

EAST AFRICA POLICY BRIEF

MANGROVES & BLUE CARBON POLICY BRIEF

KENYA, MOZAMBIQUE AND TANZANIA



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET



A

MANGROVE FORESTS

1. MANGROVES IN WESTERN INDIAN OCEAN

- a. **The total area of mangrove cover** in the WIO region is estimated at 1.0 million hectares (Table 1; Bosire et al., 2016); representing about 5.0% of global mangrove coverage.¹
- b. **Key mangrove forests** are found in the deltas of Rufiji River (Tanzania), Tana River and Lamu (Kenya), Zambezi and Limpopo Rivers (Mozambique) and along the west coast of Madagascar at Mahajanga, Nosy be and Hahavavy.
- c. **Gazi Bay & The Mikoko Pamoja Project:**² Located at Gazi Bay and launched in 2013, this small-scale carbon offset facility involving mangroves is the world's first community-type project to restore and protect mangroves through the sale of carbon credits. The twenty-year project is managed by three groups: The Mikoko Pamoja Community Organization (MPCO) consists of representatives of Gazi Bay, specifically Gazi and Makongeni villages; The Mikoko Pamoja Steering Group (MPSG) which provides technical support to the MPCO; and the project coordinator, The Association for Coastal Ecosystem Services (ACES), a charity registered in Scotland. Through a combined approach in the

prevention of deforestation of the local mangrove forest, as well as community-based reforestation and the sale of associated carbon credits through the Vivo Foundation system, the project not only achieves environmental and biodiversity SDGs, but supports community development projects such as provision of schoolbooks, construction of school buildings and the provision of clean drinking water.

- d. **Vanga Blue Forest Project.** - A similar project inspired by Mikoko Pamoja in the transboundary mangroves of Kenya and Tanzania, this project will offset 5500t CO₂-eq. per annum in a contracting period of 20 years (from 2019), generating an income of ca. US\$3000/annum to the local community. The generated income under VBF will support local development projects in water and sanitation, education and environmental conservation. In this case, the community has taken full control of mangrove conservation and is well trained in nursery establishment, planting, surveillance and monitoring, thus enhancing the success rate of mangrove restoration projects. Such transfer of rights and skills has bolstered community support, cooperation, participation and ownership.

2. ECOSYSTEM SERVICES & BENEFITS

a. Climate Regulation

- i. *Carbon sequestration* - mangroves sequester 2-4 times the amount of carbon observed in tropical forests (6-8 CO₂E/Ha on average per year).³
- ii. *Water filtration* - in addition to stabilizing coastlines and reducing erosion that can lead to siltation in water, mangroves also absorb excess nutrients from runoff and desalinate water.⁴

b. Livelihood Support

- i. *Fisheries support* - mangrove forests are habitat for over 3,000 fish species, and often serve as nurseries for many species of marine fish in their juvenile phases due to their high productivity, food abundance, lower predation pressure and complex rooting system.⁵Mirera, 2017*
- ii. *Wood provision* - mangrove wood has been used by local communities for fuel, construction, fish traps and boat building.
- iii. *Tourism development* - increasingly, mangroves are becoming tourism destinations. There are over 2,000 mangrove-related attractions around the world, primarily including board-walks, kayaking, fishing and boat tours.⁶
- iv. *Small-scale silvofisheries/mariculture* - mangroves provide suitable areas for community small-scale silvofisheries and mariculture activities for improved food and nutritional security like bee keeping, shellfish (mud crabs) and finfish farming (rabbit fish, milkfish etc). Mirera, 2009 **

c. Disaster Risk Reduction

- i. *Storm buffers* - Mangrove ecosystems provide a barrier between seascapes and landscapes and can reduce the height of wind and swell waves by up to 66% over 100m, and reduce the water level of storm surges between 5 and 50 cm per km of mangrove width. (Mclvor et al., 2012)⁷

3. LOSS & THREATS

The WIO region lost 8% of its mangrove cover between 1975 and 2000, amounting to 3,000ha/yr, with some locations losing up to 88% of their cover. Major threats include:⁸

