Western Indian Ocean
Regional Ocean Governance Strategy

BACKGROUND DOCUMENT

June 2024

prepared for
the information of the

Nairobi Convention Regional Ocean Governance Task Force, Focal Points, and regional stakeholder and partners

This Background Document is provided to support the recommendations made in the draft Regional Ocean Governance Strategy (ROGS). It is a reference document and may be subject to updates and revisions. It is not considered to be an integral part of the ROGS.

The Background Document compiles and summarises information from a wide range of different sources. This means that the information presented may present different views or approaches. Reference should be made to the source materials if inconsistencies are evident.

Additional information is available through the ROGS web pages and the Nairobi Convention Clearing House Mechanism established by the Secretariat of the Nairobi Convention.

The statements, opinions or views expressed in this document should not be taken as representing the views of the Task Force, the Nairobi Convention Secretariat, the UNEP, or of any of the organisations referred to in the document.

BACKGROUND DOCUMENT
Information Note

The Background Document provides material to inform the rationale, content and structure of the Regional Ocean Governance Strategy (ROGS) and the priority actions and arrangements proposed in the (draft) ROGS. The Background Document is intended for and reference purposes and it is not an integral part of the ROGS.

The Background Document outlines, summarises, or provides links to the background briefs and reports and outcomes of the Technical Dialogues held by the Task Force and to the associated workshops, forums, and training events organised by the Nairobi Convention or its partners.

The Appendix provides details of the composition of the Task Force and the Nairobi Convention Support Team. The text was prepared by Kieran Kelleher (Nairobi Convention/WIOMSA ROGS Adviser (consultant)) with the assistance of the Nairobi Secretariat ROGS Support Team and invaluable inputs from the Task Force members, from participants in the Technical Dialogues and from other stakeholders and colleagues.

The statements, views, and opinions expressed in this document are those of the author and do not necessarily reflect the views or opinions of the Task Force members, of the Nairobi Convention, of WIOMSA, or of any other institutions referred to in the document.

Acknowledgements

The invaluable contributions of the members of the ROGS Task Force and the Nairobi Convention Secretariat Support Team are gratefully acknowledged. The contributions and efforts of the organisers of and participants in the numerous Technical Dialogues, workshops, symposiums, forums and training sessions are recognised as an essential part of the stakeholder participatory process. Sincere thanks are due to the many authors and analysts upon whose work this Background Document rests as the Document is a synthesis of their efforts rather that contributing new insights.

The perseverance and patience of WIOMSA, the Nairobi Convention Secretariat, the Task Force and Support Team is gratefully appreciated during the lengthy preparation process which was made more challenging by the COVID 19 pandemic.

Preparation of the ROGS materials would not have been possible without the contributions of numerous Nairobi Convention partners and associated organisations. These include (but are not limited to): the GEF-financed SAPPHIRE and WIOSAP projects, the GIZ-managed WIOGI project, the World Bank supported SWIOFish2/AIODIS (managed by the Indian Ocean Commission), the EU-financed Marine Regions Forum, multiple contributors to the WIOMSA regional marine science symposium and science to policy events.

The Background Document draws on multiple studies and assessments, particularly those undertaken or managed by national marine and environmental agencies and research institutes, by the Regional Economic Communities, by the Indian Ocean Commission, by other regional and international organisations, bilateral and multilateral partners, conservation organisations, regional foundations and associations and by universities and policy think tanks. In so far as possible links to the source materials are embedded in the Background Document. The contributions of these multiple sources are gratefully acknowledged.

