

MEETING REPORT FOR THE SWIOFC NAIROBI CONVENTION PARTNERSHIP  
MEETING ON THE FISHERIES ENVIRONMENT NEXUS

26-28 September 2022 Mombasa, Kenya

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SWIOFC NAIROBI CONVENTION PARTNERSHIP PROJECT (SWIOFC-NC PP)

*A Partnership for Marine and Coastal Governance and Fisheries Management  
for Sustainable Blue Growth*



Enforcing Multilateral Environmental Treaties in African, Caribbean and Pacific (ACP)



Countries- ACP-MEAs III Programme (Nairobi Convention)

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## INTRODUCTION

Healthy ecosystems in the Western Indian Ocean are the foundation for sustaining and maximizing the potential of the coastal and marine fisheries in the region in support of economic growth, livelihoods, and food security now and in the future. Safeguarding the critical habitats that are essential for fish reproduction, growth and migration from degradation and destruction is key. How we fish has consequences, not only for the species we target, but also on the wider marine ecosystems and the services they provide us. Effective coordination, collaboration and knowledge sharing between fisheries and environmental governance systems is needed to recognize, understand, and address these interactions and links. Countries in the Western Indian Ocean have committed to cooperate regionally on the protection of the coastal and marine environment through the Nairobi Convention<sup>1</sup> and on fisheries management through the Southwest Indian Ocean Fisheries Commission, SWIOFC<sup>2</sup>.

The SWIOFC and the Nairobi Convention have initiated a partnership project, with the support of the Swedish government, to strengthen sector collaboration in the region on the areas of shared concern for both fisheries and environmental management. Hence, promoting the uptake and implementation of an Ecosystem Approach to fisheries management, ocean governance and sustainable blue growth. The partnership project shall organize a regional consultation to discuss a process that will link policy makers and key stakeholders in the fisheries and environment sectors, such as scientists, national-regional associations, practitioners, Regional Economic Communities, and others (project component 3.1.3). Furthermore, identify priority issues of shared concern and define policy dialogue indicators relevant to fisheries- and marine environment-related management interventions (project component 3.1.4). Moreover, develop a strategy and support knowledge and information sharing among countries, scientific community, and other key actors for inclusion of environmental issues in fisheries policy and management and vice versa, (project component 3.2.1).

As part of the “African, Caribbean, and Pacific (ACP) Countries Capacity Building of Multilateral Environmental Agreements (MEAs) Programme”, the Nairobi Convention Secretariat shall organize a consultation with experts from scientific and research institutions to identify priority issues and define policy dialogue indicators relevant to fisheries- and marine environment-related interventions.

The SWIOFC Scientific Committee gathers regularly to consider the state of fisheries in competence of the Commission and to advise on the scientific basis for possible regulatory measures to be considered for adoption by Members of the Commission.

Recognizing synergies between these initiatives and the advantages of joint organization,

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<sup>1</sup> [SWIOFC](#) – Southwest Indian Ocean Fisheries Commission supported by the Food and Agriculture Organization (FAO).

<sup>2</sup> Hosted by the United Nations Environment Programme (UNEP), the Convention for the protection, management, and development of the coastal and marine environment of the Western Indian Ocean. (Nairobi Convention)

this first consultation meeting on fisheries environment nexus will be organized jointly with support of the Nairobi Convention-SWIOFC Partnership project and the ACP-MEAs 3 Programme back-to-back with the 11<sup>th</sup> session of the SWIOFC Scientific committee.

## FISHERIES ENVIRONMENT NEXUS IN THE WESTERN INDIAN OCEAN

The Western Indian Ocean (WIO) is one of the most biologically diverse and productive systems and ranks as one of the world's richest ocean areas. Over 65 million people live within 10 km of the coast in the greater Indian Ocean region. It is home to some of the world's most diverse hotspots of marine life with hundreds of species of reef-associated fishes, mollusks, sharks and rays, turtles, sea and coastal birds, and the last viable population of dugongs. Estuarine and coastal systems ranging from mangroves, salt marshes and seagrass beds to beaches, rocky shores and reefs, coral reefs, nearshore sandy substrata, the offshore shelf, and deep-sea environments are the primary assets of the region. They protect the coastline from the damaging effects of wave action and tropical storms, sequester carbon dioxide, provide habitats and shelter for many marine organisms that underpin coastal commercial, small-scale, and artisanal fisheries, and support jobs and businesses through fishing, aquaculture, tourism, and recreation amongst other sectors.

Human activities on the coast in the region focus largely on gleaning the available resources, resulting in intense exploitation of nearshore resources by recreational and subsistence fishers. Over 70% of the fisheries in the WIO region consist of artisanal, small-scale fisheries operating from the nearshore habitats, yet they are a major contributor to sustaining livelihoods in many coastal communities. The artisanal fisheries and related semi-industrial and industrial subsectors target mollusks, small pelagic fish, demersal fish, and crustaceans (such as shrimp, lobster, crab, langoustine). Large pelagic fish such as tuna and tuna-like species are of great economic importance, constituting some 70 to 80% of offshore tuna catches in the Western Indian Ocean. Mariculture, involving farming of algae, finfish, shellfish, sea cucumbers, mangrove crab and other marine organisms, presents a significant emerging opportunity for future food security and livelihoods to complement capture fisheries.

In the recent years, the marine and coastal ecosystems, and resources of the WIO region are under pressure from anthropogenic activities such as coastal development, habitat destruction, overfishing, sand mining, dredging and pollution from land and offshore sources. These pressures are compounded by climate change and a rapidly increasing coastal population, combined with a lack of effective resource management strategies, poverty, and inequality among the coastal communities in the WIO region. These pressures have direct consequences to the social and economic stability of coastal communities, disproportionately affecting poor women and youth.