- a. **Overexploitation** of resources from mangrove forests
- b. **Improper development** encroaching on mangroves, including direct removal, as well as freshwater redirection and pollution
- c. **Mangrove management structure** – Before 2005, mangroves were managed purely by government, and communities were not involved. This led to a don't care attitude in mangrove exploitation. Co-management introduced in the Forest Act has recognized the role of community in mangrove management and helped slow down mangrove degradation.
- d. **Commercial aquaculture development** in many parts of the world has been cited for large-scale mangrove loss.
- e. **Climate Change** - Warming ocean temperatures are contributing to sea level rise through increased sea surface temperatures and polar ice melt. Mangroves have been identified as one of the most vulnerable ecosystems to sea level rise and inundation.⁹
 - i. In the Save Delta in Mozambique, almost half of the mangroves were degraded and lost due to sedimentation associated with cyclones and extreme precipitation.¹⁰
 - ii. In Mwache in Kenya and along the Limpopo Delta in Mozambique, Rufiji Delta in Tanzania and Tana River Delta in Kenya, prolonged flooding has been observed to cause the death of mangroves.¹¹

¹ Kairo et al, 2020. pp 1

² Plan Vivo

³ Blue Carbon Initiative

⁴ Kairo et al 2020

⁵ IUCN, roots of hope

⁶ IUCN, Mangroves and Coastal Ecosystems

⁷ Von Unger et al 2020, pp 10

⁸ Kairo et al, 2020, pp 5 *Mirera 2017, **2009

⁹ UNEP/Nairobi Convention Secretariat, 2009, pp 61

¹⁰ Kairo et al, 2020, pp 8

¹¹ Kairo et al, 2020, pp 8

B

MANGROVES & BLUE CARBON: AN OVERVIEW

1. INTRODUCTION

a. **Carbon Markets:** as the world seeks to mitigate global warming, market incentives have arisen as a tool to limit carbon emissions. These incentives include both regulated and unregulated, or 'voluntary,' markets.

i. *Regulated Carbon Markets:*

01. Regulating bodies (for example, the State of California or the country of Canada) set a cap on the amount of carbon that can be emitted in a given time frame by the private sector to mitigate global warming, and issue a specific amount of 'carbon credits' adding up to that limit.
02. 'Carbon credits' are bought by companies and businesses in the private-sector as a kind of permission slips to emit a quantity of carbon. They are usually measured in units of tons of CO₂ (CO₂e).
03. Private sector companies can sell their excess carbon credits to other companies, creating the market.

ii. *Voluntary Carbon Markets:*

01. Voluntary markets operate without regulations and are driven by environmentally conscious businesses, organizations and individuals to reduce global carbon emissions.
02. Entities that remove carbon from the atmosphere generate 'Carbon Offsets'.
03. Companies and individuals can then purchase 'Carbon Offsets' to reduce their own carbon footprints on the voluntary market.

b. **Blue Carbon** refers to the carbon captured by the world's ocean and coastal ecosystems, and has become a commodity in the voluntary carbon market.

c. **Mangrove forests are a key blue carbon ecosystem:** The remainder of this brief outlines opportunities for policymakers to support economically viable methods to leverage mangrove ecosystems as a source of blue carbon based on the Gazi Bay Mikoko Pamoja project example and policy solutions shared in the Blue Forests Project.¹²

2. BLUE CARBON PROJECTS & MARKET MECHANISMS

a. Payment for Ecosystem Services (PES)

- i. *Payment for Ecosystem Services (PES)* is a mechanism whereby users of benefits provided by healthy ecosystems make payments which are used to help maintain the ecosystems. These payments are often used to compensate landowners or rights holders for conserving the ecosystem and not converting it to an unsustainable use.
- ii. *Case Study: Legal Mechanism for PES and Mangroves in Madagascar;*
 01. Madagascar Order No. 29 211/2017 allows fishermen consortiums to establish locally managed fishing areas and use part or all of those areas for projects generating payments for ecosystem services. The PES can range from carbon sequestration to the exercise of ecotourism activities. Fishermen would receive payments from private entities, such as the tourists through eco-touristic activities or carbon-credits buyers through the activities to improve carbon sequestration. In this context, the manager of the locally managed fishing area must carry out systematic reforestation of mangroves and the areas can either be managed directly by the Consortium or co-managed with a nongovernmental organization.¹³

