – should be further investigated as sources of funding for Ghana. This could involve creating a list of Blue Carbon initiatives to be funded and investment-ready, bankable projects, with details on such issues as responsibilities (who to contract) and how to build community involvement.

RECOMMENDATION 3

(S) M L SHORT-TERM

→ Refer to Checklist 9.4 of the BCRF.

Promote public-private partnerships with communities, the private sector, and other key non-state actors.

Encouraging Public Private Partnerships (PPPs) is essential for overcoming policy impediments in expanding private investment in Blue Carbon ecosystems, while also prioritizing equity and transparency. This mechanism should identify public entities eligible for PPPs, elucidate the terms of engagement, and outline how private initiatives should interact with public entities and communities. Likewise, the government should set forth consistent investment parameters for the private sector, providing models that elucidate community involvement in the short, mid-, and long terms, encompassing benefit-sharing arrangements. This may happen in the context of creating carbon finance or results-based frameworks, namely under Article 6 of the Paris Agreement or REDD+.

RECOMMENDATION 4

S M L SHORT-TERM

→ Refer to Checklists 9.4 and 9.6 of the BCRF.

Operationalize carbon market tools (see Article 6 of Paris Agreement), including Blue Carbon conservation and restoration as eligible mitigation activities to generate carbon credits.

Establishing clear procedures and deadlines for processing applications could help fast-track private sector investments. For mangrove projects, the private sector is eager to invest and Ghana's Article 6 Framework is a clear and transparent tool for this. The VCM currently offers an avenue for mangrove projects (biomass only) to produce ITMOs, but there is room for improvement. The Ghanaian Framework overlooks mangrove soil carbon, seagrasses, and salt marshes. To further enable Blue Carbon projects to generate ITMOs, these ecosystems need to be fully incorporated into Ghana's National Greenhouse Gas Inventory. Or, they could be included in Ghana's Framework white list (eligible mitigation activities), as part of conditional NDC targets, assuming the NDC is updated to include all BCEs.