The ongoing and planned large-scale infrastructural developments in the Western Indian Ocean region are critical in unlocking the much-needed economic opportunities for the region. Countries of the WIO appreciated the need for inter-sectoral ecosystems-based approaches to management, including ecosystems approach to fisheries, marine spatial planning (MSP) and other area-based management tools to promote integrated ocean governance. Development or enhancing of sustainable spatial marine management plans,

capacity building in ecosystem-based management for marine and fishery resources, and economic valuation of ecosystem goods and services is an important frontier to reduce multiple anthropogenic pressures on coral reefs, mangroves, and other marine ecosystems to sustain their integrity and the ecosystem services they provide.

Governing the use of marine and coastal assets, resources, and services, requires information sharing and coordination between sectors, stakeholders, and geographic remits. Several ministries, agencies and intuitions in each country have a role in marine and coastal resources management, spanning across sectors and mandates, from tourism to transport, mineral extraction, oil and gas, scientific research, land use planning, fisheries, and environment. Policy harmonization and institutional reform for the blue economy sectors would provide a unified governance structure at the national level to enable sustainable development.

The fisheries-environment nexus is a crucial node in the wider context of ocean governance and sustainable blue economy, contributing to livelihoods and food security for coastal communities in the region and often functioning as a safety net for the most vulnerable. Empowering communities and resource users to engage in the management of coastal resources and ecosystems is recognized as fundamental to securing the future of these assets. Diverse efforts to protect and restore biodiversity and the ecosystem services that underpin the economic and social values of marine systems are underway at local level to enhance provision of ecosystem goods and services, functioning, carbon stock and sequestration.

## OBJECTIVES

- To identify priority issues of shared concern in the marine fisheries-environment nexus where there is a need for further collaboration, coordination, and exchange.
- To explore how processes and modalities for recognizing and addressing these issues can be organized in a way that links policy makers and key stakeholders from the fisheries and environment sectors.
- To explore how knowledge and information sharing mechanisms in the marine fisheries- environment nexus can be enhanced to underpin coordinated policies and management interventions.
- To explore modalities for the possible co-development of a regional marine fisheries- environment status report.
- To inform the upcoming EAF Nansen programme.

## EXPECTED RESULTS

Outcomes of this first fisheries-environment nexus consultation meeting will inform further policy dialogue and development of knowledge sharing mechanisms within the framework of the SWIOFC-Nairobi Convention partnership and related processes.

Anticipated results from the interactive meeting sessions include:

### Priority issues and collaborative approaches in the fisheries-environment nexus

- Priority issues of shared concern in the fisheries-nexus identified
- Gaps and opportunities for collaboration on priority issues of shared concern identified
- Lessons learned for collaboration on priority issues of shared concern exchanged
- Recommendations for process/modalities to link policy makers, scientists and stakeholders from fisheries and environment

### Knowledge and information sharing in the fisheries-environment nexus

- Outline of a possible roadmap for the co-development of a regional marine fisheries- environment status report
- Key existing mechanisms for knowledge and information sharing in the fisheries-environment nexus showcased, highlighting best practice and challenges
- Key gaps and opportunities for knowledge and information sharing in the fisheries-environment nexus identified
- Recommendations for actions and modalities to enhance knowledge and information exchange needed to address priority issues of shared concern
- Recommendations for process/modalities to engage and link policy makers, scientists and stakeholders from fisheries and environment in the generation, management and sharing of knowledge and information to inform policy and management interventions

All presentations and other meeting documents are accessible at [www.nairobiconvention.org/clearinghouse/node/872](http://www.nairobiconvention.org/clearinghouse/node/872)

## DETAILED REPORT OF THE SESSIONS

### Session 1: Opening Remarks

#### Opening remarks – Mr Dixon Waruinge, Nairobi Convention Secretariat

1. The meeting was called to order at 1000hrs (EAT) by Mr. Dixon Waruinge, who welcomed all the participants to the SWIOFC Nairobi Convention Partnership Meeting on the Fisheries Environment Nexus. Dixon acknowledged representation from different WIO countries and the expertise they brought to the meeting.
2. The first session was the official opening of the Fisheries Environment meeting. Mr. Dixon Waruinge, Head of the Nairobi Convention Secretariat gave his opening statement. Mr Waruinge began by giving a brief on the history of Regional Seas Programmes administered by UNEP. He noted these are embedded in principle no. 7 of the 26 principles of Principles of the Stockholm Declaration. Dixon further

noted that human dimension discussions on ecosystems should also focus on environment elements.

3. The head of the Nairobi Convention Secretariat reiterated that the mandate of Nairobi Convention is to assess, manage and coordinate environmental protection and management among the contracting countries. Dixon urged the meeting to look into how Nairobi Convention and SWIOFC would enhance collaborative partnerships to serve the WIO seascape better, considering a shared sea and ecosystem approach. In his concluding remarks, Mr. Waruinge Dixon observed that initially river basins were left out in early work by UNEP.