CONTENTS

Appendix

Lists of Boxes

List of Tables

List of Figures

Abbreviations and Acronyms

ABNJ	Areas Beyond National Jurisdiction/
AfCFTA	Africa continental Free Trade Agreement
AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AIMS	African Integrated Maritime Strategy
AU	African Union
AUDA	African Union Development Agency
BBNJ	Biodiversity Beyond National Jurisdiction
BFA	Blue Finance Architecture
CBD	Convention on Biological Diversity
CGIMA-WIO and CGPCA	Contact Group on Illicit Maritime Activities in the Western Indian Ocean (previously Contact Group on Piracy off the Coast of Somalia)
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties
E€OFISH	EU-funded IOC administered regional fisheries programme
EAC	East African Community
ECA	UN Economic Commission for Africa
FAO	Food and Agriculture Organization of the United Nations
FFEM	Le Fonds français pour l'environnement mondial
FPAOI	Indian Ocean Federation of Artisanal Fishers
GBF	Global Biodiversity Framework
GEF	Global Environment Facility
HMS	highly migratory species
IFI	international financial institution(s)
IGAD	Intergovernmental Authority on Development
IMO	International Maritime Organisation
IMS	Information Management System
IOC, IOC/COI	Indian Ocean Commission
IOC/UNESCO	Intergovernmental Oceanographic Commission
IOI-SA	International Ocean Institute – Southern Africa
IOTC	Indian Ocean Tuna Commission
IP	intellectual property
IPBES	Science Policy Platform on Biodiversity and Ecosystem Services
ISA	International Seabed Authority
LME	large marine ecosystem
LNG	liquid natural gas
MASE	Maritime Security Programme
MCS	Monitoring, Control and Surveillance
MDB	multilateral development bank(s)
MPP	marine plastic pollution
MTC	Minimum Terms and Conditions (of access to fisheries)
NC	Nairobi Convention
PSMA	Port State Measures Agreement
REC	Regional Economic Community
ROGS	Regional Ocean Governance Strategy
SADC	Southern African Development Community
SAIIA	South African Institute of International Affairs
SAPPHIRE	Western Indian Ocean Large Ecosystems Strategic Action Programme Policy Harmonisation and Institutional Reforms
SDG	Sustainable Development Goal
Sida	Swedish International Development Cooperation Agency
SIOFA	Southern Indian Ocean Fisheries Agreement
SSA	sub-Saharan Africa
SSF	small-scale fisheries
SST	Sustainable Seas Trust
STI	science, technology nd innovation
SWIOFC	Southwest Indian Ocean Fisheries Commission
SWIOFish	WB-funded regional fisheries programme
SWIOFP	Southwest Indian Ocean Fisheries Project
TF	ROGS Task Force
TT	technology transfer
UNCLOS	United Nations Convention on the Law of the Sea
UNDOALOS	UN Division of Ocean Affairs and Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WB	World Bank
WEF	World Economic Forum
WiMS	Women in Marine Science Network
WIO	Western Indian Ocean
WIO-C	Consortium for the Conservation of Coastal and Marine Ecosystems in the Western Indian Ocean
WIOGI	Western Indian Ocean Governance Initiative (NC/GIZ)
WIOMSA	Western Indian Ocean Marine Science Association
WIO-ROG	Western Indian Ocean Regional Ocean Governance
WIO-SAP	Implementation of the Strategic Action Programme for the Protection of the Western Indian Ocean from Land-based Sources and Activities

Western Indian Ocean Regional Ocean Governance Strategy

BACKGROUND DOCUMENT

1 PREPARATION OF THE ROGS

1.1 PREPARATION OF THE ROG STRATEGY

1. The Regional Ocean Governance Strategy (ROGS) was prepared in response to the decisions of the Nairobi Convention (NC) Conference of the Parties (COP) and the African Ministers of the Environment Conference (AMCEN).[1] The proposed objective, vision and scope of the ROGS and the composition and terms of reference of the Task Force were endorsed by the NC Focal Points.[2]

2. The ROGS has been developed through a participatory process, based largely on the work of a regional Task Force (TF). The Task Force members were appointed by the Contracting Parties to the NC, by the Regional Economic Communities (RECs), the Indian Ocean Commission (IOC) and by the African Union (AU). These appointees were complemented by representatives of the private sector and other regional experts co-opted by the Task Force. The NC Secretariat provided technical support.

3. The Task Force members participated in numerous Technical Dialogues, workshops, training sessions and forums. In total, about one thousand WIO stakeholders participated in the process. The outcomes of these dialogues informed and guided the ROGS. It is anticipated that the draft ROGS will be publicly available through the NC website and comments and suggestions from institutions and civil society can be submitted as part of an ongoing dialogue. Reports of the Task Force Technical Dialogues and workshops and the related working papers are available on the NC ROGS web pages.

4. Preparation for the ROGS included the preparation of a comprehensive background document on the state of ocean governance in the WIO in 2020. In October 2021, the Nairobi Convention Focal Points meeting reviewed this background document and recommended the participatory process which underpins the ROGS.

1.2 NATURE OF THE ROGS

5. The ROGS is a set of recommendations prepared for consideration by the NC-COP and by other regional stakeholders. It proposes two basic elements: (i) a set of regional cooperative actions and (ii) a mechanism for implementing those actions. Following review through the Nairobi Convention established process, the ROGS will be considered by the Conference of the Parties (COP) scheduled for August 2024. An interim mechanism for implementation is also proposed as many of the actions proposed by the ROGS will require further regional dialogues.

[1] Decision CP8/5.2 (2015) "to contribute to the development of an African strategy on ocean governance". Progress in the Development of an African Ocean Governance Strategy: Note by the Secretariat - African Ministerial Conference on the Environment Eighteenth Session.

[2] The terms of reference are available on the ROGS web pages. https://www.nairobiconvention.org/regional-ocean-governance-strategy/.

2 THE POLICY FRAMEWORK

2.1 VISION, OBJECTIVE AND SCOPE

6. As noted above, the proposed objective, strategic vision and scope of the ROGS was endorsed by the NC Focal Points The strategic vision for the Western Indian Ocean Regional Ocean Governance Strategy is:

> *"A peaceful stable Western Indian Ocean region with an environmentally healthy ocean and a blue economy based on the protection and conservation of natural resources that delivers sustainable benefits with due regard to equity and wellbeing."*

7. The objective of the Western Indian Ocean Regional Ocean Governance Strategy is:

> *"To develop a regional mechanism through which the key regional stakeholders can cooperate in a coherent and structured manner to achieve the vision."*[3]

8. The vision and objective statements are compiled from several sources. The objective statement is based on the following assumptions:

a) the main target of the strategy is to improve regional cooperation on ocean affairs.
b) the strategy focuses on cooperation between regional institutions rather than on cooperation between individual states in the WIO, based on the assumption that a consensus of national aspirations is generally reflected in the policies and activities of the regional organisations.
c) numerous regional organisations already exist. The strategy focuses on improving cooperation between existing institutions rather than on creating any new regional institutions unless major gaps are identified. This is consistent with COP Decision CP.10/5 (par. 4) (Box 1).