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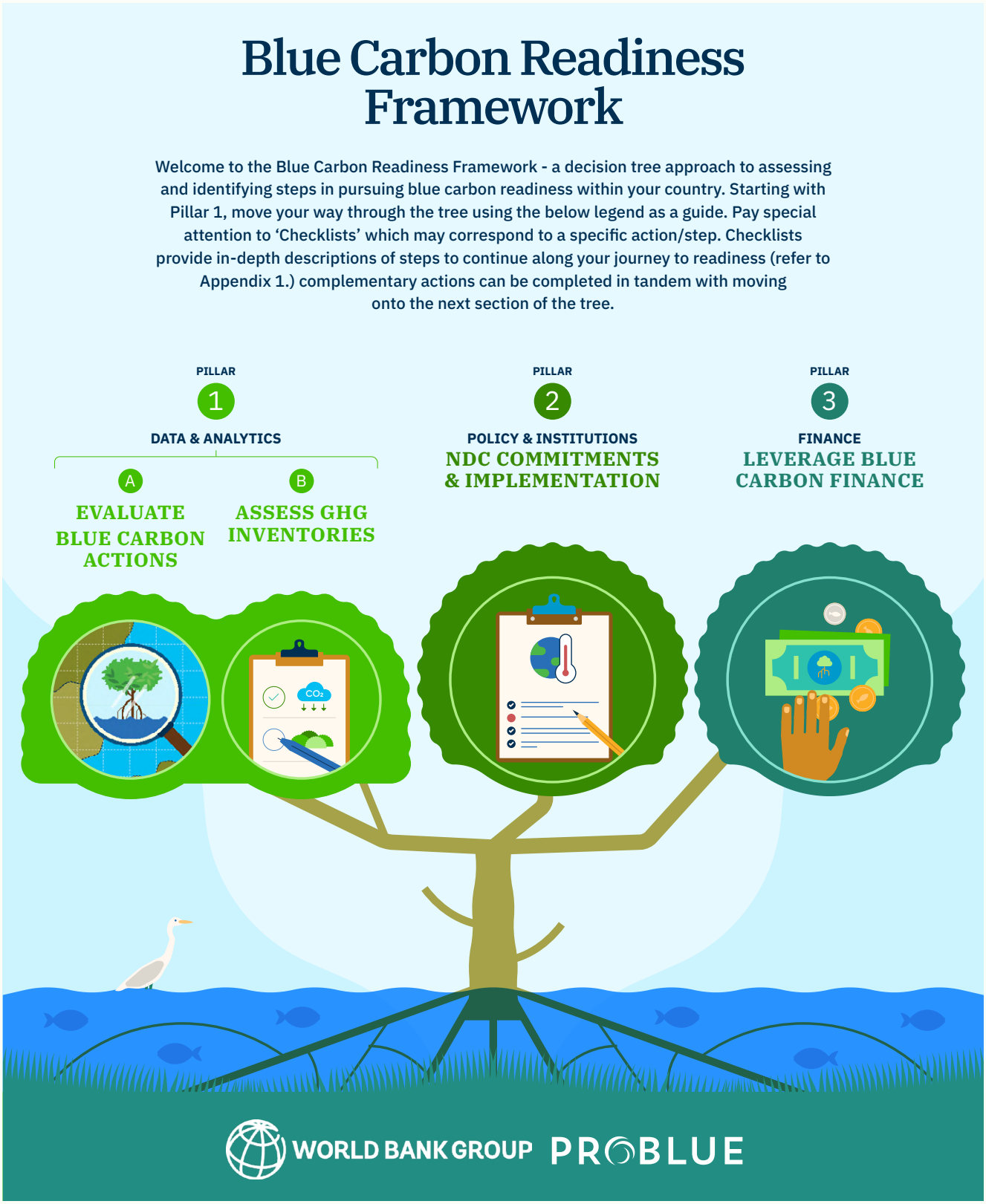
CAPERNAUM

A. APPENDICES

APPENDIX 1

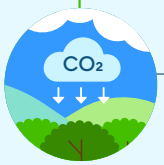
DECISION TREE



PILLAR 1

DATA & ANALYTICS

B ASSESS GHG INVENTORIES



1 GHG INVENTORIES

Are BCEs included in your country's GHG inventory?

NO → Use the Wetland Supplement and Tier 1 default values (or Tier 2/3 depending on available data) to determine carbon stock values for your country's BCE(s). Refer to Checklist 3 for steps and guidelines.

YES

Does your country apply the 2013 Wetlands Supplement (WS13)/2019 Refinement (R19)?

NO → Improve your GHG Inventory via integration of WS13/R19
- Identify where bottleneck(s) are – e.g., soil carbon data
- Review Checklist 3 for ways to improve your existing inventory

If you are engaging in REDD+

YES

2 REDD+ FOREST REFERENCE LEVELS

Has your country submitted a Forest Reference Level (FRL)/ Forest Reference Emission Levels (FREL)?

NO →
- Consider developing a REDD+ FRL/FREL with Blue Carbon integration
- Decide to build a separate blue carbon framework (using synergies)

YES →
- Review Checklist 4
- Confirm and iterate consistency between your Forest Reference Levels (FRL)/ Forest Reference Emission Levels (FREL) and your GHG inventory

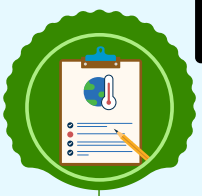
USE RESULTS FROM COMPLETED ACTION/ STEPS TO:

- Strengthen calculated carbon stocks by substituting regional/ local values in place of Tier 1 default values
- Compare calculated carbon stock values to existing activity data, and use results to improve your GHG inventory
- Integrate calculated carbon stocks into your FRL/FREL

GHG INVENTORY IS DONE!