#### Opening remarks – Mr. Vasco Schmidt, SWIOFC Secretariat

4. Mr. Vasco Schmidt, SWIOFC Secretariat, began with giving a brief history of SWIOFC Secretariat. The Secretariat held its First Session 18 to 20 April 2005. Mr. Schmidt mentioned the objective of SWIOFC is to promote the sustainable utilization of the living marine resources, through their proper management applying diverse mechanisms for regional cooperation and exchange.
5. Mr. Schmidt mentioned areas of collaboration by SWIOFC in WIO region. Notably, Vasco said the SWIOFC Secretariat is a technical arm of the SADC and exchanges information regarding SWIOFC Minimum Terms and Conditions (MTC) processes, and regional Monitoring, Control and Surveillance (MCS) initiatives. SWIOFC work further provides a framework for collaboration with the IOTC, IOC, and SADC.
6. Vasco noted that SWIOFC through its Working Party on Constant Catch (CC) in Tuna fisheries which was taken up by the G16<sup>3</sup>, has enabled the Commission to have a common stand on various resolutions tabled at IOTC with regard to the management of tuna resources. He further added that SWIOFC also cooperates with the Southern Indian Ocean Framework Agreement (SIOFA), mainly in mutual sharing of information on the fisheries at the Scientific Committee levels.
7. He mentioned that in 2018 to 2019, an important milestone was achieved when the SWIOFC developed and signed an MoU with the Nairobi Convention, and a programme was developed by the SWIOFC and Nairobi Convention. Mr. Schmidt added the partnership on projects and programmes has a focus on the artisanal and small-scale fisheries, coastal and marine environment research management.
8. Mr. Schmidt informed the meeting that the nexus meeting was being held back-to-back with the planning of the next phase of the EAF-Nansen Programme as well as the Scientific Committee session of the SWIOFC, which had recently been focusing its work mostly on demersal fisheries, small pelagic fisheries, and started a new line of work fisheries socioeconomics since last year. He reiterated the meeting provides for an opportunity for promoting the collection, exchange, dissemination and analysis or study of marine fishery and consequently also environment

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<sup>3</sup> <https://io-g16.org/about-us/>

information. It would also initiate a science to policy dialogue process between the SWIOFC and Nairobi convention - a tremendous opportunity to identify and collaborate both at policy and management levels.

9. In his concluding remarks, Vasco thanked the government of Kenya for hosting the nexus meeting, as well as the members of the SWIOFC and NC who attended the event. He lauded SWIOFC, the Nairobi Convention secretariat, Sida for fostering the partnership on marine environment and fisheries.

### **Opening of the meeting by the hosting country, Prof. James Njiru, Director – Kenya Marine and Fisheries Research Institute (KMFRI), representing the government of Kenya**

10. Mr. James Njiru (Prof) welcomed all the participants to the SWIOFC Nairobi Convention Partnership Meeting on the Fisheries Environment Nexus. Prof. Njiru affirmed the government of Kenya's commitment to collaborate with other Western Indian Ocean countries in the management and conservation of marine resources.
11. He took the opportunity to highlight issues of major concern for environment and fisheries sectors in the region. Notably, climate change, illegal, unreported, and unregulated (IUU) fishing, and destruction of habitats, these are major threats to the resilience of coastal fisheries and communities dependent on them. Prof Njiru explained that over >70% of the marine fisheries are artisanal, they are the most affected by climate change and most vulnerable to recover.

### **Introductory presentation**

### **Meeting objectives and programme, Ulrika Gunnartz, Regional Project Coordinator – SWIOFC-Nairobi Convention Partnership Project.**

12. Ms. Ulrika Gunnartz gave an overview of the SWIOFC-NC partnership: (1) The project is jointly implemented by SWIOFC/FAO and NC/UNEP. Ulrika mentioned the project aims to contribute to operationalizing and strengthening collaboration between the two regional policy frameworks for fisheries and the environment, (2) It focuses on areas of concern for both fisheries and environmental management that can benefit directly from coordinated and mutually reinforcing interventions on the regional and national/local levels and (3) The partnership project aims to improve food security and resilience and increase participation in the management of the use of natural resources by youth, women, and men in coastal communities, mainly fishing communities.
- 13.





Figure 1: Ms. Ulrika Gunnatz, Chief Technical Coordinator for SWIOFC-NC Partnership project presenting on meeting objectives.

## Session 2: Introduction to the fisheries-environment nexus

### Ocean Governance in the Western Indian Ocean – processes and practice, Theuri Mwangi, Environment Management Expert, Nairobi Convention

14. The presentation focused on the initiatives of the of the Nairobi Convention to towards Ocean Governance and a sustainable blue economy in the Western Indian Ocean. The presentation touched on:

- The history of UN Environment Programme and UNEPs Regional Seas Programme
- The mandate of Nairobi Convention and its Protocols
- The Work Programme 2022 – 2024



Figure 2: Mr. Theuri Mwangi presenting on Ocean Governance in WIO

The Ecosystem Approach to Fisheries in the context of ocean governance, Merete Tandstad, Coordinator EAF-Nansen Programme.

15. Merete's presentation gave highlights on the following:

- Introduced the EAF-Nansen Programme
- The programme aims at supporting countries to implement the Ecosystem Approach to Fisheries Management and to establish sound management systems with functional fisheries management cycles.
- The proposed outcomes of 2023-2028 phase of the Programme.

16. Brief Question and Answer Session from the Plenary

- Emphasis was made on the need to interact with the local communities to achieve Ecosystem based management. Such as integrating communities and all other stakeholders in explaining the mesh sizes of the gears.
- Simplify the training material at the community level
- Key step is what you need to manage and the key stakeholders, need to have representatives, all aspects on the table and discuss the agent ones
- Ecosystem Approach to Fisheries requires a lot of knowledge on the ecosystem, especially with understanding what already exists in fisheries sector. Consideration ought to be given to the best available knowledge, and tools used different from other types of fisheries.

Coastal and marine fisheries in WIO- overview key issues and links to environment management- Vasco Schmidt, SWIOFC Secretariat

17. The presentation noted that Western Indian Ocean is a high diversity, medium-low productivity system that has large number of species dominated by small scale fisheries
18. Main threats to marine environment identified in the presentation included:
  - o Overfishing – increasing trend of overexploited stocks
  - o Destructive fishing gears- small-meshed nets, bottom trawlers
  - o Degradation of marine habitats
  - o IUU- use of destructive fishing gears
  - o Climate change- on habitats and ecosystems especially coral reefs
  - o Rising population and poverty- increased number of people with no alternative livelihoods
  - o Inequity in distribution of costs and benefits
19. The opportunities mentioned were research and training and establishing sustainable fisheries management practices.