9. The technical scope of the strategy includes all aspects of the ocean and coastal environment, the blue economy and the related institutions, productive activities, risks, and opportunities. While technically the scope is seen as 'open-ended', the ROGS activities focus on a limited number of key challenges and important sectors while allowing space for subsequent development in other areas.

10. Any formal geographical definition of the WIO has legal and political implications. The geographical scope of the NC is not clearly specified in the Convention text.[4] However, the sphere of ocean interest of the WIO stakeholders extends beyond the jurisdictional boundaries of the member states of the NC, for example in matters of shipping, maritime security, telecom cables, biodiversity or pollution. The geography of the ROGS may extend beyond the national jurisdictional areas of the parties where the large marine ecosystems (LMEs), the populations of living aquatic resources, or the related physical processes extend beyond these limits. However, the use of the terms 'large marine ecosystem' and 'areas beyond national jurisdiction' were deliberately avoided in the statement of the geographical scope. For the purposes of the ROGS the geographical scope of the WIO is taken to be:

> "*the jurisdictional areas of the parties to the Nairobi Convention and the adjacent oceans".*

2.2 MANDATES FOR DEVELOPMENT OF THE ROGS

11. The African Ministerial Conference on the Environment (AMCEN), at its fifteenth session, held in 2015, adopted the Cairo Declaration on Managing Africa's Natural Capital for Sustainable Development and Poverty Eradication, in which it resolved to:

[3] The 'working' statements (in italics) in paragraphs 6 and 7 are from the approved terms of reference for the ROGS Task Force.
[4] See Articles 1 and 2.

> *"develop a governance strategy, in accordance with the United Nations Convention on the Law of the Sea and regional seas conventions, on oceans and seas in Africa for the effective management of the region's shared maritime resource."*[5]

12. The 2023 AMCEN meeting restated the need for an African ocean governance strategy. In 2021, the Parties to the Nairobi Convention decided to initiate the development of a ROGS through a participatory process (Box 1). Policy support for the development of the ROGS is provided through a wide range of high-level global and regional policies and declarations. These policies, actions and initiatives reinforce the political will for regional cooperation on oceans and related marine and maritime affairs (see Box 2). In addition, numerous national statements emphasise regional cooperation on sustainable oceans, including on sustainable fisheries, on conservation of marine biodiversity, on maritime trade and maritime security, on climate change, and on a wide range of economic, social, environmental and issues related to ocean governance.

Box 1. NC-COP Decision on development of the ROGS

Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean Region Contracting Parties. Tenth meeting, Virtual, 23 - 25 November 2021

Decision CP.10/5. Ocean Governance Strategy

1. To request the secretariat to finalise the development, in a participatory process, with the support of partners, the ocean governance strategy for the Western Indian Ocean region as a contribution to the African ocean governance strategy.

2. To invite the African Union Commission and regional economic communities to enhance collaboration with the Nairobi Convention on ocean governance in the Western Indian Ocean region.

3. To request the secretariat to strengthen national data centres, through capacity development on information and knowledge management, and in collaboration with partners, to develop a regional information management strategy and mechanisms to address common challenges and take informed decision-making for ocean governance.

4. To invite Contracting Parties to cooperate and collaborate in Ocean governance matters within existing institutional mandates and coordinate actions on biodiversity beyond national jurisdiction.

Box 2. Complementary regional policy support for the ROGS

High-level policy actions include:

- African Union. 2015. Agenda 2063 Framework Document. *The Africa We Want*.
- 2050 Africa Integrated Maritime Strategy (AIMS), adopted by the AU in 2014
- AU-IBAR, 2019. Africa Blue Economy Strategy
- African Union Climate Change and Resilient Development Strategy and Action Plan (2022-2032)
- Revised African Maritime Transport Charter (1994, revised 2012) and Plan of Action endorsed by AU in 2009
- Djibouti Code of Conduct, revised by the Jeddah Amendment (2017); African Charter on Maritime Security, Safety and Development (Lomé Charter) on Maritime Security, Safety and Development (not in force)
- African Continental Free Trade Area (AfCFTA) Agreement
- African Convention on the Conservation of Nature and Natural Resources (1968)
- Abuja Declaration on sustainable fisheries (2005); Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (AU-IBAR, 2016)

Actions at WIO level include:

- Development of protocols, blue economy strategies and resolutions by the RECs (e.g. SADC Protocol on Fisheries, EAC legislation on plastics); IORA declarations
- Cooperation among the regional fisheries organisations and with the NC
- Cooperation on maritime security (MASE, CRIMARIO)
- Cooperation among business leaders (e.g. Cap Business, Pan African Chamber of Commerce and Industry (PACCI)) and among port authorities (PMAESA)
- Scientific and conservation institutions and networks (e.g., WIOMSA, WIO-C, SST, Africa Waste Management Network, Northern Mozambique Channel Initiative)
- Regional fisheries projects (e.g., SmartFish (EU), SWIOFish (WB)).

