SESSION II: KEYNOTE PRESENTATION I

Ocean Finance: Financing the Transition to a Sustainable Ocean Economy

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Abstract

The ocean economy (OE) is a cornerstone of the global economy, contributing trillions each year. Despite this, the sector is drastically underinvested, with just 1% of the ocean economy's total value invested in sustainable projects to date. With climate change, pollution and overfishing putting mounting pressure on the ocean, it is crucial to protect and manage human activity on the ocean. To do this effectively and achieve a sustainable ocean economy, significantly greater finance needs to be made available. The ocean economy is currently at risk from multiple stressors. To sustain ocean health, it is crucial to restore, protect and effectively manage human use of and impacts to ocean ecosystems. These activities need financing. Ocean finance is therefore critical to achieving a sustainable ocean economy. However, current investments fall well below what is needed to finance this transition: (1) Less than 1 % (around 13 billion) of the total value of the ocean economy invested in sustainable projects in the last 10 years. (2) Mediterranean countries are facing an annual financing gap of $776.4 million for effective management of marine protected areas in the Mediterranean. Although knowledge gaps remain, there is mounting evidence of the benefits investing in the ocean can bring: (a) Investing $1 in key ocean actions can yield at least $5 in global benefits, (b) Investing in effectively managed MPAs can increase habitat protection and ecosystem resilience. Current frameworks that guide blue investments do not set out consistent and universally adopted principles. There are still gaps in understanding of the ways the OE contributes to the wider global economy, and that investments in the OE can have high return rates. Activities like oil and gas and unsustainable fishing, which create negative impacts on the environment, are heavily subsidized. Investments in the ocean economy are currently risky. Historically, ocean economic sectors have operated under relatively more unpredictable conditions than those based on land due to the ocean's vast size, physical environment, and comparative lack of ownership and responsibility in the ocean. Actions to plug the finance gap:

- Set up and implement new common guidelines and principles that help define what sustainable investment in the ocean economy would look like.
- Strengthen knowledge, data and capacity in ocean health and finance, particularly in developing countries.
- Create a supportive and inclusive enabling environment.
- Stimulate the pipeline of investible sustainable projects.
- Explore new financing mechanisms and tools.
- Develop best practices to incentivize sustainable behavior.
- Boost new approaches to insurance.

SESSION III: ASSESSMENT AND CONSERVATION OF CRITICAL HABITATS AND ENDANGERED SPECIES

Working towards a better understanding of Western Indian Ocean deep sea ecosystems

Woodall and Talma
University of Oxford

Abstract

This paper presents a brief review of available literature of the past deep-sea biology studies in the WIO region. Preliminary analysis illustrates research opportunities and survey effort are not equally distributed in the WIO nations and remain very low over all areas. Twenty-three taxonomic groups were represented across the studies with crustaceans Malacostraca which includes crabs, lobster and shrimp which are of fisheries interest, forming the focus of most studies (20%). Majority of studies (58%) investigated systematics or taxonomy mostly with a strong

focus on new species descriptions. Relatively very few studies on community ecology which is considered especially important for marine biodiversity management were recorded in the WIO. This review identified that all regions, taxa and field of study are under-represented in published literature on the deep-sea biology of the Western Indian Ocean. Given the extensive nature of the knowledge gap on the deep-sea biology of the Western Indian Ocean the paper recommends the following as a way forward in a bid to contribute to making available usable information to policy makers;

- Awareness be created on services of the deep-sea ecosystems to parties through WIOMSA, FARI or other suitable organisations.
- A comprehensive review of deep-sea biological data (inc. grey literature and traditional knowledge) to provide knowledge gaps and to help prioritise activities.
- A deep-sea working group is established to lead the advancement of deep-sea research and data usage in the WIO
- Parties should continue to have strong representation in the BBNJ negotiations considering that deep sea is valuable for their prosperity.

(*Supported by WIOMSA*)

Supporting national and regional alignment in coral reef management The Western Indian Ocean Coral Reef IUCN Red List of Ecosystems Assessment

Obura *et al.*
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Abstract

The Western Indian Ocean (WIO) contains 16% of the world's coral reefs, and the region is a globally important hotspot for coral reef biodiversity. WIO coral reefs are estimated to have an asset value of U$ 18.1 billion. Despite these tangible and intangible benefits, coral reefs are highly threatened, with up to 50% already considered degraded globally. The weight of evidence suggests that increasing local (fishing, pollution, coral diseases, cyclones) and global (warming, acidification) stressors, and their cumulative and synergistic interactionism, give a window of only several decades before possible collapse of this flagship ecosystem, with potential dire consequences on coastal food security, economies, and jobs. Addressing this need, the International Union for the Conservation of Nature's (IUCN) Red List of Ecosystems (RLE) is emerging as a framework to assess the risk of ecosystem collapse. It provides a consistent information base to inform management and policy responses to reduce the risks of ecosystem collapse. The RLE builds on the success of the IUCN Red List of Threatened Species, which for over 50 years has been the global standard for assessing the risk of species extinction. This RLE assessment of WIO coral reefs has produced some important advances: i) an up-to date regional-scale analysis of reef regions most at risk; ii)a diagnosis of the dominant threats among these; iii)increased robustness and relevance of decision-support for coral reef management and policy; iv) updated the coral reef database compiled by the Global Coral Reef Network's (GCRMN) regional network under the Coral Reef Task Force (CRTF) of the Nairobi Convention, and iv)Introduceda novel assessment approach to the region that can be adapted toother critical ecosystems, such as mangroves and seagrass beds. This paper calls the Nairobi Convention Parties and Secretariat to:

- Build on the findings of the Red List of Ecosystems, the regional report of 2017 and other science to identify priority reef areas requiring effective protection, through protected areas or other effective conservation measures (OECM), thereby addressing international conservation area targets in the Western Indian Ocean in a way that is compatible with sustainable use and equity at local levels.
- Ensure the prioritization of coral reefs and threatening activities within Marine Spatial Planning and Sustainable Blue Economy processes and implementation, in order to resolve local stressors to coral reefs from fisheries and land-based development.

- Capitalise on the findings from the Red List of Ecosystems assessment to stimulate support for national policy processes related to coral reef and marine ecosystem conservation and sustainable management e.g., national coral reef action or management plans and strategies
- Promote the inclusion of the Red List of Ecosystems as a component indicator in the Global Biodiversity Framework of the Convention on Biological Diversity thus establishing its relevance for monitoring Sustainable Development Goal 14 and of national reporting in Convention processes.

Protecting threatened sharks and rays in the Western Indian Ocean

Rhett Bennett
Wildlife Conservation Society

Abstract

Overexploitation of shark and ray species can have direct impacts on their populations and indirect impacts on their ecosystems and food webs. Thousands of people living in coastal communities within the WIO are dependent on marine resources, including sharks and rays, for their income and livelihoods, making this both a social and ecological issue. However, the catches of shark and ray species are currently poorly recorded and true catch statistics, particularly in artisanal, small-scale and IUU fisheries, remain unknown. Furthermore, human populations and the demand for marine resources are increasing throughout the WIO, with evidence of human migrations to coastal areas in search of improved food security and livelihoods. There is thus a continued threat to WIO shark and ray species, the severity of which is increasing. As a consequence, there is a critical need for corrective management and improved conservation of the WIO shark and ray species, particularly those that are already threatened or likely to become threatened. This paper responds to these issues, as they relate to the WIO member states of the Nairobi Convention. The paper is intended to encourage the listing of appropriate species on the Annexes of the Nairobi Convention Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region and urges member states to similarly protect and regulate relevant species at national level. Recalling Decision CP7/12: Conservation of Sharks, Article 4 of the Nairobi Convention Protocol on species of wild fauna requiring special protection and Article 5 on harvestable species of wild fauna, we urge the Conference of Parties to take the following steps, to reduce impacts on shark and ray populations in the WIO, to improve their conservation status:

- List appropriate shark and ray species on the respective Nairobi Convention Annexes, as proposed in Annex I to this document: Recommendations for Shark and Ray Listings in the Annexes of the Nairobi Convention Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region.
- Urge member states to implement their binding commitments in terms of species protections and trade controls at national level, as imposed by the multilateral agreements to which they are party.
- Encourage member states to voluntarily implement species protections and catch restrictions for threatened species and species subject to trade controls, i.e., those not already required to be protected under other multilateral agreements.