Figure 3: Mr. Vasco Schmidt, SWIOFC Secretariat giving overview presentation on Coastal and marine fisheries in WIO

**Coastal and marine environment in the WIO, Dr. Jared Bosire, Coordinator WIOSAP Project – Nairobi Convention**

20. The presentation highlighted on the following:
  - o The major currents in the Western Indian Ocean and the influence of SE and NE Monsoon winds
  - o The source to sea management approach to coastal and marine resources
  - o Connectivity between major ecosystems of WIO
  - o Community livelihoods from coastal resources and the threats they are facing
  - o The following regional opportunities to addressing the challenges were mentioned: Blue Economy, marine spatial planning, marine protected areas,

locally managed marine areas, circular economy, tackling climate change and development of regional guidelines



Figure 4: Dr. Jared Bosire, Coordinator WIOSAP-Nairobi Convention presenting overview remarks on the state of coastal and marine environment in WIO

## 21. Plenary: Brief Question and Answer Session

- **Question:** What are some opportunities for aquaculture production for example shrimp farming
- **Answer:** SWIOFC has had less focus on aquaculture although plans are underway to support shrimp farming
- **Question:** What role can fisheries play in integrated ocean governance?
- **Answer:** There are challenges concerning management within established MPAs although MPA initiatives in other areas such as Cisoca in Mediterranean the communities and fishermen participate in the enforcement with support from the government. This is case is not recognized in the MPA space within the WIO. Furthermore, ocean governance is well articulated in the international law of the sea. The gaps identified need to be addressed at the national and regional levels.
- **Comment:** Consider incentives to make the communities to establish their own protections for the environment and fisheries.

## 22. Identified areas of collaborations between fisheries and environment

- Offshore fisheries- tuna and tuna like species
- Efforts to support governments to put policy on the ground and invest at local level
- Fishing, mining, and environmental ministries – EIAs, licensing processes
- Alternative livelihoods- recognizing the gender aspects

- Science, policy makers
- Regional cooperation, regional fisheries body is existing, but environment bodies are missing
- Need a policy that protects critical nursery grounds
- Community level engagement- capacity building to manage the resources, bring in conflicts in the MPAs.
- Establishing MPAs geared towards fisheries and not tourism and involving the communities.
- Research conducted and then collaborative way of knowledge sharing

### Sticky-Note Brainstorming Session

As the groups were discussing their shared ideas, participants were issued with sticky notes to write their strong points on the various topics. These were:

- Priority issues requiring concerted action/collaboration from fisheries and environment management actors
- Current gaps and opportunities for collaboration to address identified priority issues – key actors and required interactions on policy/management/ local-national-regional level
- Examples from participants experience on how such collaboration can work in practise – lesson learned on success factors, challenges, risks, bottlenecks, tools, and solutions
- Recommendations for priority actions and process/modalities needed enable concerted/coordinated action by key actors and stakeholders within fisheries and environment to mitigate fisheries impacts on vulnerable species and critical habitats

Participants were given different color sticky for each topic. The notes were collected and stuck on the wall (Figure 1).



Figure 5: Sticky notes from participants stuck on wall

These were later clumped into identical ideas, eliminating those that are overlapping. The points are presented below.

Ideas for Collaboration	Areas for Collaboration	What collaboration is missing?
<ul style="list-style-type: none"> <li>• Co-plan, co-implement.</li> <li>• Create forum where scientist meet managers to discuss issues related to fisheries research needs and environments. Issues of power relations addressed.</li> <li>• Need for clear policies across different department e.g., environment and fishing authority in the country to have proper guidance on conserving the resources.</li> <li>• Political will is key. The governments have to buy in and help in influencing the collaboration between fishers and environmental managers.</li> <li>• Develop a joint status report on fisheries</li> <li>• Encourage interdisciplinary research projects</li> <li>• Diversify types of MPA's to enhance sustainable utilization of resources. An example – in Mozambique is crucial to have a common understanding among fishing sectors, environmental institutions, and mining activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Marine environment data generation and sharing.</li> <li>• Establishment of framework to link Regional-National-Local.</li> <li>• Capacity building and awareness programs.</li> <li>• Enforcement of bans on harmful gears that destroy the onshore habitat. (MPA managers, fisheries managers, national/ county government resources- MSP teams-fisheries.)</li> <li>• Identification of key offshore habitats (e.g., seamounts or mass spawning areas) that support offshore fisheries and could be protected.</li> <li>• Cooperation and regional planning involving fisheries and environment sector.</li> <li>• Enhancing collaboration between river basin management and fisheries sector.</li> <li>• Enhancing source-to-sea approach in overcoming coastal environment pollution.</li> <li>• Addressing climate change sensitivity and adaptation.</li> <li>• Countries must have clear vision of their development processes – social and economic cost must be considered on the decision-making process.</li> <li>• Collaboration between MEAs, RFBs, like CMS- cities –IOTC-SIOFA. (Alignment of goals)</li> <li>• Develop a collaborative working framework to support collaborations.</li> <li>• Empowering communities to manage fisheries resources. (Enhance livelihood a bottom-up approach).</li> <li>• Changing attitude/ perception on fisheries as a safety net-professional “respect the resource in order to benefit from it”.</li> </ul>	<ul style="list-style-type: none"> <li>• Weak collaboration between governments agencies especially those in charge of administration with communities in the management of fisheries and ecosystems.</li> <li>• Research institutions and government.</li> <li>• River basins and marine fisheries sector.</li> <li>• Town planners and coastal marine environment.</li> <li>• Lack of a forum where communities meet scientists and managers to formulate or identify management needs.               <ul style="list-style-type: none"> <li>✓ Largely involve the youth (community) in fisheries and environmental conservation activities, sensitization first on the impacts and advantages of taking care of the environments. This is the group that resort to fishing as a safety net to earn a living hence over exploitation of stocks.</li> </ul> </li> </ul>