[5] Cairo Declaration, see par. 14. https://wedocs.unep.org/bitstream/handle/20.500.11822/10923/oceangovernance_wg1_inf4_cairo_declaration.pdf?sequence=1&isAllowed=y. For an update, see: Progress in the Development of an African Ocean Governance Strategy: Note by the Secretariat - African Ministerial Conference on the Environment Eighteenth Session. https://wedocs.unep.org/20.500.11822/40440. Background reports include a scoping study,

2.3 GLOBAL COMMITMENTS OF RELEVANCE TO THE ROGS

13. All WIO countries are party to the UN Convention on the law of the Sea (UNCLOS). Under the Convention, WIO countries have international legal obligations to cooperate on ocean governance.[6] Cooperation is required with countries, with global and regional institutions with respect to a wide range of ocean issues, including, but not limited to, suppression of piracy, conservation of marine resources, science and technology, prevention of pollution, and with respect to areas beyond national jurisdiction (ABNJ).

14. WIO countries have committed to a range of global and international principles, objectives and undertakings. WIO countries are party to numerous international conventions and treaties under which the countries incur international legal obligations on oceans and on a wide range of matters which impact on ocean affairs. The global commitments include those incurred through ratification of, or adhesion to the following instruments, among others (Box 3).

Box 3. Selected global obligations and commitments of relevance to ROG

Legal. International legal obligations on oceans accrue under numerous convention and agreements and through membership of various international organisations, including:

a) International Maritime Organisation (IMO) (numerous conventions on shipping)
b) World Trade Organisation, particularly in relation 'trade and the environment'
c) Convention on Biological Diversity (also CITES, CMS)
d) Fisheries (IOTC, SIOFA, SWIOFC)
e) UNFCCC (climate agreement), e.g. in relation to conservation of blue carbon sinks (mangroves, seagrass beds, coastal wetlands, macroalgae (kelp/ seaweed) forests and emissions control.[7]
f) human rights declarations

'Soft law'. Other (non-legally binding) obligations derive from commitments made to numerous 'soft law' instruments including:

g) Sustainable Development Goals, in particular SDG14
h) Implementation of UN resolutions, e.g. on piracy off Somalia
i) Commitments made at the Global Oceans Forum
j) Codes of Conduct, international guidelines and other forms of 'customary law'.

2.4 RATIONALE FOR THE ROGS

15. The ROGS has a regional rather than national focus. This means that the priority regional activities must both add value to national priority activities and be the subject of existing regional dialogues or cooperation (Box 4). This added value may accrue in many ways. These include synergies and lessons learned among actions, improved effectiveness in implementation, cost savings, efficient use of scarce resources, avoidance of duplication or conflict, more coherent and targeted use of knowledge, joint financing, creation of trade and business opportunities, economies of scale and common positions in global dialogues or negotiations.

Box 4. African Ocean Governance Strategy: Scoping study and gap analysis

The study highlights:
- the fragmentation of institutions, agendas, and sector interests
- that there is no overarching framework that covers all aspects of oceans governance at the African or regional level
- that there is a lack of formally agreed principles on which to base action
- that there is no overarching framework within which to discuss regional ocean issues that have an in relation to global issues
- there is no mechanism, for assessing and describing in concrete, specific, measurable, achievable actions to meet policy goals

the consequences include:
- weakness in regional approaches to the implementation of Sustainable Development Goal 14
- lack of regional synergies and weak public and private sustainable financing
- in public awareness and commitments to climate change adaptation.

16. The ROGS assumes that regional priorities are already largely reflected in the range of existing regional cooperation arrangements, expressed through existing policies, or targeted through existing programmes and initiatives. The task of the ROGS is to build a framework to consolidate and enhance the numerous cooperative arrangements and initiatives across the institutional ocean space; across sector and

[6] The Convention text uses the phrase [states] "shall cooperate" 28 times.
[7] Note that ocean acidification (arguably) does not fall within the remit of the UNFCCC, although it is directly attributable to CO_2 emissions.

thematic boundaries; across knowledge clusters and to help resolve any policy divides by developing common understanding and consensus on priorities and approaches.