YOU CAN MOVE ON TO PILLAR 2

while improving inventory capacities



PILLAR 1 A B 2 3

PATHWAY

ACTIONS/ STEPS

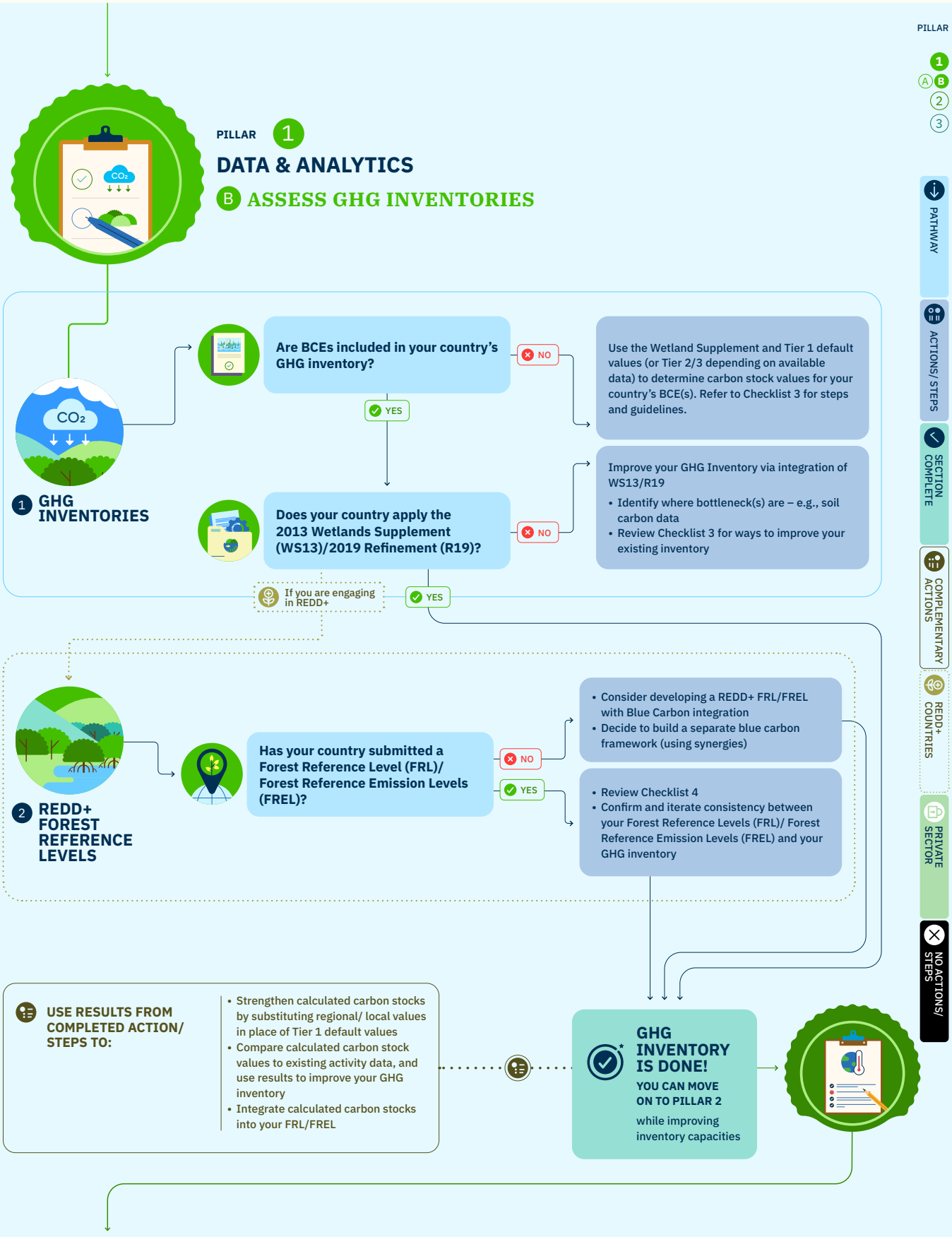
SECTION COMPLETE

COMPLEMENTARY ACTIONS

REDD+ COUNTRIES

PRIVATE SECTOR

NO ACTIONS/ STEPS


PILLAR
1
A B
2
3
PATHWAY
ACTIONS/ STEPS
SECTION COMPLETE
COMPLEMENTARY ACTIONS
REDD+ COUNTRIES
PRIVATE SECTOR
NO ACTIONS/ STEPS
PILLAR 1
DATA & ANALYTICS
B ASSESS GHG INVENTORIES
1 GHG INVENTORIES
Are BCEs included in your country's GHG inventory?
NO
YES
Use the Wetland Supplement and Tier 1 default values (or Tier 2/3 depending on available data) to determine carbon stock values for your country's BCE(s). Refer to Checklist 3 for steps and guidelines.
Does your country apply the 2013 Wetlands Supplement (WS13)/2019 Refinement (R19)?
NO
Improve your GHG Inventory via integration of WS13/R19