Ideas for Research and Knowledge sharing.	Ideas for Enhancing Marine Environment Governance
<ul style="list-style-type: none"> <li>• Clear understanding of all stakeholders and where they each fit in. (Clear roles, responsibilities, impacts).</li> <li>• Consolidation of the many existing measures/ actions/ goals into one manageable set of objectives/ actions.</li> <li>• Issues of commercial fisheries and the environment – aspect of IUU/exploitation.</li> <li>• Bringing together information providers/creators and information users (policy). Science – policy forums</li> <li>• Better interactions between researchers collecting environmental data and those collecting fisheries data</li> <li>• Develop a marine environment management system in the context of data and information management (marine environment) for sustainable fisheries departments; governments, environmental agencies/regionals</li> <li>• Science collaboration knowledge products.</li> <li>• Streamlining inclusive feedback forums               <ul style="list-style-type: none"> <li>○ Research</li> <li>○ Management issues</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harmonizing legislative policy and enforcement arrangements</li> <li>• Community participation in policy formulation processes.</li> <li>• Develop environmental guideline for sustainable fisheries</li> <li>• Policy recognition of SSF.</li> <li>• Review the legal policy and regulatory frameworks for fisheries and environment.</li> <li>• Setting of key data collection systems.</li> <li>• Finding alternatives for the fisheries dependent people (from large to small scale fishers) to promote sustainable use and enhance environmental health (ecosystems).</li> <li>• Policy protecting nursery habitats especially coastal areas that are easily accessible to local communities.</li> <li>• Need to link the different strategies together at policy level to bend the curve. All-inclusive approach to MSP.</li> <li>• Create a platform for annual dialogue between fisheries and environment institutions (governments, NGO's, civil society).</li> </ul>

### Session 3: Priority issues and collaborative approaches in the fisheries-environment nexus

#### Mitigating fisheries impacts on vulnerable species, Dr. Rhett Bennett, Wildlife Conservation Society, South Africa

23. The presentation highlighted on the following:
- Vulnerable species are characterized by slow growth, late maturity, and low reproductive rates.
  - Vulnerable species (sharks and rays, turtles) impact fisheries in different ways viz. direct mortality, mortality of specific age classes, mortality of vulnerable life stages, interruption of ecological processes and indirect impacts (removal of prey, habitat impacts)
  - The presentation identified fishing practices in the WIO that threaten vulnerable species and some measures and techniques to mitigate the impacts.
  - Future priorities and types of fisheries-environment inter-sectoral/agency collaboration needed to mitigate fisheries impacts on vulnerable species.

#### Mitigating fisheries impacts on critical habitats, Dr. Edward Kimani, Kenya Marine and Fisheries Research Institute (KMFRI)

24. The presentation highlighted fishing practices in the WIO that area causing degradation or destruction of critical habitats (directly and indirectly, such as through trophic impacts). The presentation mentioned an estimated 60 million people live within 100 km of the coast in the wider WIO region and many of them rely on the sea for their economic, social, and cultural security. The economic value of marine fisheries in the WIO is estimated to be around US\$1.9 billion annually.
25. Global guiding principles were also discussed in the presentation. These included FAO's Code of Conduct for Responsible Fisheries and Sustainable Development Goals.
26. The challenges mentioned were:
- Development of management plans/regulations is often a lengthy and rigorous regulations become non adaptive to changes
  - Lack of sustained enforcement of regulations
  - Capacity: application of EAF tools particularly in small scale fisheries, capacity in monitoring and documenting the state of fisheries and environment
27. Proposed future priorities included:
- Improved cooperation between environment and fisheries management, within state and non-state actors to enhance implementation of global and national targets for resource conservation goals



- Support to marine community conservation and community managed areas through capacity building
- Improvement of communication between science and policy makers and fishing community

#### 28. Session 3 (i) Group Discussion

Participants were divided into four groups each comprising about 8-9 participants. Each group appointed a rapporteur who took notes of key discussion points and present back to the plenary. The group members exchanged roles as group rapporteurs in the various session topics. The thematic discussions were guided by the following:

- Priority issues requiring concerted action/collaboration from fisheries and environment management actors
- Current gaps and opportunities for collaboration to address identified priority issues – key actors and required interactions on policy/management/ local-national-regional level
- Examples from participants experience on how such collaboration can work in practice – lesson learnt on success factors, challenges, risks, bottlenecks, tools, and solutions
- Recommendations for priority actions and process/modalities needed enable concerted/coordinated action by key actors and stakeholders within fisheries and environment to mitigate fisheries impacts on vulnerable species and critical habitat

#### 29. Summary points from the plenary:

##### a) **Reduce pressure on fisheries and ecosystems**

- Promote alternative livelihoods to reduce destruction of habitats and effects on species (around women and gleaning of sea cucumbers). Enhancing the value chain to reduce overfishing of invertebrates. Mariculture- Mostly targeting the women
- Diversification of aquaculture products- high value species. Integrated farming- seaweeds and fish. Gives time for the wild stocks to re-generate

b) **Support the fishers with less destructive gears thinking of trade-offs-** collaboration to encourage choice of gear by the fishers and how to maintain the catches after gear exchange.

c) **IUCN Red listing does not trickle down to the local communities-** awareness to fishers even on issues of overfishing, monitoring of resources, enforcement, and compliance of existing regulations- gears

d) **Capacity building, awareness, and research-** potential for collaboration

All Session 3 breakout group discussion points presented at the plenary are available at Nairobi Convention clearing house using this link:

<https://www.nairobiconvention.org/clearinghouse/node/900> :

## Protecting and restoring critical habitats essential for marine fisheries production

Critical coastal fish habitats, Prof. Salomao Bandeira, University of Eduardo Mondlane, Mozambique

30. The presentation highlighted on the following:

- Ecological importance of habitats – nurseries, supports different fish species
- Socio-economic importance – protein, food security, gender dimension, value chain
- Mangroves- crabs
- Seagrasses- fish species in seagrass meadows overexploited
- Issue of IUU
- Management and policy tools- habitat based management plan, gleaning of invertebrates included in management (decline in invertebrates), LMMAs, Co-managed No-Take Zones (NTZs)

