



# Blue Carbon: The Opportunity of Coastal Sinks for Africa

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#### RECOMMENDATIONS

- It is an opportune time for African countries to contribute to the formulation of a Blue Carbon policy framework. Countries with long coastlines and ample coastal vegetation should push for global agreements where the value of carbon within coastal ecosystems is included in the accounting of ecosystem services.
- Blue Carbon should be more fully integrated into international policy discussions on climate change mitigation, as well as within regional and national policy discussions on marine and coastal management frameworks. Mangroves, seagrasses and tidal marshes, where appropriate, should also be incorporated into national emission reduction strategies or reported on in GHG inventory submissions at the international level.
- IPCC definitions should be expanded to cover blue carbon sinks and reservoirs, and REDD+ strategies and Readiness Plans should be expanded in extent and detail with regards to coastal ecosystems.
- African policymakers should be more vocal in calling for the integration of Blue Carbon into financing processes of the UNFCCC, as well as on discussions on voluntary carbon finance mechanisms.

#### EXECUTIVE SUMMARY

Although the bodies of the UN Framework Convention on Climate Change have developed strategies and mechanisms to enhance terrestrial 'Green Carbon' sinks, less attention has been given to marine and coastal ecosystems – despite their capacity to sequester comparable amounts of carbon both in their tree biomass as well as in the deep mud that accumulates around their roots. The abundance of mangrove forests, seagrasses and tidal marsh ecosystems in Africa, and their vital importance as both global carbon sinks and sources, makes 'Blue Carbon' important for many countries' climate change strategies – not only in international forums, but also to fulfill their national governments' pledges to reduce carbon emissions.

It is important that African negotiators realise these carbon benefits and use the policy windows open to them as opportunities to attract financing for the conservation and restoration of vital coastal ecosystems.

#### INTRODUCTION

Conserving and restoring terrestrial forests have for some time been recognised as important components of the international climate change mitigation debate through their ability to act as carbon sinks. Several countries have developed policies and programmes to reduce their carbon footprint through various international vehicles such as the UN Framework Convention on Climate Change (UNFCCC). Mechanisms developed by the UNFCCC include Reducing Emissions from Deforestation and Forest Degradation (REDD+),<sup>2</sup> Nationally Appropriate Mitigation Actions (NAMAs),<sup>3</sup> and the Clean Development Mechanism.<sup>4</sup> These systems provide incentives and financial support for national-level accounting and project-level activities including the conservation, restoration and sustainable use of natural systems such as forests and peatlands.

However, other ecosystems that are comparably rich carbon reservoirs and that can offer potential mitigation benefits, in particular coastal ecosystems, have been largely excluded in the global climate discussions within these mechanisms. Coastal ecosystems of tidal marshes, mangroves and seagrasses capture and store large quantities of Blue Carbon in both the plants and in the sediment below them – trapping emissions that would otherwise contribute to harmful anthropogenic climate change. If destroyed, degraded or lost, these coastal ecosystems become significant sources of carbon dioxide.

**Brown Carbon:** refers to GHG gas emissions from the burning of fossil fuels for energy, industry and transport.

**Black Carbon:** particles resulting from impure combustion, such as soot and dust.

**Green Carbon:** terrestrial carbon stored in planted biomass and soils in forests, plantations, and agricultural and pasture land.

**Blue Carbon:** the world's oceans and coastal vegetation binds carbon in living organisms. Mangroves, marshes and seagrasses capture and store most of the carbon buried in marine sediment.

Currently the greenhouse gas (GHG) emissions released into the atmosphere as a result of poor management of coastal ecosystems and the destruction of marine habitats are not accounted for in international climate change frameworks or in National GHG Inventory Submissions. This means that countries are underestimating their contribution towards anthropogenic emissions, and that the carbon savings from measures to protect and restore coastal and marine habitats will not count towards meeting international and national climate change targets.

Beyond their important role in carbon sequestration, coastal ecosystems provide other significant benefits through their provisioning, regulating, supporting and cultural services. These include providing natural protection and buffer zones from storm surges and the rise in sea levels (important for the adaptation to climate change); preventing shoreline erosion; regulating coastal water quality; provisioning of habitats and productive nurseries for fish and crustaceans; providing rot-resistant wood for construction and fuel; and supporting recreational experiences and aesthetic value. Yet despite these benefits, coastal ecosystems are being degraded

at an alarming rate – threatened by the conversion or loss of coastal vegetation from urban development, agriculture, aquaculture, salt and sand extraction, pollution and upstream development. Such activities are compromising the resilience of these ecosystems and eroding their natural capacity for carbon sequestration, and their contribution to sustaining human health, food security and economic development in coastal zones. Many communities, for example, are seeing a visible decline in fishing stocks due to the destruction of coastal vegetation. Some 75% of all commercial fish species spend most or part of their life cycle in mangrove forests.