17. The rationale for the ROGS has been identified at the level of AMCEN and in 2021, work on a continental ocean governance strategy identified key elements of a draft African strategy for ocean governance.[8] The Nairobi Convention COP Decision CP.9/6. 'Ocean governance' refers to collaboration with the regional economic communities (RECs), the regional seas conventions, the South West Indian Ocean Fisheries Commission and other regional institutions and refers to the Cairo Declaration on Managing Africa's Natural Capital, the 2050 Africa's Integrated Maritime Strategy, and the provisions of Agenda 2063.[9]

2.5 PRINCIPLES, GUIDELINES AND APPROACHES

18. The ROGS is consistent with and applies the core values and principles set out in the UN Charter,[10] in the Constitutive Act of African Union and those set out in the constitutive instruments of the Regional Economic Communities (RECs) and the Indian Ocean Commission. The ROGS draws upon and applies numerous globally recognised principles, practices, guidelines and approaches. These include guidance:

a) on disadvantaged countries
   (i) recognition of the special circumstances of small island developing states and of least developed countries
   (ii) acknowledgement of the special interests and needs of landlocked developing countries

b) on the environment, natural resources and climate change
   (i) the polluter pays and precautionary principles
   (ii) the ecosystem approach, including a 'ridge-to-reef' approach[11]
   (iii) the stewardship of the areas beyond national jurisdiction (ABNJ) on behalf of present and future generations
   (iv) guidelines and targets developed by the CBD (e.g., the Global Biodiversity Framework)
   (v) the non-transfer, directly or indirectly, of damage or hazards from one area to another and the non-transformation of one type of pollution into another in taking measures to prevent reduce, and control pollution of the marine environment
   (vi) the FAO Code of Conduct for Responsible Fisheries and associated plans of action (e.g., on sharks, IUU, guidelines on small-scale fisheries)
   (vii) guidelines on ICZM, MSP, the establishment and sustainability of MPAs, on transparency, and on participatory processes
   (viii) emerging guidelines on climate change adaptation, mitigation and climate finance, on the application of public trust doctrine[12] to oceans, and many other international guidelines of relevance to ocean governance and the blue economy

c) on business, finance and trade
   (i) the UN Global Compact which sets out principles for corporate responsibility with respect to human rights, labour, environment, and anti-corruption[13]

[8] Issues paper on African governance strategy. Second consultative meeting on the development of an African strategy for ocean governance. October 2020. African Ocean Governance Strategic Blueprint. See also: Regional Oceans Governance: Making Regional Seas Programmes, Regional Fishery Bodies and Large Marine Ecosystems Work Better Together (2016). UN Environment (2014) Measuring Success: Indicators for the Regional Seas Conventions and Action Plans.

[9] AU regional ocean governance consultations.

[10] In particular, Ch.1.1. Art. "*To achieve international cooperation in solving international problems of an economic, social, cultural, or humanitarian character*", sovereignty and acting in 'good faith' (Art. 2).

[11] The CBD defines an ecosystem as 'a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit' (CBD, Article 2 of the Convention). The Ecosystem Approach underpins numerous policy initiatives including the CBD Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets the UNEP Marine and Coastal Strategy and the UN Ocean Compact. However, it remains unclear as to the governance architectures which are most capable of delivering the ecosystem approach and sustaining flows of ecosystem services in the longer term.

[12] Blumm, M.C. and Wood, M.C., 2021. The Public Trust Doctrine in Environmental and Natural Resources Law. Carolina Academic Press 2021. https://ssrn.com/abstract=3761017.

(ii) the Equator Principles (banking and investment),[14] and many others
(iii) approaches to improve the circular economy and transparency[15]
(iv) guidelines on sustainable trade, including those related to potential pollutants, hazardous materials, to fisheries and on endangered species
(v) The Jakarta Declaration on Blue Economy (May 2017)[16]
(vi) guidelines developed by the IMO (on shipping, often applied in advance of regulation)
(vii) the use of the best available science and scientific information to inform collective decisions.

19. **Regional cooperation**. In addition to the mandates and higher-level guidance, the ROGS takes due account of the wide range of existing regional cooperative arrangements at sector, business and scientific levels. The ROGS aligns with or contributes to an African (continental) ocean governance strategy (initial drafts). Through the stakeholder participatory process, the ROGS has identifies synergies between the existing regional cooperative initiatives. The opportunities for enhanced regional cooperation can take many forms. These include memoranda of understanding, contractual arrangements, joint programmes, partnerships, networks, clusters, codes of conduct and other more formal and informal institutional relationships between the various regional organisations. The following are some examples of existing cooperative arrangements:

a) development of protocols, blue economy strategies and resolutions by the RECs (e.g., SADC Protocol on Fisheries, EAC legislation on plastics)
b) declarations on cooperation (e.g., IORA Maritime Cooperation Declaration, Moroni Declaration)
c) cooperation within and among the regional fisheries organisations
d) cooperation between the NC and SWIOFC and arrangements between the fisheries bodies
e) cooperation on maritime security (e.g., Maritime Security Architecture and MASE)
f) the Northern Mozambique Channel Initiative, the Great Blue Wall initiative, Our Blue Future
g) cooperation among business leaders (e.g. Cap Business, Pan African Chamber of Commerce and Industry (PACCI))
h) cooperation among port authorities and maritime trade agencies (e.g. PMAESA)
i) Cooperation among scientific institutions and conservation NGOs (e.g., WIOMSA, WIO-C, SST)

20. **Financing**. The continuity and stability of many cooperative arrangements is often dependent on erratic project financing or resourcing. One of the tasks of the ROGS is to help ensure the continuity and effectiveness of the cooperative arrangements through placing the various arrangements within a broader governance framework that can facilitate secure long-term resources and create synergies. A detailed discussion of financing is provided in section 8.4.