Critical off-shore fish habitats – recent research findings from the Mascarenes Plateau, Prof. Ranjeet Bhagooli, University of Mauritius

31. Prof. Ranjeet's presentation focused on the findings from the Nansen 2018 Research Cruise: Saya de Malha and Nazareth Banks published in Western Indian Ocean Journal of Marine Science Special Issue 1/2021

32. At first Prof. Ranjeet explained that critical habitats are areas with high biodiversity value, including

- habitat of significant importance to Critically Endangered and/or Endangered species.
- habitat of significant importance to endemic and/or restricted range species.
- habitat supporting globally significant concentrations of migratory species and/or congregatory species.
- highly threatened and/or unique ecosystems; and/or
- areas associated with key evolutionary processes.

Area based measures for fisheries and habitat conservation, Dr. Arthur Tuda, Executive Secretary, Western Indian Ocean Marine Science Association

33. Dr. Tuda's presentation Marine and Coastal Area Based Management Approaches in WIO. These included Marine Protected Areas, fisheries closure areas, Marine Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM). There were discussions on Other Effective Area Based Management Measures OECMs.

34. The presentation touched on key developments in the WIO in the use of spatial management measures for fisheries and habitat conservation. Examples given were use of spatial management measures in Seychelles, locally managed marine areas (LMMAs) in Madagascar, and co-managed MPAs in Tanzania. Tuda emphasized the need to reconcile fisheries and habitat management objectives in the development and implementation of spatial management measures.

35. Tuda mentioned the following challenges of promoting wide adoption of multi objective approaches to area-based initiatives:

- incompatibility of policy and legislation mainly at the country level
- ambiguity of the input and expected outcomes
- low interaction in project management.

36. Plenary: Brief Question and Answer session

- **Question:** What is the cost of maintaining the closures? If the net gain is that good, why don't we have many closures in the region? There is need to come up with food web structure/interactions within NTZs
- **Question:** Concerning the campaign to protect 30 per cent of the world's oceans by 2030, how can the target be realized with the constrains in the society? A proper inventory of what exist, what working before establishing new one. Do we rush to increasing the area, or improving the management of existing ones? Seychelles have made achievements that can offer learning lesson.
- **Question:** What kind of policy measures exist to support the OECMs/LMMAs? How can governance systems within these management areas be strengthened? How to include this in the IUCN protected area categories?
- **Question:** Regionally, do we have an existing relation on how different area-based approaches are established?
- **Question:** Are there standard tools that assess the status of the PAs?
- **Comments:**
  - Think about multiple approaches, move away from the sectorial approaches. More focus on governance. Strong MSP should be the start point of addressing these challenges.
  - There is one goal, but the conflicts come in in their working. We all need to define a vision as a country and formulate the policies from there, and not from who we are
  - Assessing the management with existing tools.

### Coastal communities' livelihoods, resilience, and stewardship

#### Innovative, resilient, and sustainable coastal livelihoods, Dr Jacob Ochiewo, KMFRI

37. The presentation by Dr. Ochiewo highlighted on the following:

- Benefits of coastal resources and marine resources
- Threats to these resources that ranged from climate change, overexploitation, conversion of mangrove areas to other uses, settlement, urban development, and pollution.
- Details into the climate change impacts were discussed and results on local perceptions of these impacts in four (KE, TZ, MZ, MG) regional countries presented.
- Innovative, resilient, and sustainable coastal livelihoods
  - Seaweed farming and value addition (soap, shampoo, shower gel, lotion)

- e.g., in Kibuyuni
- Mangrove conservation and ecotourism initiative e.g., Mida Creek (Crab Shack)
  - Carbon Offset Project e.g., Mikoko Pamoja- mangrove conservation
  - Octopus closures e.g., Shanga-Ishangani Women Group in Lamu
- A recommendation to intervene to build adaptive capacity of the coastal communities



Figure 6: Dr. Jacob Ochiewo making his presentation

### 38. Session 3 (ii) Group Discussion

Participants were divided into four groups each comprising about 8-9 participants. Each group appointed a rapporteur who took notes of key discussion points and present back to the plenary. The groups were tasked to identify priority gaps/needs for fisheries-environment knowledge or information sharing in the Western Indian Ocean region to:

- a) Enable evidence-based and coordinated policies and decisions on issues of shared concern for fisheries environment, as identified in previous sessions
- b) Enable effective design and adaptation of management measures
- c) Create a joint understanding between resource users, communities, experts, policy makers and managers from the fisheries and environment sectors.
- d) Maximize cost-efficiency in how information is collected, analyzed, and put to use

For each gap, identify: (i) what type of information needs to be shared, (ii) by who and for who, (iii) expected results or outputs, (iv) if there are existing structures, processes or tools that can be used to address the gap, and (v) practical steps to enable the establishment and maintenance of the knowledge or information sharing process.

### 39. Summary points from the plenary:

- a. There is spatial movement of LMMAs with interest e.g., octopus closures. LMMAs ought to be treated as sanctuaries, not moving
- b. Cost of maintaining mangrove closures for carbon is more expensive
- c. Where do the government come after communities have the by-laws?
- d. Different approaches for ecosystem management: MPAs, gear restriction zones, species protection (octopus), ecosystem closures (carbon). How can all these approaches be informed by the ecosystem approach?
- e. Need for a common body to manage the marine, because of overlapping mandates and approaches of managing the same area; multisectoral.
- f. Understanding the biology of species (trophic levels), management structure (network approach) communities being the main stakeholders with support from the fisheries government structure.
- g. LMMAs establishment is donor dependent, unsustainability. What is the cost of not having them?
- h. Lack of ecosystem-based approach in the management of the marine area.