Towards A Regional Mangrove Vision

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Abstract

At the global level, mangroves deliver substantial ecosystem services that play a critical role in supporting human well-being through climate regulation, disaster risk reduction, food security and poverty reduction for more than 120 million people globally living in tropical coastal areas. The critical need to conserve, manage, and restore functioning mangrove forests and related coastal ecosystems are recognized in multiple international treaties including: the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971;

the Convention on Biological Diversity (CBD), 1992; the United Nations Framework Convention on Climate Change (UNFCCC), 1992; the United Nations Convention on the Law of the Sea, 1982; and the United Nations Watercourses Convention, 1997 as well as in global commitments such as the Sustainable Development Goals (SDGs). However, the potential of mangrove conservation in contributing towards serving such multiple international commitments is still only marginally realized and utilized. The Western Indian Ocean (WIO) region is characterized by high coastal and marine biodiversity, both in terms of species and ecosystems, which places it as one of the richest and most interesting ocean regions of the world. Mangrove loss rates vary immensely between regions and, particularly when their distribution and health are non-linear at national and local levels, that isn't surprising in the WIO region where four countries (Kenya, Tanzania, Mozambique and Madagascar) hold ca. 99% of its mangrove cover. The coastal areas of the WIO region have experienced increasing loss rates over the past decades, a change in that trend started only to manifest in recent years. The policy recommendations are:

- Call on the Nairobi Convention Parties to develop a regional mangrove vision (and related strategy framework as needed) that encapsulates the region's commitments and priority needs.
- Call on the Nairobi Convention Parties to facilitate the mainstreaming of mangroves innational development planning
- Call on the Nairobi Convention Secretariat and Parties, and the WIO Mangrove Network, to establish the relevant institutional structures such as the proposed Regional Advisory Group for supporting synergies between mangrove-related initiatives, crafting the elements of the regional mangrove vision, and supporting a regional policy dialogue on mangroves.
- Urge the Nairobi Convention Secretariat, Parties and partners to create a strong case for the regional mangrove vision through regional and global dialogues (beyond the dialogues in the proposed Regional Advisory Group) to enhance mangrove conservation goals, commitments and priority needs at regional and international level. This will help profile the WIO region as a "mangrove champion" in the global sphere.

Underwater Noise and Shipping and the threats they pose to marine species in the Western Indian Ocean

Tim Collins *et al*
Wildlife Conservation Society

Abstract

The threats that noise and shipping pose to marine life remain poorly understood in the region and are rarely considered in national or regional management and development plans. WIO states are accelerating the development of the regional "Blue Economy" including development & expansion of ports and offshore oil and gas production which will further increase shipping & noise. This has the potential to increase impacts of ship strikes & noise where shipping activity intersects with the migratory routes or feeding and reproduction habitats for vulnerable species. Previous studies indicate that ship-strike probability and oceanic noise pollution can be monitored, and their impacts may be reduced through for example noise quieting technologies or ship speed management schemes. Vessel-quieting guidelines have been developed by the International Maritime Organization & others and guidelines for the reduction of ship strikes by the International Whaling Commission (IWC). The need for increased action on oceanic noise & ship strikes has gained considerable attention with discussions being made at the 12th Convention on Migratory Species Conference of the Parties (COP), 2017, Nairobi Convention COP9, 2018 and United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, 2018. Guidelines for the reduction of impacts associated with offshore geophysical surveys as well as other forms of environmental imaging have been developed by IUCN. The IWC adopted a resolution on anthropogenic underwater noise in 2018. The parties are urged to take the following steps, to reduce threats associated with Shipping and Underwater Noise in the WIO:

- A technical review of current underwater noise mitigation policies within the Nairobi Convention area be undertaken. The review should identify
    - A plan for targeted regional and collaborative research that improves current understanding of regional WIO ocean noise levels, including establishment of acoustic baselines (such as soundscape maps) and modelled changes over time.
    - A plan for targeted research that highlights the potential impacts to marine habitats and species from underwater noise and shipping traffic and the effects of expanding regional maritime trade.
- The development of regional technical capacity should be encouraged by member states through academic frameworks.
- Regional research that actively investigates oceanic noise and its effects on marine life should be encouraged and supported, including prioritizing targeted research funding.
- Member states should be encouraged to routinely review current national guidance and regulation that pertains to maritime development and to address deficits linked to the following:
    - The assessment and mitigation of underwater noise associated with development projects, particularly ports and associated increases in vessel traffic.
    - To incorporate recommendations identified by the technical review proposed as well as any other relevant guidance provided by other appropriate agencies.

Strengthening regional regulatory frameworks and national capacity for handling marine biodiversity data in the Western Indian Ocean – Technical and policy recommendations on data handling and sharing standards

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Abstract

Oceans and coastal areas along the Eastern African shorelines are among the most diverse and productive marine ecosystems worldwide. To sustain the ecological services for future generations and to address potential competing interests about spatial use, sound coastal governance requires careful management of those often fragile ecosystems, especially since stakeholders have different interests concerning the use and protection of marine ecosystems. There are now many opportunities to expedite the process of providing biodiversity data to relevant decision-making institutions at a much faster rate than previously known. There are technical and logistical constraints, institutional and governmental policies, missing scientific capacities or general issues in knowledge sharing that hinder the collection and sharing of in-situ biodiversity data. To meet future conservation and management goals, we will need to identify common monitoring strategies and agree on the essential variables (biodiversity and taxonomic data) that should be observed and routinely exchanged and shared. The proposed framework therefore addresses several main themes of the Nairobi Convention Science-to-Policy Platform workshop: (1) It adds critical information to MSP efforts and data management, (2) Through its approach of standardized monitoring efforts, it will simplify ecosystem monitoring and ecosystem approaches to fisheries.

It is recommended that

- A roadmap vision for the Western Indian Ocean region to be developed and become a model region for the monitoring, handling and sharing of marine biodiversity data.
- A regional inter-sectoral (i.e., academia, government, policymakers, industry, traditional knowledge holders) expert panel be established
- Biodiversity and taxonomic data collection, reporting and sharing through common frameworks be regionally aligned.

Overview of oceanographic data and research for improved ocean governance in the Western Indian Ocean Region

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Abstract

Ocean governance underlies the concept of Sustainable Ocean Economy which is one of the desirable outcomes for the UN Sustainable Development Goal 14. Innovative and improved ocean governance requires essential data and information obtainable only from oceanographic and other ocean-related research. In line with the ecosystem approach to management of natural resources, ocean governance requires consideration for the ecological assets, the social and economic consequences of management actions and ability of regulatory agencies to achieve management objectives in the face of external impacts. This requires multi-facetted research and multiplicity of data and information. To enable scientists and managers to determine reference points and baselines against which changes in ecosystem can be measured and how the systems respond to changes in management interventions as well as external influences such as climate variability and change, it is necessary to have adequate and good data on essential ocean variables. The national institutes carry out ocean science research in national waters, including undertaking the collection of oceanographic data along with other ocean data that are necessary for good governance. Data centers are very important facilities that are essentially networks of connected servers, primary objectives of which are to secure, store and disseminate data. National datasets are not always readily available online and are generally scattered over more than one national institute. Monitoring of ecosystem processes is reliant on the availability of data therefore it is necessary to set up agreements with various organizations and institutions in the WIO region to facilitate data availability for this task. It was recommended that the Contracting Parties of the Nairobi Convention request the Secretariat to support the strengthening of National Data Centers to collect, analyze and share data and information in the region through the following actions:

- Prepare an action plan for the further development and support of National Data Centers as provided under the SAPPHIRE project.
- Support capacity development initiatives aimed at strengthening the capabilities of the National Data Centers as well as the data center managers.
- Ensure linkages between National Data Centers and regional mechanisms such as the Nairobi Convention Clearing House Mechanism are established to ensure the efficient and effective sharing of, and easy access to regionally relevant information.