b. Blue Carbon Projects

- i. *Blue carbon projects* connect markets for blue carbon to governments and local communities that can benefit from both the conservation of these critical ecosystems, as well as the socio-economic benefits from the market mechanisms.
 01. Case Study:
 001. The Mikoko Pamoja project is a small-scale carbon offset facility that seeks to provide incentives for mangrove restoration and protection through conservation activities, awareness creation, and the sale of mangrove carbon credits in Gazi Bay, Kenya.¹⁴ External buyers purchase carbon credits for the project from ACES (the Association for Coastal Ecosystem Services), which then transfers approximately 65% to the Mikoko Pamoja Community Organization (MCPO) for community benefit, 6% in fixed credit fees to the Plan Vivo market, 23% to the Mikoko Pamoja Project Steering Group to cover project expenses, and holds 6% to meet its cost for the 5-year independent verification.¹⁵

¹² *Blue Forests Solutions (Aigrette et al 2021)*

¹³ *Slobodian et al 2018, pp 49*

¹⁴ *Ecology Nature Pro, 2021 Plan Vivo, Mikoko Pamoja, Plan Vivo Project Design Document (PDD): 2020*

¹⁵ *Revision, Pp 41*

C

POLICY MAKER OPPORTUNITIES TO SCALE AND REGULATE BLUE CARBON IN KENYA, MOZAMBIQUE AND TANZANIA

1. ENABLING LEGISLATION

a. **Legal Clarity of Definitions:** Lack of legal clarity and good governance in carbon markets drives away potential investors and can put conservation at risk.
¹⁶For mangroves to be effectively utilized as blue carbon, legal frameworks must be in place that set legal definitions for:

- i. Ownership of mangrove areas and their ecosystem services
- ii. Carbon property rights, and standards for valuation of carbon
- iii. Clearly delineated mandates and jurisdictions for agencies and ministries in the executive to reduce confusion with overlapping authority

b. **Guidelines for Natural Capital Accounting:** Lack of effective valuation of mangrove areas can prevent effective incentive systems and carbon pricing. Policy makers can support the incorporation of natural capital accounting into national processes by ensuring that:

- i. National natural capital accounting processes include ecosystem services, as well as direct benefits to GDP through commercial values.

- ii. Policies governing large corporations or private-sector practices impacting critical ecosystems like mangroves include rigorous reporting requirements and guidelines through environmental impact assessments and strategic environment assessments.

c. **Broker Regulations:** Demand for blue carbon has increased exponentially following CoP-26. Blue carbon markets - like all markets - are subject to market processes, and legislators should consider regulations for brokers on the voluntary market to avoid exploitation.

- i. Proper national-level accounting of blue carbon ecosystems
- ii. Regulations that set parameters for third-party verifications of blue carbon prices on the voluntary market
- iii. Consideration to collecting royalties or taxes on sale of blue carbon credits from nationally managed/owned land

d. **Guidelines to guide silvofisheries and small-scale mariculture interventions that play a significant role in mangrove management:** Lack of policies to guide community interventions in silvofisheries and

small-scale mariculture leaves a gap for commercial-scale explosions that will have less consideration for conservation.

- i. Policies on the scale for silvofisheries and small-scale mariculture interventions
- ii. Policies governing livelihood interventions with legal rights in the mangrove ecosystem

2. SUPPORTING REGIONAL COMMITMENTS AND INITIATIVES:

a. Western Indian Ocean Strategic Action Program (WIOSAP)¹⁷

- i. *This SAP incorporates strategies* for assisting countries to achieve an overall regional vision of "People of the region prospering from a healthy Western Indian Ocean " with objectives to be achieved by 2035. These objectives are:
 01. Stakeholders will collaborate effectively at the regional level in addressing transboundary challenges.
 02. Critical coastal habitats in the WIO region are protected, restored and managed for sustainable use.
 03. Water quality in the WIO region meets international standards.
 04. Management of the Coastal Zone and River Basins is fully integrated in the WIO region.
- ii. *Legislative Support:* In order to evaluate progress in the implementation of the SAP and further to guide management and decision-making, the baseline status of critical habitats, coasts and shorelines in the region needs to be documented according to an agreed set of key indicators, further supporting the need for legislative support in establishing guidelines for natural capital accounting.

b. African Union Blue Economy Strategy ¹⁸

- i. The objective of the Africa Blue Economy Strategy is to guide the development of an inclusive and sustainable blue economy that becomes a significant contributor to continental transformation and growth.

ii. Legislative Support:

01. Evaluating how ecosystems can be more effectively included within existing policy frameworks, carbon financing mechanisms such as Reducing Emissions from Deforestation and Land Degradation (REDD+) and other UNFCCC mechanisms is essential to restoring and protecting marine ecosystems.
02. There is a great opportunity for Nationally Determined Contributions (NDCs) for adapting and mitigating climate change in existing frameworks for carbon offsets referred to as carbon credits.

c. Commonwealth Blue Charter¹⁹

- i. The Commonwealth Blue Charter is an agreement by all 54 Commonwealth countries to actively cooperate to solve ocean-related problems and meet commitments for sustainable ocean development.
- ii. The Blue Charter operates through a number of Action Groups on specific marine topics, including Mangrove Ecosystems and Livelihoods.
- iii. Legislative Support: Kenya, Mozambique, and Tanzania could consider joining the Mangrove Ecosystems and Livelihoods Action Group to cooperate with other Commonwealth nations that contain these ecosystems to share best practices on developing blue carbon markets.

d. Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (1985)²⁰

- i. *This Convention aims to protect and manage* the marine environment and coastal areas of the Eastern African region, and parties agree to take all appropriate measures to prevent, reduce and combat pollution of the Convention area.

¹⁶Slobodian et al 2018, pp 50

¹⁷ UNEP/Nairobi Convention Secretariat, 2009. (WIO-SAP)

¹⁸AU-IBAR, 2019

¹⁹Commonwealth Secretariat, 2021

²⁰Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, 1985

ii. *Legislative Support:*

01. Parties agree to develop guidelines for the planning of major development projects in the Convention area, assess the environmental effects of development projects likely to cause significant adverse changes in the Convention area, and develop procedures for dissemination of information and consultation among the parties in such assessments. Enhancing guidelines embedded in legislation and regulations for blue carbon markets would support this agreement.

3. SUPPORTING INTERNATIONAL COMMITMENTS:

a. **The Ramsar Convention on Wetlands of International Importance**

- i. The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world".
- ii. Under the Convention, parties commit to work towards the wise use of all their wetlands; designate suitable wetlands for the list of Wetlands of International Importance (the "Ramsar List") and ensure their effective management; and cooperate internationally on transboundary wetlands, shared wetland systems and shared species.
- iii. *Legislative Support:*
 01. Mozambique's 2021 RAMSAR report notes that one of the challenges with implementation of the Convention is to elaborate the National Policy as well as the Wetland National Strategy, which could be a focus of the government with consideration to blue carbon mechanisms.
 02. Kenya's 2021 RAMSAR report noted that one goal for the next period is the listing of additional RAMSAR sites, including a trans-boundary and a marine Ramsar

site- Legislators could support efforts for a transboundary marine conservation area with Tanzania that extends from the northern boundary of the Diani-Chale Marine National Reserve in Kenya to the southern boundary of Mkinga District in Tanzania, just north of the Tanga Coelacanth Marine Park.²¹

b. **UNFCCC: Incorporating Blue Carbon into NDCs**

- i. The incorporation of blue carbon mechanisms into Nationally Determined Contributions (NDCs) supports the United Nations Framework for Combating Climate Change (UNFCCC) and is especially relevant emerging from the 26th Conference of Parties (CoP) in Glasgow in 2021.
- ii. Kenya, Mozambique, and Tanzania have referenced blue carbon in their NDCs:
 01. Kenya mentions plans to conduct a blue carbon readiness assessment for full integration of blue carbon/ocean-climate action into NDCs in its adaptation section of the NDC.²²
 02. Mozambique launched its 2020-2025 NDC Roadmap in November 2021.
 03. Tanzania has included blue carbon ecosystems as a adaptation priority sector in its NDCs, targeting the restoration of mangroves in its adaptation measures, and including a mangrove and shoreline restoration programme in its adaptation contributions to be achieved by 2030.²³
- iii. *Legislative Support:* Reduce the ambiguity of pledges with specific targets for mitigation, adaptation, and resilience, along with methodological approaches to measuring impact, related to blue carbon in NDCs through national policies.

²¹Tuda, et al, 2021

²²Lopez, Olivia 2021, Pp 6-7

²³Martin et al 2016. pp 19

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ICCF Kenya
P. O. Box 25530-00603
Lavington, Nairobi, Kenya
hq@internationalconservation.org