• Identify where bottleneck(s) are – e.g., soil carbon data
• Review Checklist 3 for ways to improve your existing inventory
YES
If you are engaging in REDD+
2 REDD+ FOREST REFERENCE LEVELS
Has your country submitted a Forest Reference Level (FRL)/ Forest Reference Emission Levels (FREL)?
NO
• Consider developing a REDD+ FRL/FREL with Blue Carbon integration
• Decide to build a separate blue carbon framework (using synergies)
YES
• Review Checklist 4
• Confirm and iterate consistency between your Forest Reference Levels (FRL)/ Forest Reference Emission Levels (FREL) and your GHG inventory
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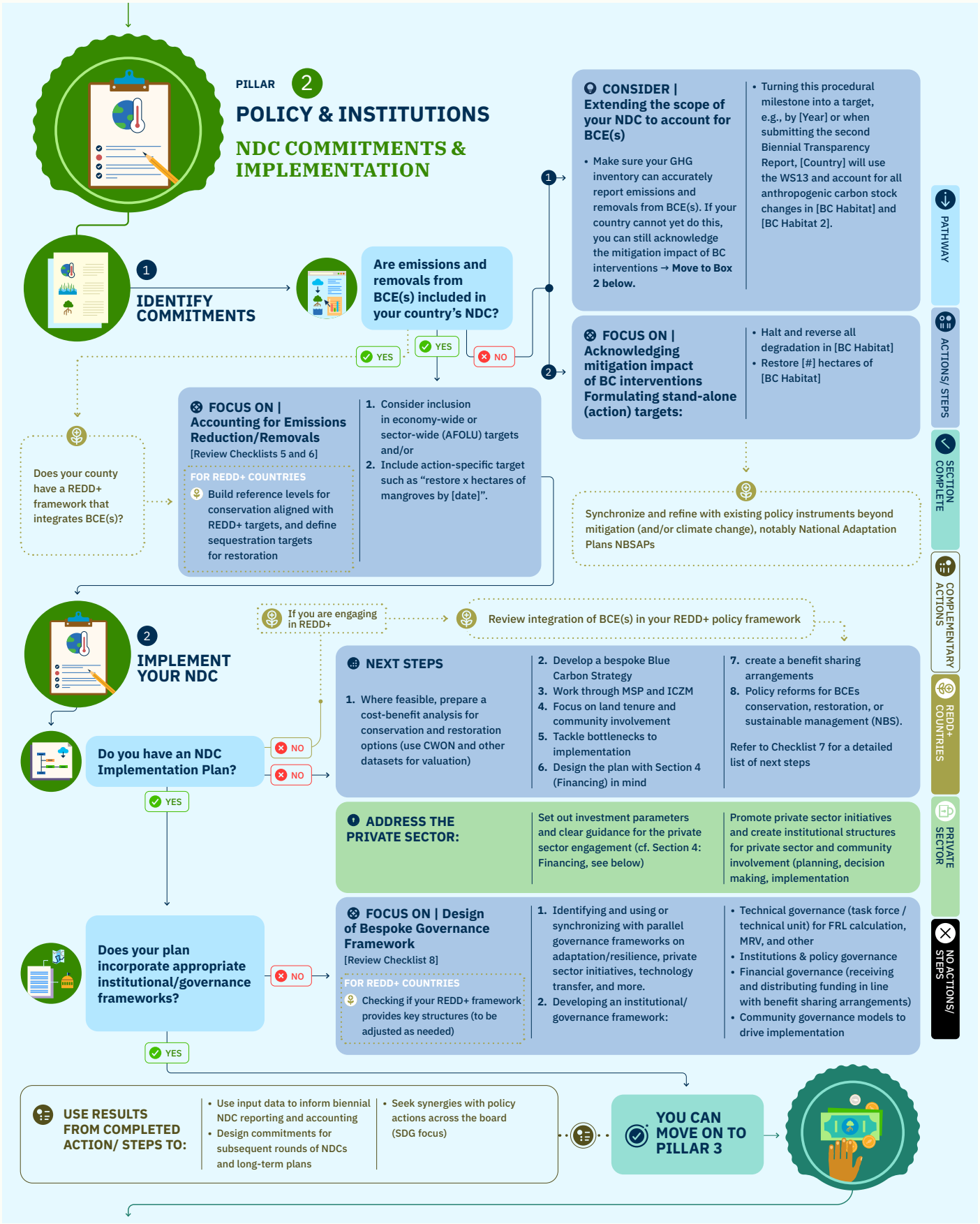
• Integrate calculated carbon stocks into your FRL/FREL
GHG INVENTORY IS DONE!
YOU CAN MOVE ON TO PILLAR 2
while improving inventory capacities