(Supported by the Nairobi Convention under the SAPPHIRE Project)

Ecosystem Monitoring Framework for the Western Indian Ocean

Warwick Sauer
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Abstract

Ecosystem health determines the sustainability and productivity of these activities to support human well-being and, thus, relies on the successful management of the Ocean. Regional ecosystem monitoring provides a tool to assess the status and trends of both ecosystem health and management blueprints over long periods of time. Monitoring of ecosystems is undertaken through constant and long-term data collection of regional and national indicators relevant to evaluate the environmental status and trends, and sustainable ecosystem services usage. It represents a proactive, dynamic and adaptive process which is continuously under review and refinement in terms of the procedures, tools, methods, and approaches used. Thus, it is based on the adaptive management principle. The Contracting Parties to the Nairobi Convention have committed under Article 15 (on Scientific and Technical

Cooperation) of the Amended Convention to cooperate in scientific research, monitoring and the exchange of data and information in relation to the Convention and its Protocols. The regional framework for ecosystem monitoring should be considered as a guide to support contracting parties and the region to assess their efforts and progress in achieving regional and global conventions and commitments. Contracting Parties are urged, after appraisal and suggested amendments, to approve and incorporate this framework for ecosystem monitoring into their national planning processes taking into consideration the following supportive actions:

- The priority indicators suggested in this framework should be evaluated, discussed and approved by the Contracting Parties in order to standardize data gathering for the regional monitoring.
- National Data Coordinators (NDCs) from the National Data Centres of each Contracting Party should be nominated to oversee implementation.
- NDCs should designate Indicator Coordinators, who will evaluate the indicator data, oversee the progress and review the indicator monitoring for quality control and assurance.
- The NDCs, Indicator Coordinator and Expert Groups should discuss the specific methodology and parameters to be collected for each of the priority indicators to ensure regional standardization, continuous updating and evaluation of data.
- A capacity development programme to support the above recommendations should be initiated to strengthen the capacity of NDCs to participate and contribute to regional ecosystem monitoring requirements.

(Supported by the Nairobi Convention under the SAPPHIRE Project)

Proposed Strategic Framework for Marine Water Quality Management in the Western Indian Ocean

Susan Taljaard *et al*
Council for Scientific and Industrial Research (CSIR)

Abstract

In response to the Contracting Parties urging the Nairobi Convention Secretariat to establish a strategic framework for marine water quality management (MWQM) in the WIO region, led by the Regional Task Force on Water Quality the framework has been developed. The framework will ultimately support and trigger development of national level management in countries of the region to ensure coordinated and consistent monitoring and reporting of marine pollution matters. Five basic principles are recommended for the WIO region to provide broad direction within which to position a strategic framework MWQM; 1) Pollution prevention, waste minimisation and precautionary approach 2) Receiving water quality objectives approach 3) Integrated, adaptive assessment approach 4) Polluter pays principle 5) Participatory approach. Objectives setting in the strategic framework should consider aquatic ecosystem functionality and key beneficial uses, guidelines for Environmental Quality Objectives and Targets (EQOs and EQTs) & identification of potential marine pollution sources. During implementation of the strategic framework, design & implementation of monitoring and evaluation programmes to test for compliance and inform management intervention & action is critical. The following recommendations are proposed to the contracting parties for consideration of implementation of the Strategic Framework for MWQM in the region.

- Consider adopting as appropriate the framework for MWQM including guidelines for developing EQOs and EQTs
- National MWQM Task Forces be established at national level to feed into the Regional Task Force
- Established National MWQM Task Force to facilitate the adoption and implementation of proposed Strategic Framework for MWQM

- Established National MWQM Task Forces to compile National level status reports, to feed into overarching regional status reports coordinated by the Regional Task Force, to inform various regional processes such as the WIO State-of-Coast reporting.
- The NC Secretariat to work with partners to support capacity building programmes in support of the effective implementation of the Strategic Framework for MWQM (including Monitoring) and associated Guidelines on EQOs and EQTs.

(Supported by the Nairobi Convention under the SAPPHIRE, WIOSAP and EU-ACP MEAs Projects)

SESSION IV: CLIMATE CHANGE ADAPTATION AND MITIGATION

Ocean Acidification - a hidden risk to sustainable development in the Western Indian *Ocean*

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Abstract

This paper is a new response to past COP decisions, CP.9/9 (Climate change adaptation and mitigation), to urge Contracting Parties to address the impact of ocean acidification (OA), including through capacity development and the enhancement of scientific cooperation in partnership with research and academic institutions, regional monitoring and adaptation activities. The paper seeks to address the lack of data coverage in the Indian Ocean and lack of capacity of WIO scientists to address ocean acidification. It highlights the need for political support for further development, expansion, and enhancement of this area of research in the region. Particularly the paper proposes the following on OA in the WIO;

- Promotion of a national and regional solution-oriented research strategy including implementation of adaptation strategies to mitigate impacts of OA.
- Communication on OA and the threat its poses to the public through outreach and educational programmes. The use of United Nations Policy Brief on OA is proposed as a platform for promotion of National Action Plans formulation, regional and local policies development, and general awareness creation on OA.
- Research, knowledge sharing and transfer, and capacity development on OA to inform development and implementation of efficient adaptation strategies to minimize the impact of OA.

The following recommendations are made based on the background on OA in the WIO given.

- Contracting Parties are urged to develop and implement mitigation and adaptation solutions to address and minimize impacts of OA as part of their wider climate change intervention strategies including prioritizing solution-oriented OA research to help their countries achieve SDG target 14.3, which aims at minimizing the impacts of OA.
- The Secretariat working with WIOMSA and other partners support the development of a regional strategy for capacity building bringing together scientists, policy makers and ocean users.
- The Nairobi Convention Secretariat working with partners establish a community of practice in the WIO focused on OA.

The Climate and Ocean Risk Vulnerability Index: Measuring Complex Climate Threats in Coastal Cities to Enable Action

Jack Stuart *et al.*
The Stimson Center

Abstract

Coastal cities are at the forefront of the climate crisis. Rising sea levels, extreme storms, and heat events are amplifying the vulnerability of city residents. At the same time, cities face underlying economic and social concerns, such as expanding populations, aging infrastructure, and governance gaps. These interlocking risks threaten ocean and land-based ecosystems, which coastal cities rely on for their economic and food security. However, climate finance remains inadequate, with an estimated $30 billion allocated to climate adaptation in 2018. This amount stands in stark contrast to $180 billion, which the Global Commission on Adaptation estimates is needed every year to build resilience to current and future climate impacts. In this resource scarce environment, decision-makers need targeted risk information to increase financial flows and ensure that limited resources are being directed to safeguard people, their livelihoods, and to build a more resilient future. In response, the Stimson Centre developed the Climate and Ocean Risk Vulnerability Index (CORVI), an analytical decision-support tool which compares a diverse range of ecological, financial, and political risks connected to climate change, to produce a coastal city risk profile. With the Western Indian Ocean Marine Science Association (WIOMSA), the Stimson Centre is now conducting two city assessments in Mombasa, Kenya and Dar es Salaam, Tanzania. By integrating information and resilience work already underway across the land-seascape, these projects will culminate in innovative new datasets and a risk profile that can be used to prioritize further resilience actions, provide evidence to upscale projects, and access additional climate finance.

It is recommended that.

- The Secretariat, working with WIOMSA, and other partners to build capacity and integrate climate risk into coastal city planning, can use this information as part of the implementation of the Climate Change Strategy for the Convention.
- The Secretariat, WIOMSA, and other partners can also apply the CORVI method to other coastal cities in the WIO region. As more cities are added to the CORVI data matrix, a comparative body of city level data will emerge, providing greater insights into the risks these cities face.
- Ministries of Environment and Finance, in collaboration with coastal cities authorities and other partners, can use this information to further integrate climate risks into their city planning and development.

(*Supported by WIOMSA*)

Prioritization of climate refugia in the Western Indian Ocean

Nyawira Muthiga
Wildlife Conservation Society

Abstract

The WIO's coastal and marine areas are experiencing rapid change with increased human population and the expansion of fishing, tourism, shipping and energy. Climate change in particular is projected to have large-scale impacts including elevated sea surface temperatures, sea-level rises, changes in monsoonal systems and cyclones and coastal flooding. Coastal ecosystems such as coral reefs, seagrasses and mangroves will bear the brunt of climate change impacts. This combination of local and global stressors is resulting in environmental degradation and undermining the ecosystem services and livelihoods of millions of local people and national economies that rely on natural resources in the WIO. One solution is the establishment of marine protected areas (MPAs). Most WIO countries have established MPAs mainly focusing on nearshore ecosystems and are committed to the Convention on Biological Diversity's (CBD) Aichi 11 target to protect 10% of coastal and marine areas. The target has been a key driver of the rapid expansion of national marine conservation efforts in the last decades. Establishing large-scale MPAs such as transboundary conservation areas (TBCA) and other large wilderness sanctuaries is one of the few tools available to achieve this area target. The benefits of large area-based management include ability to act at the ecosystem and landscape spatial scale; conservation and management of ecosystems, species and fisheries stocks that cross national jurisdictions; promotion of integrated management and conflict resolution, and the ability to

increase climate resilience on a large scale. Studies in the WIO have identified several climate refugia including the proposed TBCA on the Kenya Tanzania border. Protection of these climate refugia not only confer the benefits of managing at a large spatial scale, but also serve as potential climate mitigation measures. This working paper summarizes the science that has been undertaken in the WIO on climate refugia. It is recommended that;

- Member states to evaluate and improve the effectiveness of MPAs across the WIO with a focus on the MPAs in the areas identified as climate refugia.
- Parties and relevant organizations to collaborate to identify, map, designate and develop management strategies to protect the climate refugia in the WIO.
- Member states to implement approaches that ensure coordination, integration and inclusion of all sectors in developing local and national MSP and BE initiatives
- Parties when undertaking MSP, marine conservation planning and BE initiatives especially large-scale developments such as ports and oil and gas, to take into account climate refugia.
- Member states to implement their global and regional binding commitments in the protection and management of the coastal zone and ocean governance.

