

ADVOCACY NOTE

MITIGATING THE IMPACT OF CLIMATE CHANGE ON AFRICAN AQUATIC ECOSYSTEMS AND BIODIVERSITY



Prepared by: Giorgio Brandolini

Edited by: Joel Mokenye, Mohamed Seisay, Alberta Sagoe and Eric Nadiope

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Requests for such permission should be addressed to:

The Director
African Union – Interafrican Bureau for Animal Resources (AU-IBAR)
Kenindia Business Park
Museum Hill, Westlands Road
P.O. Box 30786
00100, Nairobi, KENYA
Or by e-mail to: ibar.office@au-ibar.org

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Context

Africa emits far less carbon dioxide than any other continent. However, this continent with the majority of the world's poor countries and communities, faces more severe climate change impacts than other regions due to its lower resiliency, lower adaptive capacity, and greater reliance on climate-sensitive sectors such as agriculture, fisheries and aquaculture for food and nutrition and income.

The African Union (AU) has elaborated the Policy framework and reform strategy for fisheries and aquaculture in Africa (PFRS, 2014) and Africa Blue Economy Strategy (ABES, 2019) to shape the continental approach to the development of an inclusive and sustainable blue economy and anchor it to the continent transformation and growth processes, as enshrined in the African Union development framework, Agenda 2063

The mitigation of the climate change impact on aquatic ecosystems and biodiversity has been prioritised in the PFRS and mainstreamed into the ABES where the conservation, sustainable use and equitable access to aquatic resources acts as a booster of sustainable development.

Several practices have been successfully tested to reduce the impact of climate change including, among others, its mitigation through the adoption of circular economy short value chain solutions, the adaptation of economic activities to the changes in the biology of the aquatic organisms, tree planting, mostly done by women, to enhance carbon sequestration, and the sustainable intensification of aquaculture production to reduce the extent of the fishery extraction areas.

The progress made in this field is little known and insufficiently disseminated to produce the large-scale changes needed to systematically improve the conditions of the aquatic ecosystems and biodiversity.



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Artisanal fishery, Lembá harbour, São Tomé e Príncipe.

Impacts of climate change on aquatic ecosystems and biodiversity

The impact of climate change can be clustered into: (a) Chronic climate hazards that refers to the incremental climate changes, such as rise in seawater temperature and acidification, change in rainfall patterns and rise in sea level; and (b) Acute climate hazards that refers to extreme weather events such as drought, heatwaves and extreme rainfall.



Coastal erosion¹ at Varela, Guinea Bissau.

The impact of climate change sums to that of other anthropological factors, such as the increased disposal of plastic waste that ends up in the water ways and disrupts the aquatic biological cycles. Within the seas, climate warming is affecting the reproduction of several species. Shifts in latitude of fish species have already been noted. Species that need more cold temperatures migrate poleward of the ocean with warming oceans. Climate change is also expected to reduce the water flow of coastal rivers thus impacting on the evolution of wetlands and estuaries that are highly productive and important fish nurseries ecosystems.

¹ Coastal erosion is caused by local sea level rise, strong wave action, and coastal flooding which wear down rocks and/ or sands along the coast.



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Sedimentation at Cufada lagoon, Guinea Bissau.

Key effects of climate change on fisheries include reduced productivity, loss of fishery habitats, displacement of stocks and or species, interference with reproduction and migratory patterns of fish species, and loss of species among others.

The impact on aquaculture include floods, drought spells, diseases, decrease in grow rate - can appear more dramatic than in the case of fishery due to its more intensive and timebound exploitation of the aquatic resources.



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Fish processing (Drying of fish) at the Lifuwu (lake Malawi), Malawi.

The impact on the access to aquatic ecosystem services, especially coastal communities, concern erratic water and hydrological cycles of coastal ecosystems, reduction of water biological self-purification and availability for domestic, agricultural, industrial uses.

The predicted increase of dry and hot climate across Africa, will affect every aspect of peoples' lives and ecosystem services delivery.



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Aquaculture at Savane, Sofala province – Mozambique.

Some key aquatic hotspots threatened by the impact of Climate change include the following:

Marine ecosystems	<ul style="list-style-type: none"> • The mangroves of Guinea Bissau and the Gambia, Tanzania, Mozambique (erosion and biodiversity loss) • The Madagascar, Tanzania and Kenya coral reefs (growing bleaching) • The Mauritius seagrass (degradation and biodiversity loss) • The Banc d'Arguin off Mauritania coast (migratory bird route degradation)
Freshwater ecosystems	<ul style="list-style-type: none"> • The Madagascar freshwater (endemic fish biodiversity loss) • The Zaire River basin (degradation and biodiversity loss) • The Africa's Great Lakes Tanganyika, Malawi, and Victoria – (cichlid and other fishes biodiversity loss) • The Sudd swamp in South Sudan and Zambezi valley (migrating bird routes degradation) • The Chad lake basin and Okavango Delta (desertification and biodiversity loss)



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Mangroves² at Buba, Guinea Bissau.

Ecosystem-based solutions for mitigating climate change

Mechanisms for integrating and enhancing ecosystem-based solutions

National Climate Adaptation Plans address the conservation, sustainable use and equitable access to aquatic ecosystems and biodiversity services. The main ecosystem-based solutions available for their implementation can be grouped into the following:

- **Mitigation mechanisms** centred on the efficient performance of marine and freshwater economic activities – including ecological intensification, circular economy, short value chain, energy efficiency and the enhancement of the carbon sink by, for example mangroves restoration and protection, that mitigate Climate change.
- **Adaptation mechanisms** include adaptation planning, adaptive management, community-based management and government support.
 - *Adaptation planning* considers the different aspects of and expectation involved in the management of water and other aquatic resources. Coastal spatial planning incorporates building the capacities of the local stakeholders and exploiting digital technologies, to support knowledge-based decisions that reduce the impact of Climate change on the livelihoods of the coastal population.
 - *Community based management* reduces the effects of climate change impacts on the coastal populations' livelihoods through the enhancement of social cohesion and community ties, as well as disaster awareness

² Mangroves are among the most carbon-rich forests in the tropics. The carbon storage function performed by mangroves is vital for providing a pH buffer against ocean acidification.