21. **Equity**. The legal framework on oceans and many ocean policies are 'equity blind' - that is, they make little of no reference to equity. The global distribution of the costs and benefits from ocean activities or from ocean pollution clearly demonstrates inequities. Shipping is dominated by a few countries and multinational corporations. Many large-scale fisheries, such as for tuna are dominated by multinationals and small-scale fishers are among the most marginalised communities. The disproportionate impact of climate change on coastal communities and small islands also demonstrated the embedded inequities in the dominant political and economic systems.

22. While the prevailing norms may be the result of historical legacies, the ROGS will need to embed measures to advance ocean equity in all the actions. This will be particularly important where reforms may incur negative impacts for communities, where conservation of biodiversity comes at a cost to communities, or where development of extractive or other industries fundamentally changes the local economy. Human rights, well-being, inclusion, and equal access to resources and

[13] The principles in the UN Compact are derived from: the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.
[14] https://equator-principles.com/
[15] E.g., EITI, FiTI.
[16] IORA Jakarta declaration on the blue economy.

opportunities are pillars of sustainable development and will need to be embedded in all ROGS actions.[17]

2.6 CONTRIBUTIONS OF GLOBAL PROCESSES TO THE ROGS

23. A wide range of global assessments provide baseline information for the ROGS. These include:

a) the SDGs, and SDG14 in particular, which provide verifiable objectives and indicators (see tables)
b) the Global World Ocean Assessment provides peer-reviewed consensus (third version in preparation)
c) WTBA protected areas database
d) atlas of global conservation, which includes information on vulnerable ecosystems, mangroves, seagrass beds and coral reefs
e) waste management
f) physical oceanography including ocean temperature, ocean acidification and primary productivity
g) meteorological information which informs on extreme weather conditions.

24. **SDGs**. The SDG indicators provide one means of tracking the outcomes of ocean governance and potentially a means of tracking the impacts of investments in sustainable oceans. SDG 14 is linked to many other SDGs and the SDG 14 indicators need to be complemented with other SDG indicators which have a bearing on oceans.

Table 1. Indicative status of SDG14 achievement

Performance in relation to SDG targets	CO	MD	MA	MO	KY	SY	SO	TZ	SA
Marine protected area important to biodiversity									
Ocean Health Index: Clean Waters score									
Fish from overexploited or collapsed stocks									
Fish caught by trawling or dredging									
Fish caught that are then discarded									
Marine biodiversity threats in imports									

Source: UN Country Profiles on achieving the SDGs. Red = major challenges; Yellow = Challenges remain; Green = achieved. France is excluded as the reporting includes metropolitan France.

Table 2. Example. SDG indicators for a selected WIO country

SDG Indicator	Status	Status	Trend
Mean marine protected area important to biodiversity	20.14% of area	Red	Stagnant
Ocean Health Index: Clean Waters score	53.2/100	Red	Decreasing
Fish caught from overexploited or collapsed stocks	8.14% of catch	Green	On Track
Fish caught by trawling or dredging	20.29%	Yellow	Decreasing
Fish caught that are then discarded	5.72% of catch	Yellow	Decreasing
Marine biodiversity threats embodied in imports	0%	Green	Achieved

Source: UN Country Profiles on achieving the SDGs. Actual data/ most recent available year.
Red = major challenges; Yellow = Challenges remain; Green = achieved.

[17] Österblom, H.,et al. 2020. Towards Ocean Equity. World Resources Institute.

3 DEVELOPMENT OF THE ROGS PRIORITIES AND CLUSTERS

25. The priorities identified by the ROGS Task Force are set out in Box 5. Selected thematic priorities and cross-linkages between the priorities are illustrated in Table 3.

Box 5. Priorities as identified by the Task Force

Maritime Security cluster

k) effective cooperation on maritime security and enforcement (including on port state measures)
l) alignment of institutions on a 'regional' ABNJ
m) recognition of the strategic importance of subsea telecommunication cables

Blue Economy cluster

n) building sustainable tourism
o) building sustainable fisheries
p) prevention, reduction and control of marine plastic pollution (shared with environment cluster) and development of a circular blue economy for plastics
q) managing offshore energy (extractive and renewable)
r) managing deepsea resources
s) ports, trade and maritime connectivity
t) other emerging areas (IT, telecommunications, marine biotech)

Environment and Natural Resources cluster

u) prevention, reduction and control of nutrient & chemical pollution
v) conservation of protected species and habitats
w) conservation of biodiversity and critical ecosystems
x) implementation of the BBNJ treaty
y) conservation and rehabilitation of coral reef ecosystems
z) adaptation to and mitigation of climate change
aa) regional marine spatial planning and marine protected areas