SESSION V: ESTABLISHING AND MANAGING AREA-BASED CONSERVATION MEASURES

Keynote Presentation

The Role of the Private Sector in the Management of Plastics as an Environmental Challenge

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Plastics, South Africa

Abstract

Private sector support is crucial in managing plastics. The keynote presentation highlighted that plastic production in South Africa is ca. 1 841 700 tons of polymer (1 504 000 tons virgin material and 37 700 tons recyclate). There are about 60 000 people employed by the plastics industry, 49% of all polymer went into packaging. The country has a plastics per capita consumption of ca. 27 kg/person. The increasing demand for plastics packaging products in western Indian Ocean (WIO) region is majorly due to market access to more than 145million people, numerous investment opportunities, abundant labour force, high level of intra trade and cross border investments. The plastics industry faces several challenges; opposing single use plastics ban and producer fees, lacklustre voluntary commitments, opposing plastic tax and, heavy lobbying needed to implement bans. South Africa had developed an initiative to bring together key stakeholders to implement solutions towards a circular economy for plastics. It also included a collaborative forum and working groups from full plastics value chain. An **African Plastics Waste Management Strategy** is proposed and would encompass:

- Innovation and new technologies
- Investment support to plastics waste collection
- Recycling infrastructure,
- Changing human behaviour re-littering.
- Circular economy and design for recycling.
- Research – science based, knowledge generation.

SESSION VI: ESTABLISHING AND MANAGING AREA-BASED CONSERVATION MEASURES

Establishment of Marine Transboundary Conservation Areas in WIO: From the Theory to Practice

Arthur Tuda *et al.*
Western Indian Ocean Marine Science Association

Abstract

Transboundary conservation areas (TBCAs) are important spatial management strategies to protect ecosystems and ecological processes that often transcend national jurisdictions. TBCAs have been implemented to protect ecosystems, resources, and animal migrations that are either shared or occur in at least two countries. TBCAs, which have also been referred to as "peace parks" in certain contexts, have also been implemented to resolve territorial and boundary disputes among neighbouring countries. Whilst TBCAs offer a good solution to protect and manage shared or disputed areas, they also tend to be more difficult to plan and manage, because of the differences in the governance contexts in the countries involved. Moreover, it is also important to evaluate the governance context of potential TBCAs to identify barriers and pathways to planning and management. Understanding the governance context will also assist in designing management zones, developing shared management plans, and increasing cooperation amongst stakeholders and countries that are part of the TBCA. The paper outlines three scenarios that can support planning and implementation of TBCA. First, is a transboundary scenario that will develop a conservation plan that will have contiguous management zones across the Kenya and Tanzanian border to protect the entire extent and distribution of ecosystems and ecological process. The second scenario is pseudo-transboundary conservation; whereby contiguous management zones will be developed across the shared border but will require two separate plans and corresponding institutional arrangements and common policies and practices across both countries. Third is a decentralised scenario, where the planning and implementation of the TBCA is based on the lowest possible governance units (e.g., county, district) in the respective countries. It is recommended that;

- Both governments to support the conservation planning exercises to be organised and led by WIOMSA by endorsing the planning process at all government levels
- Both governments to commit to achieving consensus when identifying the conservation and management objectives.
- Both governments to commit to carefully consider the suggested conservation plans, and will collectively and cooperatively decide on the best scenario to adopt for implementation.
- Both governments to support the development of the necessary policy frameworks and institutional arrangements, based on the agreed upon conservation plan.

(Supported by the Governments of Kenya and Tanzania, Nairobi Convention, WIOMSA and other partners)

Strengthening the WIO MPA Network and cooperative actions of governments and society

Julius Francis *et al*
Western Indian Ocean Marine Science Association

Abstract

A global network of marine protected areas (MPAs) is key to sustaining marine biodiversity and fisheries, and to ensure the persistence of biodiversity in the face of climate change. One of the mandates of the UNEP – Nairobi Convention is to support nations in the Western Indian Ocean (WIO) on biodiversity conservation and sustainable marine resource use in the region. This process includes tracking the progress of Contracting Parties' towards the achievement of global sustainable goals. Currently, there are 149 established MPAs in the region, which covers a total area of ~678 000km2 or 8% of the combined EEZ of the WIO nations. The majority of these MPAs were established nearshore and covered coral reefs, mangroves and seagrass habitats, which also translates to protection of 17% of the combined East African coastline. Despite the different capacity among WIO states, the general policy and technical recommendations revolve around: i) improving the management and governance of existing MPAs; and, ii) increasing the area and quality of MPAs. Identifying and addressing gaps in MPA planning in the WIO to develop a functional marine protected areas network (MPAN) requires political will, multidisciplinary information, coordinated action and time. The Nairobi Convention already provides the institutional structure and arrangements for the development and establishment of a regional MPAN. The following is recommended;

- Strengthen existing partnerships (e.g., WIO MPA management network; country-level LMMA networks), and form new bilateral and multilateral agreements and institutional arrangements to support sharing of knowledge, resources, roles, and responsibilities to help increase MPAN management capacity
- Develop and adopt a national MPAN management and operational plan, which includes sustainability measures to ensure long-term financing, effective implementation, regular capacity building initiatives, and strong cooperation, coordination, and collaboration across all levels of organisation
- Develop and adopt a regional and systematic MPAN planning and implementation framework to support the development of national MPANs and formation of the corresponding institutional arrangements and structures
- Adopt a systematic conservation planning approach to ensure that the national MPAN plans adhere to ecological design principles and post-2020 CBD targets, and are attuned to social, economic, and political contexts
- Develop and adopt a national MPAN monitoring and evaluation framework, which includes regular capacity building initiatives, to ensure that individual MPAs are effectively managed and are contributing to maintaining ecological function of the MPAN

Mainstreaming community managed marine areas into the Western Indian Ocean's governance frameworks

Melita Samoilys *et al.*
CORDIO East Africa, Kenya

Abstract

The declining state of marine resources and biodiversity, including local disappearance of species, is a widespread problem in the Western Indian Ocean (WIO). While the value and importance of marine resources and biodiversity to the livelihoods of millions of coastal people in the WIO is well recognised, improvement in the management of marine resource extraction has been slow and piecemeal. There are several causes of the decline in health of the WIO's marine resources and biodiversity, which among others include inadequate area protection, inadequate engagement of communities in management, poor management of small-scale fisheries (SSF) all of which are exacerbated by poor funding commitment. The paper discuss how mainstreaming community managed marine areas into the WIO's policy frameworks can improve marine area protection and SSF management. Locally managed marine areas (LMMAs) provide an alternative community-led governance mechanism, deliver positive socio-economic and conservation outcomes and are an inclusive, equitable and participatory approach to marine resources management. These small, protected areas covered > 11,000 km2 in the WIO in 2014, collectively increasing MPA area coverage to 11%. The LMMA model has been increasingly adopted in Madagascar and Kenya with numerous successes and more recently in Mozambique. However, these LMMA successes have not extended into SSFs, with high levels of overfishing evident in Madagascar and Kenya. Unsustainable fishing in SSFs in much of the WIO has resulted in biodiversity loss and fish population declines. This discussion paper addresses the link between ocean conservation and the wellbeing of coastal communities, which is reinforced by SDG14 (life below water) interacts with SDG1 (no poverty), SDG2 (zero hunger), SDG12 (responsible consumption and production (efficient use of natural resources), and SDG13 (climate action). It presents research findings to support the developments of policy and legal frameworks in the WIO that provide for improved involvement of local communities in marine resource management.