The world has lost approximately five million hectares of mangroves over the last 20 years. About 90% of global mangroves are classified as 'critically endangered' or 'nearing extinction' in 26 countries. Of the world's coral reefs, 20% have been lost and a further 20% degraded, and 29% of seagrass habitats are estimated to have disappeared since the late 1800s.

Africa needs to play a significant role in the conservation of these global common goods. As a means to address sustainable development goals, countries must recognise the importance of protecting their natural capital. The continent is home to some 3.5 million hectares of these mangroves – 20% of the world's total. Mangroves are distributed in three major coastal zones along the western Atlantic, central Atlantic and eastern Indian Ocean. Nigeria has the largest mangrove forests in Africa, followed by Mozambique.

## RECOGNISING THE MITIGATION VALUE OF BLUE CARBON

In the terrestrial sector, the ability of tropical forests to sequester carbon from the atmosphere has led to the economic quantification, purchase and trade of this carbon through carbon 'credits'. Traditionally this has occurred within international and national REDD+ programmes, whereby developing countries are compensated for maintaining carbon sequestration functions of their forests. This has spurred forest-related carbon offset projects – either to protect existing forests or to regenerate lost or degraded forests by planting trees, or both. The rapid growth of carbon markets for offset credits offers the potential for the development of small, equitable and self-sustaining conservation projects in developing countries. The recent recognition that mangroves, seagrasses and tidal marshes can also

sequester comparable amounts of carbon has encouraged interest in the quantification of coastal ecosystems and the further exploration of options regarding the trading of their carbon offset credits.

Blue Carbon can be traded and handled in a similar way to Green Carbon – and entered into climate mitigation protocols along with other carbon-binding ecosystems. Although not a conservation solution, carbon markets may offer African countries the additional economic incentives required to prioritise, protect, sustainably manage and restore their coastal ecosystems.

### POTENTIAL INTERNATIONAL POLICY INTERVENTIONS

Opportunities exist to promote Blue Carbon as a legitimate climate change activity. However, promoting Blue Carbon as a new and separate agenda item under the UNFCCC is unlikely to succeed. The current climate change negotiations are already heavily overloaded and adding another agenda item may be counterproductive – especially before the Intergovernmental Panel on Climate Change (IPCC)<sup>5</sup> reporting guidelines have been improved, and before the impacts of Blue Carbon have been fully understood. At present, the best opportunities for policy influence lie in the further development and expansion of IPCC guidelines (to include seagrasses, for example) and in integrating Blue Carbon into existing NAMA and REDD+ agendas.

Several countries do refer to mangroves in their national REDD+ strategies and readiness plans, although these are mostly limited in extent and detail. Costa Rica, Tanzania, Indonesia and Ecuador, for example, refer to mangroves in their national submissions to REDD+ and to the Forest Carbon Partnership Facility (FCPF).<sup>6</sup> The scope of REDD+ is also currently limited to forest-related activities for Land Use, Land-Use Change and Forestry,<sup>7</sup> and does not include non-forest land use such as salt marshes and seagrass-related activities. For many countries, this is a large opportunity missed.

There are also prospects within the broader scope and definition of activities qualifying for NAMAs, which countries are able to tailor to their specific needs and mitigation potential. The methodologies for carbon measurement within NAMAs are currently being developed and improved. This opens up space for countries, such as small-island African states, which do not represent typical REDD+ countries, to use NAMAs

to explore opportunities to access climate change mitigation finance for coastal management activities, as well as to promote capacity building and awareness programmes around ecosystem services and carbon sequestration. Several countries, including Sierra Leone, Eritrea and Ghana, have submitted coastal wetland-related NAMAs.