Knowledge Management and Capacity Building cluster

bb) scientific advice in support the above clusters (including on ecosystem-based approaches, on fisheries and on monitoring of climate change)
cc) regional scientific cooperation and consensus scientific advice on international oceans affairs
dd) science to governance (institutional arrangements)
ee) human capacity development and communications, including institutional arrangements
ff) transfer of technology
gg) public awareness and access to science (including for private sector applications)

Many of the cross-cutting priorities, such as, finance, technology transfer, human capacity development are addressed in the section on implementation arrangements

Table 3. Illustrative priority matrix

Theme	Climate change	Pollution	Habitats and biodiversity	Unsustainable resource use	Maritime security
Livelihoods, economic, other incentives Infrastructure, services, and technology	Blue Economy				
Land and water management Species and ecosystem management Conservation designation and planning	Environment & Natural Resources				
Research and monitoring Education and training and tech. transfer Awareness raising	Knowledge Management & Capacity Building				
Institutional development / financing Legal and policy frameworks Enforcement, monitoring and control	ROGS Implementation arramgments				

26. The regional priorities were identified through a stakeholder participatory process. This process was guided by the ROGS Task Force through the Technical Dialogues. Many of the priorities were already identified through global processes, through the NC-COP decisions, derived from AU policies and decisions, and REC protocols and blue economy strategies . The Task Force also drew on national ocean policies and action plans and regional instruments and declarations.

27. **Structure of the participatory process**. The participatory process included several training or orientation events to build a shared understanding of the challenges and establish relationships among regional initiatives and sectors. A training course on ocean governance was held online. Teamwork was built through collective leadership exercises. Task Force members participated in specific events on the law of the sea, the BBNJ treaty, on regional marine science, information management, ocean accounts, and other specialised areas. Stakeholders were reminded that NC guidance is that the ROGS should use existing institutions and processes in so far as possible. For each of the priorities identified by the Task Force, participants in the stakeholder Technical Dialogues were requested to develop the following outputs:

a) **consensus description**. A consensus description of the regional priority to build a common understanding of the priority and a to clearly identify the rationale for selecting the priority
b) **actions**. The proposed regional actions required (or recommended pathway) and goals for each priority and consideration of the alternatives. The regional actions take many forms, for example, information exchange, cooperation on maritime enforcement operations, legislative alignment, regional projects, private sector collaboration, or development of joint positions in international fora (e.g., on marine plastic pollution or maritime security)
c) **leadership and resources**. The proposed regional implementation arrangements, including identification of the potential or possible regional leadership (i.e., which regional institution(s) could take the lead on which actions). This required consideration of the nature of any regional services to be generated and the type of cooperation mechanisms possible (formal structures, permanent platforms, informal arrangements). It also required identification of potential resourcing including in-kind support and financing, review and adjustment modalities (what to monitor, which reporting channels).

4 MARITIME SECURITY CLUSTER

28. Background information is provided on five maritime security topics. While some of these topics are not fully addressed in the current iteration of the ROGS, to be submitted for COP consideration in 2024, they may be the subject of future regional dialogues:

a) the regional maritime security architecture and cooperation arrangements
b) strategic maritime issues
c) prevention and preparation for maritime spillages
d) protection of subsea telecommunications cables
e) regional cooperation on Areas Beyond National Jurisdiction.

4.1 REGIONAL COOPERATION ON MARITIME SECURITY

4.1.1 Rationale

29. **Inclusion in the ROGS**. The Maritime Security cluster is considered part of the ROGS. But the role of the ROGS is considered limited to cooperation on pooling information, generating political and financial support for critical activities, and linking collaborative maritime security initiatives to other maritime activities (e.g., shipping, fisheries, oil spill preparedness, protection of undersea cables). Given the sensitive nature of the political and national security considerations, the form of any of the institutional engagement on maritime security within context of the ROGS is expected to be subject to further dialogues by key maritime security stakeholders during ROGS implementation.[18]

30. **Importance**. Maritime security is a fundamental pillar of ocean governance. Over 80% of global trade and about 90% of the region's intercontinental trade is by sea. Over 60% of container freight is operated by only five Asian and European companies. The region's economy remains heavily dependent on imports of refined oil and gas by sea. Traffic in arms, drugs and people, illegal fishing and a possible re-emergence of piracy, or armed aggression on shipping are ever-present concerns. To avoid sanctions imposed on some countries, an estimated 10% of all tankers are operating outside mainstream laws and outside conventional trade and financial arrangements. It is unclear if these vessels comply with international maritime safety standards. Maritime security is fundamental to the region's blue economy, to compliance with national and international rules on fisheries, shipping, conservation, and to combatting traffic in drugs and arms. Somali piracy incurred an estimated increased cost to global trade of US$18 billion per year, and additional losses to the

[18] Bueger, C. & Stockbruegge, J. 2022. Maritime security and the Western Indian Ocean's militarisation dilemma. African Security Review. 2022, VOL. 31, NO. 2, 195–210.

region's fisheries and tourism industries.[19] These costs included an estimated $1.25 billion/year in naval operations, elevated maritime insurance, rerouting of ships and ship-board security services.[20]

31. **Consensus on cooperation**. There is wide regional consensus that close cooperation on maritime security is required, including with non-WIO countries and agencies. Effective cooperation includes maritime domain awareness; improved responses to illicit maritime activities, strengthened maritime enforcement capability, continued improvement of the regional maritime security institutional architecture, and secure long-term financing and resourcing. Selected aspects of increasing WIO domain awareness are illustrated in Figure 1 to Figure 6.