It is recommended that;

- The role of LMMAs in fisheries management is recognized and expanded.
- Legal frameworks to be developed and adopted to streamline community engagement in the establishment of LMMAs
- Development of legislation to ban damaging fishing gears used in SSFs be supported.

- Develop and implement national and regional long term sustainable financing mechanisms to support LMMAs and SSFs

The ongoing role of the Nairobi Convention in delivering well-connected and effective systems of protected areas and other effective area-based conservation measures through capacity development, networking and knowledge management, in turn supporting implementation and reporting on the Post-2020 Global Biodiversity Framework.

James Hardcastle *et al*
IUCN Global Programme on Protected and Conserved Areas

Abstract

The Western Indian Ocean (WIO) coastal and marine resources are essential for livelihoods, island sustainability, and economic stability, from local to national levels. The Nairobi Convention promotes the effective management, sustainable use, and protection of the marine and coastal environment of the WIO region as a core objective under a dedicated theme on Coastal Management. This includes development and implementation of ecosystem-based management programmes and activities that seek to reduce or prevent degradation of the coastal and marine environment and strengthen functioning and resilience of marine ecosystems. However, at the same time, challenges remain in scaling-up success. Most notably there are significant difficulties in sustaining resources and financing, technical capacities, in securing policy gains beyond pilot projects, and in matching governance models to the context and practicalities of the region. The objectives of many protected and conserved areas remain poorly defined and even out of context with the rapidly changing climate and coastal ecosystem dynamics. Additionally, systems of protected and conserved areas can lack vitality to adapt to the demands of globalization and geo-political shifts in demography, economics, and culture. Key recommendations provided include:

- Enable more diverse, inclusive and robust governance frameworks that support *effectiveness* of protected and conserved areas, including 'other effective area-based conservation measures' (OECM).
- Enact policies and programmes that promote region-wide scale and integration of systems and networks of effective protected and conserved areas into marine spatial planning, climate change adaptation programmes and other nature-based solutions for ecosystem protection and restoration, including regional and transboundary processes as well as for the development of a blue economy.
- Align networks and expert commitments, such as through WIOMSA, IUCN and the IUCN World Commission on Protected Areas, to mentor agencies and site managers, communities and their representatives, in achieving and maintaining standards for effectiveness.
- Encourage Parties to adopt 'next generation' tools for measuring and reporting effectiveness, including good governance and management effectiveness. In doing so, support WIOMSA to adapt the IUCN Green List Sustainability Standard and criteria for the WIO region, to include regionally defined, locally applicable indicators and evidence.

Western Indian Ocean Marine Protected Areas Outlook: Towards achievement of the Sustainable Development Goals

Arthur Tuda *et al.*
Western Indian Ocean Marine Science Association

Abstract

The marine protected areas (MPA) Outlook, led by the Nairobi Convention in partnership with WIOMSA, the WIO member states and other institutions, reports the progress of individual countries and the region in achieving the Convention on Biological Diversity (CBD) 2020 Aichi Targets and the United Nations 2030 Sustainable Development Goals (SDG). More specifically, the "Outlook" presents the progress of the Nairobi Convention Contracting Parties to

achieving Aichi Target 11 (conservation of 10 per cent of coastal and marine areas) and SDG 14 (Life Below Water) through an assessment of the status and implementation of marine protected areas (MPAs) across the WIO region. The preparation of regular status reports is beneficial to member states as it promotes accountability and supports regional cooperation in achieving the conservation targets and exchanges of best practice and mutual learning. It is also helpful in mobilizing support to overcome shared challenges and identify new and emerging issues. The paper recommends that;

- Member states should develop as soon as possible, practicable ambitious national responses to the overall implementation of SDG 14.5 and the new biodiversity target 30% by 2030.
- Countries should integrate MPAs within broader marine spatial planning frameworks and apply systematic conservation planning to address MPA design issues, representatively, and connectivity.
- Member State should conduct regular and inclusive reviews of progress in meeting SDG 14.5 at the national levels.
- Regional strategy to be developed for the establishment and implementation of an effectively and equitably managed WIO MPA network
- Regional approach and programme to sustain systematic monitoring and evaluation efforts across all important sites to be developed and regularly conduct MPA management effectiveness assessments and social assessment of MPAs using agreed methods that also describe biodiversity outcomes.
- Capacity building should be supported at all levels to address the variety of challenges to increase social responsibility among institutions and communities and strengthen the regional commitment to conservation and resource management

(Supported by the Nairobi Convention (under the WIOSAP Project) and WIOMSA)

Addressing shifting governance contexts and development objectives in the Quirimbas National Park, Mozambique

Alima Taju *et al.*
WWF Mozambique

Abstract

Marine protected areas (MPAs) are one of the most commonly applied spatial management tools for biodiversity conservation. Considering their history, MPA planning and management have evolved to address multiple objectives and consider different approaches to ensure their success and sustainability. In terms of planning, MPA objectives have included ecological processes and various threats to ensure persistence of biodiversity, and various social, economic, and political considerations to reduce conflict between protected area management and stakeholders and increase compliance. Management has also evolved to become more adaptive to increase MPA effectiveness. Despite the considerable strides, MPA planning and management have yet to learn to be more dynamic to keep up with shifting governance contexts and development objectives to ensure their success and sustainability. There are 154 MPAs in the Western Indian Ocean (WIO), and these were established with different objectives and are managed using different approaches. Using the Quirimbas National Park (QNP) in Mozambique as a case study, the paper describes the lessons learned from the protected area review process. The lessons presented in this paper are envisioned to provide insights as to how the development trajectories of Mozambique have influenced governance of the QNP, and consequently the proposed downgrading of regulations and expansion of protected area boundaries. The paper recommends that;

- Management effectiveness assessments should be included in MPA management plans and should be conducted regularly as part of the adaptive management cycle.

- Research on protected area downgrading, downsizing, and degazettement (PADDD) supported and developed to understand its implications on achievement of conservation, social, and economic objectives.
- A more inclusive approach to MPA management be promoted by considering access, use rights, and cultural and historical values of local communities to reduce PADDD.
- Complementary financing sources (e.g., sustainable tourism, nature-based solutions, biodiversity offsets) should be identified and encourage broader stakeholder engagement to sustain MPA management.
- Criteria and guidelines as part of the regional MSP implementation process should be formulated to accommodate current and future transformations caused by social, economic, political and climate change events to minimize the negative impacts of PADDD.

SESSION VII: REGIONAL OCEAN GOVERNANCE: EMERGING ISSUES/FRAMEWORKS

Improving the understanding and regional awareness of illegal, unreported, and unregulated fishing occurring in small-scale/ artisanal fisheries and the impacts it has on ocean conservation, blue economies and communities in the Western Indian Ocean – Technical and policy recommendations

Keith Roberts *et al*
Terranautics

Abstract
Despite a growing IUU fishing problem impacting artisanal/ small-scale fisheries in the WIO region, few actors have a comprehensive understanding of the scope and broader impacts of the problem. This paper calls for a regional plan of action to better understand and address IUU fishing by both small-scale fishers and industrial fishing vessels occurring within artisanal/ small-scale fisheries of the WIO region, with a particular emphasis on programs to improve information, raise awareness and devise strategies to curb those illegal activities. There is an urgent need for collective regional effort (in the form of long-term support to national Governments) prioritizing research, information sharing, capacity building and the strengthening of Monitoring Control & Surveillance (MCS) systems. An integrated and participatory approach to sustainable development and management of small-scale fisheries involving all stakeholders (resource users, academia, civil society, and Governments) is recommended.

- Achieve recognition and agreement by the Parties to the Nairobi Convention that IUU fishing conducted by both industrial fishing vessels and small-scale fishermen within artisanal/ small-scale fisheries is not only a fisheries issue, but also greatly undermines the ability to sustainably manage ocean and coastal resources. Therefore, it is relevant to be recognized as a threat and addressed by the Parties to the Nairobi Convention.
- IUU fishing should also be recognized as a threat toward achieving SDGs and blue economy initiatives at both a country and regional level, hindering potential benefits such as food security, sustainable livelihoods, and social protection through strengthened trade and improved economic performance.
- Develop a WIO regional plan of action by the Parties to the Nairobi Convention to address IUU fishing performed by both industrial fishing vessels and small-scale fishermen within artisanal/ small-scale fisheries and unlock the full potential of the blue economy in alignment with and in support of other regional efforts. The plan will include:
    - assistance and support to national Governments to elaborate legislation and regulations for small-scale fisheries.
    - improving research and information gathering to create awareness and sensitization of fisherfolks and policymakers on biodiversity and the sustainability of resources; and
    - the strengthening of local fisheries organizations and institutions for community-based and/or participatory management, or co-management and improving MCS in small-scale fisheries.