All Session 3 breakout group discussion points presented at the plenary are available at Nairobi Convention clearing house using this link:

<https://www.nairobiconvention.org/clearinghouse/node/901>

### Communities engaging in fisheries and habitat management, Dr. Lydia Gaspare, University of Dar es Salaam

40. The presentation discussion the following:

- o Fisheries management in the context of ecosystem-based management (EBM)
- o Social-ecological linkages – a need in fisheries management for awareness of human fish assemblage interactivity
- o Connecting knowledge systems – indigenous versus conventional scientific knowledge
- o Co-production of knowledge- co-designing of data collection
- o Governance approaches e.g., co-management

41. Challenges in engaging local communities; Limited resources and capacity, Trusting local knowledge by the scientists, Power issues, Protective and positive measures,

42. Opportunities for adaptive co-management are enhancing both status of natural resources and human well-being and participation of all stakeholders including women.

43. Plenary: Brief Question and Answer session

- o **Question:** How can a socio-ecological system be enhanced considering it is faced by the tragedy of commons?
- o **Answer:** Building trust is a process; one has to ensure to provide feedback and not disappearing after collecting the data.

- **Question:** How sustainable are community closures? What do they depend on during that time?
- **Question:** What is the difference between EBM and co-management
- **Answer:** EBM relies on conventional science while co-management relies on community



Figure 7: Dr. Lydia Gaspare presenting at the meeting

#### 44. Group Discussion

Plenary discussion on missing collaboration and what is needed to empower and support engagement of communities and resource users in the management of coastal fisheries and ecosystems? Local, National and Regional levels.

##### Local level

- a) Collaboration between communities and administrative institutions; need to develop a joint working mechanism e.g., bylaws, licensing processes, EIAs
  - Tanzania: Legislated process for community involvement in EIA process
  - Mozambique: CCPs have regular meetings with district administrators for licensing
  - Challenges: low level of participation of communities and fishers
- b) Empowered and more organized user groups to manage the resources
- c) Awareness, training, and capacity building on environment stewardship for communities
  - Pacific: inclusion of coastal and marine environmental awareness in school curriculum
  - Seychelles and Mozambique: development of first co-management plan; participatory lobster monitoring
- d) Disseminate research information back to communities
  - WCS: fisheries forum in Kenya to inform and validate research results
  - KWS: capacity building of communities linked to permit for studies/research in Kenya
- e) Develop and share lessons learned on multifaceted approaches- integrating different actions, regulation, incentives, alternative livelihoods

- Gear exchange programme, integrated research

#### National level

- a) Co-management processes
- b) Design conservation measures in a way that communities can benefit
  - TZ: agreement between government and communities on mangrove restoration
- c) Harmonize national legislations and regulations; develop platform for inter-ministerial collaboration
  - EAF Nansen programme established inter-ministerial of TDA process for LMEs

#### Regional level

- a) Exchange learning for fishers
  - Seychelles: good practice of adapting to seasonal changes
- b) SANSFAFA- supporting engagement in intersectoral policy processes
- c) EARFISH- working on identifying gaps in governance systems in Madagascar and the role of fishers in this process
- d) Benguela convention- regional exchange programme for SSF associations

### Session 4: Knowledge and information sharing in the fisheries-environment nexus

#### Fisheries data and information systems in the WIO, Dr. Bernadine Everett, Oceanographic Research Institute, South Africa

45. The presentation discussed:

- The Western Indian Ocean region supports a large diversity of fisheries that support the economic, social, cultural wellbeing of over 60 million people. Further, Dr. Everett noted that WIO fisheries have been underreported and the available data remains unknown.
- A comparison was made on data availability globally, regionally, and nationally. Different data sources (FAO, Seas Around Us, IOTC, WIOFish, EAF Nansen) and type (catch, effort, socio-economic, environment and time series) was investigated.
- The presentation looked at mechanisms for enabling data sharing such use of mobile based applications and databases.
- Case studies on integrated analyses include (1) the Pemba Channel small pelagic fishery under climate threat, (2) Emerging fishery of the North Kenya Bank, an opportunity for coastal populations and (3) Environmental drivers and socio-economic consequences of the South African Chokka squid fishery collapsing.

#### Marine environment data and information systems in the WIO, Prof. Maarifa Mwakumanya, Pwani University, Kenya

46. Prof Mwakumanya's presentation highlighted the following:

- The importance of marine environment data and information systems. One stop shop would minimize the challenges of data access and quality. The data is important in understanding the quality and status of critical habitats.
- Some relevant types of data mentioned included: Oceanography, Marine habitats, biological resources, Demographic data, Marine Experts, socio-economic activities, Marine geology among others
- Examples of integrated data and information sharing systems include Nairobi Convention clearing house mechanism, Ocean Data, and Information Network for Africa (ODINAFRICA), African Register of Marine Species (AfReMaS)
- Recommendations included an integrated data and information sharing strategy for WIO and building and enhancing the capacity to develop and manage integrated data and information system.

#### 47. Plenary Comments

- What are the incentives for sharing data with other institutions? Researchers need to establish a structure to protect the data shared and a framework for developing a robust data sharing platform put in place.
- Integrate landscape perspectives, including governance systems, for both the marine space and landscape.
- Specialized funding for data collection at higher level through the SWIOFC and Nairobi Convention to support policies geared towards environment – fisheries nexus.

#### 48. Session 3 (ii) Group Discussion

Participants were divided into four groups each comprising about 8-9 participants. Each group appointed a rapporteur who took notes of key discussion points and present back to the plenary. The groups were tasked to identify priority gaps/needs for fisheries-environment knowledge or information sharing in the Western Indian Ocean region to:

- a) Enable evidence-based and coordinated policies and decisions on issues of shared concern for fisheries environment, as identified in previous sessions
- b) Enable effective design and adaptation of management measures
- c) Create a joint understanding between resource users, communities, experts, policy makers and managers from the fisheries and environment sectors.
- d) Maximize cost-efficiency in how information is collected, analyzed, and put to use

For each gap, identify: (i) what type of information needs to be shared, (ii) by who and for who, (iii) expected results or outputs, (iv) if there are existing structures, processes or tools that can be used to address the gap, and (v) practical steps to enable the establishment and maintenance of the knowledge or information sharing process.