- *Adaptive management* comprises of the activities that improve the efficient use of the aquatic ecosystems and biodiversity. The capacity to quickly adapt to changing natural capital through new harvesting techniques and tools plays a role in the evolution of aquatic systems-dependent livelihoods. Promising solutions include changing the timing and areas of fishing, closing fishery during climate-driven events, relocating landing and processing practices, establishing early warning systems to master climatic events, diversifying livelihoods, using local by products for producing aquaculture feed.
- *Government support* fosters the sustainability of socio-ecological systems that provide the environmental services of resilient livelihoods. Funding of these actions should be done by progressively shifting to the mobilisation of financial instruments tailored for the exigencies of the artisanal producers, as microfinance schemes, community banking, to ensure the sustainability of Government support.
- **Surveillance of marine and freshwater resources** through remote sensing technologies. Their effective use depends on the collaboration of the environmental surveillance bodies with the agencies in charge of monitoring, control and surveillance of illicit practices.
- **Transboundary aquatic ecosystems regulations and indicators** on fisheries or aquatic ecosystems support the planning and coordination of common or harmonised actions. The implementation of transboundary regulation requires the establishment of reliable and compatible national statistics.

The weak capacities and limited financial resources available to implement National Climate Adaptation Plans as well as insufficient engagement of the coastal population are the main challenges to the implementation of these solutions in the aquatic ecosystems.

A continental initiative on mitigating climate change impact

The elaboration of climate change mitigation action at the African Union (AU) level should adopt the principle of subsidiarity by complementing ongoing initiatives and concentrating the resources where they make a difference, thus filling in gaps instead of repeating ongoing experiences by:

Establishing or strengthening online platforms of sub-regional organisations (LME, RECs, inland water basin commissions, etc.) to provide a forum for interactive service, exchange of experience and organization of remote training on climate change mitigation and adaptation measures. The online platform would also provide a forum for exchange of experiences, lessons, best practices and priorities and strategic actions of AU Member states on mitigating the impact of climate change on aquatic ecosystems and biodiversity
Sensitising the local actors (producers' cooperatives, community-based organisations, fishers' association, research centres, institutions, NGOs, etc.) through these platforms and organising information and training sessions on the impacts of climate change and mitigation practices
Mobilising the expertise of sub-regional organisations and local actors to assist pilot communities in building capacities and elaborating cost recovery mechanisms;
Community empowerment by States through institution of Policies, Legal frameworks and guidelines with clear roles and responsibilities to facilitate organisation and involvement.
Innovative financing mechanism to support community-based mitigation and adaptation measures should be gender sensitive and inclusive to support the conservation, sustainable use and provide equitable access to aquatic ecosystem services
Innovative financing mechanism should also support capacity building of the beneficiaries, including women, local actors and other stakeholders on mitigation and adaptation measures.
The elaboration of cost recovery mechanisms (i.e. revenue generating activities) should be integrated in any project on climate change mitigation and adaptation measures so as to ensure the sustainability of the measures

The following mechanisms should be considered in the design of a regional initiative that contributes to conservation and climate change mitigation objectives:

- **Networking approach:** exploitation of the knowledge management capacities of regional, sub-regional and national organizations. The objective is to test and disseminate best practices across the continent.
- **International advocacy coordination:** promotion of the mutual understanding of the AU Member states on their position on aquatic ecosystems and biodiversity in view of the harmonization of their participation to international fora, e.g., the Conference of parties to the Convention of Biodiversity.

The approach should mainly focus on:

The exploitation of the existing multi-level dialogue tools by prioritizing synergies in the organization of gender-inclusive regional meetings, communication and awareness events, training sessions, etc.
The strengthening of the interactive services provided by the existing knowledge management platforms to link the performance of field actions to regional objectives and priorities
The collation of the evidence of the benefits of mitigation and adaptation measures and disseminated across the continent, to stimulate engagement of African decision-makers in dialoguing and joining forces to mainstream mitigation and adaptation measures in planning development, transboundary initiatives, etc.
The organization of information exchanges / remote meetings of institutions including private sector and civil society organisations, dealing with aquatic ecosystems and biodiversity; for effective participation of the AU Member states in international fora to promote the African common voice on issue related to conservation of aquatic biodiversity and environmental management.

Conclusion:

The design of this climate change mitigation initiative integrates the contribution of local, national, sub-regional and regional stakeholders in maximising the impact of innovation across Africa. The knowledge-based and development focus stimulates the dialogue and mobilises the experience and resources of ongoing initiatives, thus avoiding the creation of new structures or mechanisms. The implementation should be promoted through consultation involving regional and sub-regional organisations active in this field, to discuss their expectations and contribution to framing a regional approach to mitigating the impact of Climate change on the aquatic ecosystems and biodiversity in Africa.



Commercial fishery, Bijagós islans, Guinea Bissau.



African Union
Inter-African Bureau for Animal Resources (AU-IBAR)
Kenindia Business Park
Museum Hill, Westlands Road
P.O. Box 30786
00100, Nairobi, KENYA
Telephone: +254 (20) 3674 000 / 201
Fax: +254 (20) 3674 341 / 342
Website: www.au.ibar.org
Email address: ibar.office@au-ibar.org