- Conduct a WIO regional threat assessment focusing on IUU fishing practices by both industrial fishing vessels and small-scale fishermen within artisanal/ small-scale fisheries.
- Mobilize actors' networks and establish a regional inter-sectoral IUU fishing expert panel.

Coastal Cities of the Western Indian Ocean Region and the Blue Economy

Valentine Ochanda *et al*
Western Indian Ocean Marine Science Association

Abstract

This paper is a result of the Nairobi Convention Nineth Conference of Parties that recommended a partnership with UN-Habitat to address the environmental challenges and opportunities posed by rapid urbanization, especially of coastal cities in the WIO region. It discusses three reports produced as a result of studies commissioned by WIOMSA, in collaboration with UN-Habitat in response to Decision CP.9/9 and 9/13. It is hoped that the reports can provide a useful foundation or supplement to blue economy planning and programming in WIO cities. The study acknowledges the potential future growth of other blue economy sectors such as marine biotechnology, renewable energy, and resource extraction, but the recommendations are intentionally focused on blue economy sectors and themes which are currently most prominent across WIO coastal cities. In achieving the conventions strategies and integrating the new urban agenda including urban spatial planning processes and consider integrating marine natural capital, the report recommends.

- Helping the parties enhance their operational environment to maximise gains in BE in WIO cities
- WIOMSA, the Secretariat and other regional partners strengthen and integrate BE governance and planning in waterfront development, ports, and maritime trade for the WIO region.
- An effort by the parties to offer Blue Economy technical assistance to local authority and county governments in the region and integrating Coastal Cities in BE.
- *Blue Economy Governance and Planning* - Formalize local MSP in legislation and allow local governments to plan 5km into the ocean, establishing coordinated city structures for BE planning.
- *Ports and Maritime Trade* - Identify additional supply chain opportunities (processing, other value addition activities) economically proximate to existing port activities.
- *Tourism* - Develop and promote city region tourist strategies, promoting local assets, local communities, connecting cities and beach resorts, and coordinating between regional tourist locations.
- *Fishing* - Incentivize bulk buyers in WIO cities to buy local seafood produce. E.g., restaurants that can showcase local produce.
- *Waterfront Development* - Public-private partnerships (PPP) to facilitate waterfront development, including multiple area market analysis, land use assessment, financing, and/or operations.
- *Operational Environment* - City mapping of circular economy opportunities including livelihood opportunities for local communities; transportation planning and infrastructure, innovative plastic waste solutions; resilient and anticipatory planning, and systematic interventions with respect to recycling infrastructure and processes. Creation of city circular economy strategy.

(*Supported by WIOMSA*)

Co-Design as the basis for collaboration and science to policy uptake in the Western Indian Ocean region

MeerWissen Secretariat on behalf of MeerWissen partnership projects
Western Indian Ocean Marine Science Association

Abstract

Researchers from different disciplines are expected to collaborate among each other as well as with relevant stakeholders and focus more directly on producing knowledge in order to inform society and decision-makers. A

framework of co-creation that consists of three stages, throughout which all stakeholders are involved: co-design, co-production and co-dissemination is proposed. The term co-design is often used analogously to co-creation and can comprise all three stages. The UN Decade of Ocean Science for Sustainable Development (Ocean Decade) is supporting such a transformative process and placing emphasis on the importance of co-design. This is seen as a useful step in illuminating how co-design can be used to shape practice in marine research and policy. The paper proposes an adaptive framework to jointly develop research projects and policies based on a common agenda and a shared vision. Such an adaptive approach is the four-step approach developed by Future Earth Coasts – Our Coastal Futures, which aims to engage stakeholders for joint problem definition, goal setting and strategy development. A key point of this approach is the establishment of a reliable partnership among stakeholders, a mandate to act (and an institutional framework for doing so), and joint definition of targets.9 The co-design and co-production will involve scientists, regional decision makers, the private sector, non-government organizations as well as local and indigenous knowledge-holders. The paper recommends that;

- For the implementation of co-design approaches, an institutionalization similar to that of participation processes on a regional level may be considered which requires strong political support and the will to eventually anchor such approaches formally if necessary
- To convey a competence base for co-design methods, a knowledge transfer approach with a (digital-) modular system is conceivable, which can be called upon depending on the scientific problem.

Shaping action and measures to effectively address marine plastic pollution in the Western Indian Ocean Region

Peter Manyara
IUCN

Abstract

The specific purpose of the regional assessment was to provide a reliable and credible baseline metrics on key plastic flows and leakages into the Western Indian Ocean, integrating both a quantitative technical assessment, qualitative process to quantify potential impacts of plastic in the marine environment, and strategic priority interventions and policy options. The assessment outlines robust metrics of regional significance, with enough granularity for action that enable governments and regional bodies in the WIO to promote, enact and enforce legislation and other effective measures to better contain and reduce marine plastic pollution. The results from the assessment are aimed at supporting and informing the review of important action plans and strategies developed within the region to address marine plastic pollution. The analysis above clearly demonstrates that marine plastic pollution is real and continues to present challenges to the integrity of coastal livelihoods and marine biodiversity in the Western Indian Ocean. It further highlights that the most urgent short-term solution to minimizing marine plastics inputs in the WIO region is through improved waste collection and management. The following recommendations are provided:

- Urge governments to undertake measures to strengthen plastic recycling capacity, lessen the burden of entry and scaling for informal and formal actors, and adherence to established norms, standards, and licensing requirements as applicable.
- Encourage governments to implement measures that discourage the production and import of plastic objects that do not benefit from a recycling solution within national jurisdiction.
- Facilitate the strengthening of tools, capacities and knowledge for municipalities and local government to address plastic pollution in major cities, towns and peri-urban areas.
- Urge municipalities and local governments to scale measures to address widespread littering and open burning of plastics through increased waste collection effort.
- Urge governments and private sector in the WIO region to develop and support measures that increase the value of after-use plastics and encourage the redesign of products and materials for End-of-Life value and circularity.

- Call for scaling up of measures for plastic waste collection and recovery, improved integration of the informal sector in the waste economy; and increased funding to local initiatives for enhanced community livelihood options and to address the socio-equity gap in circular economy.

A regional Marine Spatial Planning strategy for the Western Indian Ocean

Amanda Lombard *et al*
Nelson Mandela University

Abstract

This paper addresses the aims and objectives of marine spatial planning (MSP) strategy and the process towards its development to date, including key concepts and themes to be included in the document. The overall purpose of the MSP strategy is to support the Western Indian Ocean (WIO) with principles and guidelines for national MSP initiatives that will address transboundary and cross-sectoral challenges and issues. In an attempt to apply a bottom-up approach to developing the MSP strategy, a series of discussion questions were posed to the technical working group (TWG) and relevant stakeholders, to identify the key issues in the region and challenges for MSP implementation, the main objectives and strategic priorities that should be included in a regional MSP strategy, and to identify the potential uptake and feasibility of MSP at a national level. The MSP strategy will serve as a guiding document that can assist regional and national implementation of ocean governance systems and mechanisms. Recognizing that countries of the WIO are at different stages and have different priorities with regards to MSP, the countries of the Nairobi Convention are asked to:

- Agree to ratify and adopt the marine spatial planning strategy for the region to achieve improved governance of the WIO.
- Agree to harmonise in-country MSP development in support of regional marine ocean use and planning.
- Secure funding and develop capacity for regional and in-country MSP.
- Develop regional partnerships with regional economic communities (e.g., SADC), regional fisheries management organizations and other regional communities (e.g., the IOC).
- Ensure that MSP follows an ecosystems-based approach, according to the "Malawi Principles" and the IOI-UNESCO steps.
- Harmonize in-country MSP processes with the regional strategy.
- Promote an enabling policy environment for development of in-country MSP legislation.
- Assist with establishment of in-country cross-sectoral forums/committees/working groups to provide integration of sectoral policies and to assist with the MSP process.
- Develop in-country knowledge management systems that contribute to, and benefit from, a regional knowledge management system.