PILLAR 2
POLICY & INSTITUTIONS
NDC COMMITMENTS & IMPLEMENTATION
1
IDENTIFY COMMITMENTS
Are emissions and removals from BCE(s) included in your country's NDC?
YES
YES
NO
CONSIDER | Extending the scope of your NDC to account for BCE(s)
• Make sure your GHG inventory can accurately report emissions and removals from BCE(s). If your country cannot yet do this, you can still acknowledge the mitigation impact of BC interventions → Move to Box 2 below.
• Turning this procedural milestone into a target, e.g., by [Year] or when submitting the second Biennial Transparency Report, [Country] will use the WS13 and account for all anthropogenic carbon stock changes in [BC Habitat] and [BC Habitat 2].
FOCUS ON | Acknowledging mitigation impact of BC interventions Formulating stand-alone (action) targets:
• Halt and reverse all degradation in [BC Habitat]
• Restore [#] hectares of [BC Habitat]
Does your county have a REDD+ framework that integrates BCE(s)?
FOCUS ON | Accounting for Emissions Reduction/Removals
[Review Checklists 5 and 6]
FOR REDD+ COUNTRIES
Build reference levels for conservation aligned with REDD+ targets, and define sequestration targets for restoration
1. Consider inclusion in economy-wide or sector-wide (AFOLU) targets and/or
2. Include action-specific target such as "restore x hectares of mangroves by [date]".
Synchronize and refine with existing policy instruments beyond mitigation (and/or climate change), notably National Adaptation Plans NBSAPs
2
IMPLEMENT YOUR NDC
If you are engaging in REDD+
Review integration of BCE(s) in your REDD+ policy framework
Do you have an NDC Implementation Plan?
NO
NO
YES
NEXT STEPS
1. Where feasible, prepare a cost-benefit analysis for conservation and restoration options (use CWON and other datasets for valuation)
2. Develop a bespoke Blue Carbon Strategy
3. Work through MSP and ICZM
4. Focus on land tenure and community involvement
5. Tackle bottlenecks to implementation
6. Design the plan with Section 4 (Financing) in mind
7. create a benefit sharing arrangements
8. Policy reforms for BCEs conservation, restoration, or sustainable management (NBS).
Refer to Checklist 7 for a detailed list of next steps
ADDRESS THE PRIVATE SECTOR:
Set out investment parameters and clear guidance for the private sector engagement (cf. Section 4: Financing, see below)
Promote private sector initiatives and create institutional structures for private sector and community involvement (planning, decision making, implementation
Does your plan incorporate appropriate institutional/governance frameworks?
NO
YES
FOCUS ON | Design of Bespoke Governance Framework
[Review Checklist 8]
FOR REDD+ COUNTRIES
Checking if your REDD+ framework provides key structures (to be adjusted as needed)
1. Identifying and using or synchronizing with parallel governance frameworks on adaptation/resilience, private sector initiatives, technology transfer, and more.
2. Developing an institutional/ governance framework:
• Technical governance (task force / technical unit) for FRL calculation, MRV, and other
• Institutions & policy governance
• Financial governance (receiving and distributing funding in line with benefit sharing arrangements)
• Community governance models to drive implementation
USE RESULTS FROM COMPLETED ACTION/ STEPS TO:
• Use input data to inform biennial NDC reporting and accounting
• Design commitments for subsequent rounds of NDCs and long-term plans
• Seek synergies with policy actions across the board (SDG focus)
YOU CAN MOVE ON TO PILLAR 3
PATHWAY
ACTIONS/ STEPS
SECTION COMPLETE
COMPLEMENTARY ACTIONS
REDD+ COUNTRIES
PRIVATE SECTOR
NO ACTIONS/ STEPS