#### Key points from the plenary presentations



- a) Develop georeferenced fisheries data products on spatial and temporal scales for areas of interest to allow linkages between environmental/oceanographic/socioeconomic data (resource users)
- b) Incl. Fisheries status information and mapping of all vulnerable habitats. (fisheries survey data, remote sensed data, pollution etc.
- c) Need to establish national-level meta-databases to be updated regularly which are also available to the public. Meta-database summarize what data is available, where it was collected, by whom, how and when it was collected.
- d) An inventory of the existing structures for data sharing is needed (are the structures working structures? do we need to create new ones, or do we revitalize existing ones?
- e) National oceanographic data centers to be revitalized. (Nairobi Convention Clearinghouse mechanisms can be revitalized), WIOFish
- f) There is also need to ensure that countries commit
- g) Data collection to be guided by a joint management strategy (Fisheries and environment) using EAF approach

## Summary of Recommendations

- Promote partnerships for cooperation, collaboration to address environment and fisheries issues and challenges
- Conduct joint assessments on ecosystems and species of concern
- Develop a roadmap to address above recommendations leading to a regional status report on the environment-fisheries nexus in the Western Indian Ocean

## Closing Remarks

Closing remarks by Dr. Jared Bosire, Nairobi Convention

Closing remarks by Mr. Vasco Schmidt, SWIOFC

Closing statement by Chair

## Annex: List of Participants

No.	NAME	Institution/Country
1.	Mr. Salomao Bandeira	Eduardo Mondlane University - Madagascar
2.	Ms. Nyawira Muthiga	Wildlife Conservation Society – Kenya
3.	Ms. Lydia Gaspare	University of Dar es Salaam - Tanzania
4.	Mr. Maarifa Mwakumanya	Pwani University – Kenya
5.	Ms. Margareth Kyewalyanga	Institute of Marine Sciences – UoDSM
6.	Ms. Agnes Wangui Muthumbi	University of Nairobi – Kenya
7.	Mr. Ranjeet Bhagooli	University of Mauritius
8.	Mr. Mohamed Omar	Wildlife Research and Training Institute – Kenya
9.	Mr. James Njiru	Kenya Marine & Fisheries Research Institute Kenya
10.	Mr. James G. Kairo	Kenya Marine & Fisheries Research Institute Kenya
11.	Mr. Ahmed Mohamed Nadjim	University of Comoros
12.	Mr. Yves Jean M. Mong	National Center for Environmental Research – Madagascar
13.	Mr. Japhet Joel Kashaigili	Sokoine University of Agriculture – Tanzania
14.	Mr. Rhett Bennett	Wildlife Conservation Society – South Africa
15.	Mr. Jacob Ochiewo	Kenya Marine and Fisheries Research Institute
16.	Mr. Arthur Tuda	Western Indian Ocean Marine Science Association
17.	Mr. Bernard Fulanda	Pwani University – Kenya
18.	Mr. Akunga Nebat Momanyi	University of Nairobi - Maritime Centre
19.	Ms. Bernadine Everett	Oceanographic Research Institute, South Africa
20.	Ms. Socrate Elisa	Seychelles Fishing Authority
21.	Ms. Emelda Teikwa Adam	Ministry of Livestock and Fisheries – Tanzania
22.	Ms. Evelyn Ndiritu	CORDIO East Africa
23.	Ms. Jennifer O’Leary	Wildlife Conservation Society
24.	Mr. Theuri Mwangi	UNEP-Nairobi Convention Secretariat
25.	Mr. David Ouma	UNEP-Nairobi Convention Secretariat
26.	Mr. Jared Bosire	UNEP-Nairobi Convention Secretariat
27.	Mr. Dixon Waruinge	UNEP-Nairobi Convention Secretariat
28.	Ms. Caroline Bii	UNEP-Nairobi Convention Secretariat
29.	Mr. Mahamoudou Abidina	Directorate of Fisheries Resources – Comoros
30.	Ms. Abdou Azali Houda	Directorate of Fisheries Resources – Comoros
31.	Mr. Christophe Fontfreyde	Mayotte Marine Nature Park - France
32.	Ms. Elizabeth Mueni	Kenya Fisheries Services

No.	NAME	Institution/Country
33.	Ms. Gladys Okemwa	Kenya Marine and Fisheries Research Institute
34.	Mr. Stephen Ndegwa	Kenya Fisheries Service
35.	Mr. Edward N. Kimani	Kenya Marine and Fisheries Research Institute
36.	Mr. Herimamy Lalaniaina Razafindrako	Ministry of Fisheries and Blue Economy - Madagascar
37.	Mr. Mahefa Randriamiarisoa	Directorate of Fisheries – Madagascar
38.	Mr. Rui Jorge Mutombene	Fisheries Research Institute – Mozambique
39.	Mr. Osvaldo Chacate	Fisheries Research Institute – Mozambique
40.	Mr. Ikran Mohamed Abdullahi	Department Marine Environment Protection – Somalia
41.	Mr. Abdikadir Abdinur Yusuf	Department Marine Environment Protection – Somalia
42.	Ms. Peris Khamoga	EARFISH
43.	Mr. Soobaschand Soobaschand (Sunil)	ECOFish
44.	Mr. Muzila Nhatsave	SANSAFA
45.	Mr. Peter Britz	Rhodes University – South Africa
46.	Mr. Vasco Schmidt	FAO
47.	Mr. Merete Tandstad	FAO
48.	Ms. Ulrika Gunnartz	FAO
49.	Mr. Azevedo Timoteo	FAO