(Supported by the Nairobi Convention under the SAPPHIRE, and WIOSAP and ACP MEAs Projects working with the Regional MSP Working Group)

Private Sector Engagement for a Sustainable Blue Economy in the Western Indian Ocean Region

Alex Benkenstein *et al.*
Nairobi Convention Secretariat

Abstract

The private sector's economic activities in marine and coastal sectors rely heavily on marine and coastal ecosystems for goods and services as business inputs and indirectly through business value chains. At the same time, the activities of businesses, both large and small across a wide range of sectors, have significant and often detrimental impacts on coastal and ocean environments. Meaningful private sector engagement in ocean governance and

protection is therefore not only fundamental to managing our oceans sustainably, but also critical to ensure a sustainable and inclusive blue economy for the Western Indian Ocean (WIO) region overall prosperity. Contracting Parties to the Nairobi Convention are urged to strengthen collaboration with the private sector and other stakeholders for conservation and sustainable utilization of coastal and marine resources in the context of a sustainable blue economy in the WIO. Specifically, Contracting Parties are encouraged to:

(a) Adopt the Strategic Framework for Engagement of the Private Sector in the Western Indian Ocean and the recommendations therein including:

- Develop an implementation plan and a framework for reporting on progress in implementing the Strategic Framework for Private Sector Engagement.
- Assess the feasibility of a WIO Blue Economy Platform (WIO-BEP) to support more effective private sector partnerships in the region.
- Establish focus groups to assess and drive forward the proposed partnerships contained in the Strategic Framework for Private Sector Engagement.

(b) Endorse a strategic regional multi-stakeholder advocacy initiative to create an easy entry point for private sector engagement in coastal and ocean stewardship, encouraging companies to provide resources and influence through individual actions and multi-stakeholder partnerships. This will help to accelerate the transformation to a sustainable and inclusive blue economy.

(*Supported by the Nairobi Convention under the SAPPHIRE Project and GIZ under the joint Western Indian Ocean Governance Initiative*)

Regional Ocean Governance –the Road to a Regional Ocean Governance Strategy for the Western Indian Ocean

Yvonne Waweru *et al*
GIZ - Western Indian Ocean Governance Initiative

Abstract

The Nairobi Convention Secretariat in implementing decision COP 8/5 and COP 9/6 has advanced the process of regional ocean governance through three technical dialogues. **RECs dialogue**, as a first step, in early 2019, the Nairobi Convention Secretariat organized a partnership meeting with the regional economic communities (RECs), the Indian Ocean Commission and other key partners, including stakeholders from ocean science and shipping to develop collaboration on ocean governance and the blue economy. **Analytical dialogue**, a Special Session on Ocean Governance in the Western Indian Ocean Region was hosted by the Nairobi Convention and other partners in July 2019 at WIOMSA's 11th Scientific Symposium. Participants outlined several priorities, challenges, and recommendations for the development of a regional ocean governance strategy. **Broad-based stakeholder dialogue**, a workshop on Ocean Governance for the Western Indian Ocean (WIO) region was held in September 2019 in Seychelles which further advanced the discussions and identified possible next steps and options for further cooperation. Three options are fronted for consideration in the process of developing an Ocean Governance Strategy for the WIO: a) Establish a joint REC ocean governance task force, b) Structure an adaptable open dialogue, or ecosystem-based management (EBM) approach, and c) Dialogue clusters. Based on the above options the following immediate way forward could be considered with support from various regional structures, initiatives, and projects:

a) Request the Nairobi Convention Secretariat to facilitate, together with partners, continued dialogue with the RECs in the WIO and other stakeholders on the establishment of a regional Ocean Governance Taskforce or Coordinating Structure and develop a roadmap towards Strategy development.
b) Building on previous COP decisions around Ocean Governance, request the Nairobi Convention Secretariat to facilitate a process led by the RECS to develop a regional Ocean Governance Strategy for the WIO by March 2022.

It is recommended that the above processes should:

- Align ocean governance engagement with RECs to their Blue Economy Strategy and Policy development processes and continental processes under the AU.
- Align support for this process among regional structures, initiatives and projects including Regional Fisheries Bodies in the WIO.
- Link discussions around ABNJ/BBNJ connectivity and related area-based management to national EEZs, into the ocean governance dialogues.
- Link discussions around private sector engagement to the ocean governance dialogues.
- Strive to draw the environmental and fisheries sectors within the WIO closer together in an Ecosystems Based Approach to enhance regional ocean governance.

(*Supported by the Nairobi Convention under the SAPPHIRE and ACP MEAs Project and GIZ under the joint Western Indian Ocean Governance Initiative*)

COVID-19 and the future of Ocean Sustainability – supporting adaptation to post-COVID changes in the Western Indian Ocean

David Obura *et al*
CORDIO East Africa, Kenya

Abstract

This Sustainable Oceans Lab event was convened as a first step, to bring together 25 diverse stakeholders from across the globe in a rapid on-line process to engage together to develop a systems-level analysis of the short and long-term implications of the COVID-19 crisis. Learning from the findings we may identify mechanisms for regionally focused events to do the same, to support building back better from COVID-19 in relation to Western Indian Ocean sustainability. The paper explores how COVID-19 has changed the landscape of strategic interventions and how this can help to advance ocean sustainability and achieve SDG 14. Further, actions to achieve sustainability and SDG 14 can play a key role in supporting recovery and rebuilding from COVID-19. The process identified six major areas for strategic action, that would help actors on the ground (communities, governments, businesses, NGOs, researchers, others), particularly when working together across their diverse perspectives, backgrounds and interests, identify how to turn negatives into positives – to avoid and transform the 'bad' scenarios' and create 'good' scenarios and pathways in the specific context they may be in. Learning from the 'COVID-19 and the future of Ocean Sustainability' process provides tangible guidance to 'build back better' from the challenges of the pandemic, and across other major threats and challenges. This is a particular challenge when projects may already have predetermined actions and log frames that may not be able to address new realities post-COVID. The following specific approaches or actions can be adopted to alleviate this, which we class as technical recommendations in view of their practical application in project and discussion processes. The paper calls on the Nairobi Convention Secretariat, Parties to the convention and partners, to:

- Incorporate scenario or 'future thinking' approaches into project development and adapting to COVID-19. Identify how one or more of the strategic interventions can be mainstreamed into COVID-recovery and other projects and processes: Ensure inclusive, blue, sustainable approaches, Build resilience of people and ecosystems to withstand future shocks, Embrace interconnectivity and complexity, Leverage digitalization to enhance activities, outputs and outcomes, Reduce ecosystem pressures and threats and, Support shifts in mindsets, to promote positive and reduce negative scenarios.
- Support dialogues and consultations at relevant levels (local, national, regional) for WIO participants to explore and define their experience of COVID-19 and its implications for their lives and work.

A review of the current status of marine litter and microplastics knowledge in the Western Indian Ocean region: amounts, sources, fate and resultant ecological and human health impacts on the coastal and marine environment

Martin Thiel *et al*
Western Indian Ocean Marine Science Association

Abstract

The Western Indian Ocean (WIO) is a region where high biodiversity is increasingly being impacted by marine anthropogenic debris. Identification of litter types and local concentration around urban source areas indicate that most litter is from local, land-based sources, reaching the ocean via rain run-off or being directly deposited by beachgoers. Cleaning beaches close to urban source areas provides a temporary way to reduce leakage of plastic into the sea while more fundamental solutions are sought to reduce the generation of mis-managed plastic waste in the region. Land-based sources are dominant for areas close to urban centres, especially in continental areas, while offshore inputs dominate away from these sources. One major need relating to the mitigation of marine litter in the WIO region is the establishment of a regional monitoring programme, given the relevance of litter monitoring to help identify the major sources of litter, as well as new sources not previously identified, and provide information to assess the efficacy of mitigation measures. The following recommended actions were provided to curb the release of litter in the WIO region:

- Extend regional monitoring programme to all WIO countries with a coordinated and harmonised protocols and reporting units within WIO and among other regional programmes.
- Include understudied habitats (e.g., water column, seafloor) and strengthen research of understudied topics (e.g., ecological impacts and on human health)
- Reduce production and consumption of single-use plastics and promote the reusable/returnable alternatives
- Establish Extended Producer Responsibility (EPR)
- Impose tax on imported plastic products (especially in island states)
- Develop educative campaigns to manufacturers to support litter curbing measures and anti-littering campaigns
- Improve waste management and pickup services at the municipal level
- Implement and enforce stricter international regulations (to e.g., reduce litter released from land-based activities, and ensure adhesion of ships to MARPOL)
- Require waste audits on board ships upon departure and docking
- Adopt regional approach of coordinated rates at litter reception facilities on harbours