PILLAR 3

FINANCE

LEVERAGE BLUE CARBON FINANCE

Does your country have a blue carbon finance and investment framework in place?

YES NO

FOCUS ON | Developing a framework that integrates with the implementation plan

1. Scrutinizing existing funding flows to benefit/disadvantage Blue Carbon investments
2. Conduct Stock-take of financing approaches (including the use of mechanisms such as Article 6 and jurisdictional REDD+/RBCF) and sources/instruments (concessional and non-concessional, considering innovative business models, see further below)
3. Set out stable investment parameters for the private sector, including with respect to carbon finance: Define and allocate carbon rights, create mandates for carbon trading, and present models for community involvement and benefit sharing

FOCUS ON | Accessing Grant Funding

Accessing grant funding for capacity-building and related needs, namely:

- Design and operationalize the governance framework
- Inventory work
- BCEs mapping, carbon stock assessments
- Preparation of a pipeline of shovel-ready projects
- Conceptualization of blue infrastructure finance

Have you operationalized specific funding tools?

NO

YES

CONSIDER | Operationalizing in line with survey above – leverage tools such as:

- Concessional instruments, including blended finance instruments and philanthropy
- Dedicated sovereign and/or corporate debt finance instruments (blue loans, blue bonds)
- Blue infrastructure /NBS finance
- Business models that stack multiple revenue streams
- Results Based Carbon Finance (RBCF)
- Blue carbon project finance (carbon markets)

Review Checklist 9 for examples and guidelines on leveraging investment.

Does your country intend to use carbon markets as a means of investment?

YES NO

CONSIDER |

- Using Article 6 of the Paris Climate Agreement;
- Allowing Voluntary Carbon Markets with corresponding adjustments

PILLAR 1 A B 2 3

PATHWAY

ACTIONS/ STEPS

SECTION COMPLETE

COMPLEMENTARY ACTIONS

REDD+ COUNTRIES

PRIVATE SECTOR

NO ACTIONS/ STEPS

WORLD BANK GROUP

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HEALTHY OCEAN • HEALTHY ECONOMIES • HEALTHY COMMUNITIES

GHANA

2024

A BLUE CARBON READINESS ASSESSMENT