It is therefore necessary to integrate Blue Carbon more strategically into existing international, regional and national climate change initiatives and to broaden the existing definitions and terminologies so that they are designed more appropriately for African countries. It is also crucial to improve access to untapped avenues of carbon financing, via the UNFCCC or through voluntary carbon markets, as primary vehicles for supporting national and project-level Blue Carbon activities. Owing to the ability of mangroves to protect vulnerable coastal communities from storm surge and a rise in sea levels, countries with ample coastal vegetation can also seek financing from the UNFCCC's Adaptation Fund. Other complementary funding avenues are also available outside the UNFCCC, such as biodiversity offsetting, conservation funding from ecotourism, private sector finance to meet corporate social and environmental responsibility targets, or via bilateral and multinational agencies (such as the Global Environment Facility of the World Bank). A number of carbon market facilities and sources of funding have also been established outside the UNFCCC. The Verified Carbon Standard,<sup>8</sup> for example, is recognised as the most advanced for developing coastal carbon systems. Other standards generating CO<sub>2</sub> Certificates include the Climate, Community and Biodiversity Standard, CarbonFix Standard, and the Plan Vivo Systems and Standard.

### CHALLENGES STILL TO BE ADDRESSED

Although scientific evidence exists to support the carbon sequestration benefits of coastal ecosystems, there is currently no international regulatory framework or convention to protect the value of coastal and marine ecosystems for sequestering carbon and mitigating climate change. Unlike terrestrial forests, the substance and certainty surrounding Blue Carbon benefits have not been communicated effectively to the broader climate change policy community. As a result, these ecosystems have not been integrated fully into policy discussions or within the financial mechanisms for climate mitigation.

There is still a lack of confidence in the quantification of Blue Carbon. A major priority should therefore be to support scientific research to better analyse the quantity of emissions captured by Blue Carbon sinks, and to assess where on the planet carbon loss is occurring most rapidly as a means to prioritise these areas. Demonstration projects could also be good avenues for the development of practical, science-based methodologies and tools for the UNFCCC and other frameworks that support carbon accounting for mangrove projects.

Currently these challenges represent barriers to finance and incentive mechanisms including carbon markets. There is currently little knowledge and awareness about the financial rewards of coastal ecosystems specifically. Trading and registry procedures are not yet well established for the nascent voluntary offset markets.

## CONCLUSION

Currently human pressure and economic activities are compromising the resilience of global ecosystems and eroding their natural capacity to deliver vital services. The improved management of coastal Blue Carbon ecosystems, through avoided emissions, conservation, restoration, reforestation, afforestation and sustainable use, has strong potential to become a transformational tool in effective natural carbon management. Countries should work rapidly towards developing effective ecosystem management tools and conservation incentives to secure their coastal carbon sinks.

Ecosystems services should be taken into account when assessing the true economic, ecological and social value of coastal ecosystems. Policymakers should better understand how biological, regulating, provisioning and cultural services are contributing to the well-being of their constituents and to economic development in their communities more broadly. There is an urgent need to quantify the economic value of mangroves, seagrasses and tidal marshes and use this value to entice investment back into sustainable financing for their conservation.

Climate change mitigation mechanisms offer many African countries, home to some of the largest global coastal resources, new innovative financing opportunities to compensate for actions leading to the reduction in their emissions from coastal ecosystems. In this regard, international schemes and carbon accounting tools have

the potential to persuade decision makers to visualise the impacts of their potential decisions and identify tradeoffs and compatibilities between environmental, economic, and social benefits.

Blue Carbon is emerging as a new option on the palette of existing global mitigation opportunities – one that also has positive spin-offs for conservation and biodiversity protection. This complements the conservation work that is already taking place within different international forums, such as the UN Convention on Biological Diversity and the Ramsar Convention on Wetlands.

Africa needs to be involved at the forefront of decision making in this regard and in the creation of policies specifically suited to their needs. However, there is still major uncertainty about the quantification of these sinks that needs to be addressed urgently in the scientific community.

## ENDNOTES

- 1 Romy Chevallier is a senior researcher for GARP at SAIIA.
- 2 REDD+ supports reductions in emissions caused by deforestation and forest degradation. It aims to strengthen and expand the role of forests as carbon pools by supporting the conservation and sustainable management of forests and forest carbon stocks.
- 3 Voluntary mitigation actions undertaken by a developing country to seek financing, capacity building and/or technology transfer support under UNFCCC agreements.
- 4 A Kyoto Protocol mechanism through which developed countries can finance GHG emission reduction/removal projects in developing countries, and receive credits towards meeting mandatory limits on their own emissions.
- 5 The IPCC surveys world-wide scientific and technical research and publishes assessment reports that are the most recognised as credible sources of information on climate change.
- 6 The FCPF, financed through the World Bank, supports developing countries to prepare readiness plans for the implementation of the REDD+ process.
- 7 A GHG inventory sector that covers emissions and removals of GHG resulting from direct human-induced land use, land-use change and forestry activities.
- 8 A GHG accounting system used by carbon mitigation projects globally to verify and issue carbon credits for the international voluntary offsets market.

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