(Supported by the Nairobi Convention (under the WIOSAP Project) and WIOMSA)

Economic consequences of unmanaged plastics and the economic opportunities in the WIO region

Anthony Ribbink *et al*
Sustainable Seas Trust

Abstract

Theoretically, if economic enterprises compete for plastic waste, they will remove all plastics from the environment and stop plastics from terrestrial/land environments from entering the seas. Creating an enabling environment is needed to promote economic enterprises dealing with waste, and also make it easy for people collecting waste, and sell their waste. This will improve the economic standing of people from these communities. The state of knowledge of the economics and plastic value chains using empirical evidence and data were not sufficient, and therefore this area needs to be better understood, and even included in educational programmes going forward. There was also a need to look at the cost of plastics to human and environmental health, as air, water and food consumed is

contaminated by plastics. Plastics have affected different sectors including climate, agriculture, fisheries, vessels, tourism, and real estate value. Plastics have also been reported to trap rainwater, thus causing breeding grounds for insect vectors and disease. Plastic pollution is found in every level of the value chain. Greenhouse gas emissions are produced at every level of the chain too, aggravating climate change. Inaction leads to the increase of human, economic and environmental costs. However, there are economic activities that emerge from marine litter and microplastic recycling. Informal collectors play a fundamental role in saving the environment, and they also contribute to funds in their communities. They should thus be protected in future. South Africa has over 60,000 informal collectors. Since most plastics are non-recyclable, plastic alternatives should be used more. There is therefore a need to develop technology to help with this. Therefore, this paper recommends:

- Increasing waste management enterprises
- Data are sparse so it is recommended that the tables provided should be used as a foundation for building databases
- Lack of empirical information calls for more intensive research
- State of knowledge of plastic polymers, manufacturing, the industry and enterprises needs to be boosted by training courses
- Plastic products need to be designed for recycling
- Economic considerations must become core aspects of national and regional action plans
- Opportunities for enterprises should be expanded to include non-recyclable plastics.
- The Roles of informal collectors should be expanded and supported in future
- Those involved in the plastic industry should become part of a structured network to share ideas.

(*Supported by the Nairobi Convention (under the WIOSAP Project) and WIOMSA)*

A review of marine plastic litter in the WIO region: Effectiveness of measures undertaken, and opportunities

Franck Oliver *et al*
ECOGEOS

Abstract
WIOMSA commissioned three interrelated studies to further understand marine litter in the WIO region. This study's objective (iii) sought to review policy and institutional frameworks on marine litter in the WIO region, including government and non-government (private sector, NGO, and community) actions and to analyze opportunities and needs. Specifically, this study analyzed how effective existing policy and institutional frameworks, and the actions conducted by all types of stakeholders were. Literature review in English and Portuguese to understand and identify existing regulatory frameworks and current initiatives to address marine litter were conducted. Information collected was put together in a database showing records on the type of waste targeted, the scope, the country/countries involved, the date and details of implementation. Participation by WIO countries in international agreements is generally widespread, with countries such as Reunion Island and South Africa involved in all relevant governmental and industry agreements. Some gaps exist, as some countries are not signatories to the London agreements or the International Convention for the Prevention of Pollution from Ships (MARPOL), however these countries are still involved at an international level through their membership of the UN and the International Maritime Organization. Nationally, some countries already adopted regulations on PET bottles indicating the recognition of their role in single use plastic reduction and creating opportunities in recycling. This reflects the engagement of governments, citizens, non-state actors against plastic marine pollution. Most of these initiatives were by the private sector. General awareness about plastics is still low and the initiatives are on a small scale, especially in countries with inadequate infrastructure. Various existing international programmes can help on these

aspects in the WIO region by providing technical and financial support. After conducting a SWOT analysis, this paper gives these recommendations:

a) Regulatory framework and waste management – using a top-down approach.
   - Collaborating with industry on EPR development
   - Incorporating microplastics in national-level regulatory frameworks
   - Ensuring regulatory measures via education and enforcement
   - Including informal sector in collection and recycling of litter
   - Promoting upstream measures like avoidance and eco-design

b) Building initiatives – via a bottom-up approach
   - Developing awareness continuously
   - Supporting win-win partnerships with governments intervention where there exists no private initiatives.
   - Facilitating access into international programmes and funding

(Supported by the Nairobi Convention (under the WIOSAP Project) and WIOMSA)

Sans frontières - Ocean and Coastal Sustainability of the Western Indian Ocean

Louis Celliers *et al*
Climate Service Center Germany

Abstract

This policy paper discusses the commonalities in the policy implementation cycles of integrated coastal (zone) management (ICM), marine spatial planning (MSP), the Blue and Green Economies and climate change adaptation. The overlap and integration between these (currently) separated domains in the WIO is seen as the only path to the achievement of the SDGs and sustainability. The paper proposes a purposeful integration of management across these four axes of sustainability, and a pragmatic view on the extensive overlap and combined benefit of integrating elements of the existing policy instruments for coastal and marine resource management (in support of CP9/6). Such commonalities are recognized and actioned as a unifying and integrating mechanism to plan a range of management and governance activities from ocean to land. Pragmatically, it proposes the exploration of management (strategies, and plans) and institutional (regional and national fora) mechanisms with which to explore the benefit flows and management of resources across the land-sea interface. Practical actions and deliverables arising from this policy recommendation may include:

- Developing a white paper for Integrated Ocean and Coastal Management in the WIO.
- Developing of a high-level integrated ocean and coastal management strategy for the WIO, incorporating the principles of both ICM and MSP, and the targets of the SDGs.
- Including a chapter on the four axes of sustainable coastal and ocean management in the WIO Regional State of the Coast.
- Developing a set of indicators to monitor the state of the coastal-ocean systems across contemporary concepts of boundaries
- Convening a work group to consider a more comprehensive understanding of the flow of benefits from the Blue Economy, especially between ocean resources (planned at the national level) and local communities and coastal urban administration. Such a working group needs to pay more attention to economic development synergies between coastal and inland areas in the context of the Blue Economy.
- Developing a protocol for engagement of stakeholders across the four axes of coastal and ocean sustainability. This should address the issue of involvement of local stakeholders (citizens, communities, urban settlements, cities) in the planning process and sustainable utilization of marine resources.

Open Data for Regional Marine Spatial Planning Decision Support

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Abstract

Geospatial decision support tools (DSTs) embedded in a philosophy of ecosystem-based management can be considered the most useful and effective assistant to decision makers working to deliver marine spatial plans (MSP). However robust decisions based on DSTs should be based on high quality information products, which in turn depend on confidence in source data and their interpretation and analysis. WIO Symphony (WIOSym) which is a DST for ecosystem-based MSP aims at regional and national scale MSP processes is currently in development for the WIO region. It is a SIDA funded project lead by the Swedish Agency for Water Management (SwAM) with technical support from the Geological Survey of Sweden, co-developed with the Nairobi Convention via the WIO MSP Technical Working Group. It is a collaborative approach to WIOSym data development embedded in 'open data principles', creating a framework for future development. WIOSym tool provides examples of how unpublishable sensitive data can be transformed and published in a desensitized form while still providing essential information to decision makers. The WIOSym tool under development provides motivation for repositories to be collaboratively developed and improved to support iteratively improved MSP decisions in the WIO. The paper is aligned to the Nairobi Convention Conference of Parties decision with CP 4/8 urging contracting Parties to develop and/or organize, in collaboration with partners in the Region, outreach, information and public awareness programmes on marine and coastal issues and Decision CP.9/10 on Marine Spatial Planning for the blue and ocean economy which urges the Contracting Parties to continue to advance blue and ocean economy approaches in the context of Sustainable Development Goal 14. The approach outlined and being embraced by WIOSym addresses the SDGs 4, 9, 14 & 17. The paper recommends the following;

- Stakeholders in the WIO to consider adopting an approach that ensures that open-data principles are the default for sharing of marine data both in support of and resulting from joint analysis and DSTs.
- Define and agree on regional data and metadata standards for marine data.
- Ensure data are available for download via open access archives.
- Create training and support materials on data principles and standards.
- Publish summary metadata on restricted and open data assets via a central portal.
- Publish regular updates on gaps and quality issues in the data, information and knowledge available.