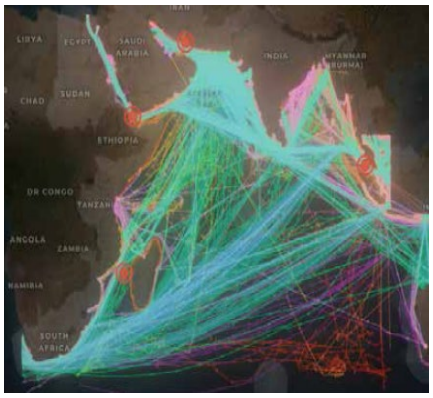


Figure 1. Heat map of oil and gas shipping in the WIO[21]

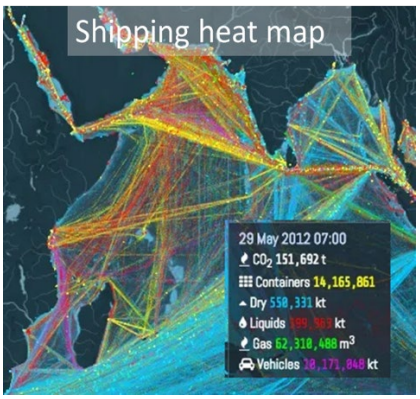


Figure 2. Heat map of all shipping in the WIO

Figure 3. IMO-designated Search and Rescue areas and responsibilities

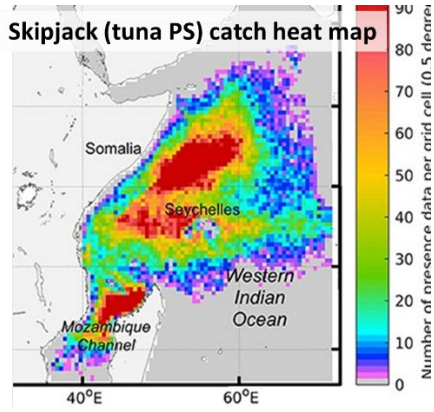


Figure 4. Skipjack fishing effort

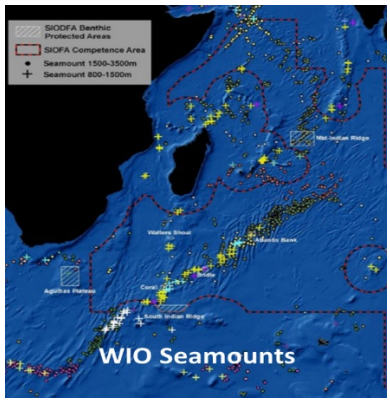


Figure 5. Distribution of seamounts

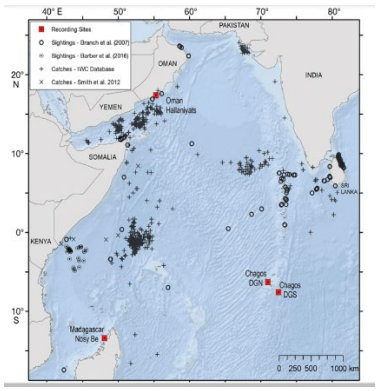


Figure 6. Blue whale distribution

4.1.2 Regional initiatives on maritime security

32. Regional cooperation on maritime security has advanced significantly. This has been driven partly by the recognition that a minimum regionally-owned capacity is required to assure maritime security, and that close regional cooperation is required to make effective use of scarce resources, to share information, and to monitor maritime activities.[22] The Western Indian Ocean maritime security architecture is constantly evolving in response to threats, to changing strategic considerations and resource availability. Existing cooperation arrangements, or policy and operational commitments have included:

[19] World Bank, 2013. The Pirates of Somalia: Ending the Threat, Rebuilding a Nation.
[20] There are several estimates of the cost of Somali piracy. See: Oceans beyond Piracy. The Economic Cost of Piracy; . Pirates of Somalia: Ending the Threat, Rebuilding a Nation.
[21] *Source:* Movement of liquid energy 2022.
[22] IOC. 2019. Introducing a state-of-the-art maritime security architecture in service of the blue economy.

a) the Djibouti Code of Conduct and Jeddah Amendment (2017) which has developed norms and technical standards for national agencies and operators, and assists in coordinating capacity building support on the national level[23]
b) the Lomé Charter (African Charter on Maritime Security and Safety and Development in Africa) can be regarded as an Africa-wide 'extension' of the Djibouti Code but with several mandatory provisions. The Charter has not been ratified by any WIO country
c) the Contact Group on Illicit Maritime Activities in the Western Indian Ocean (CG) (formerly the Contact Group on Piracy off the Coast of Somalia (CGPCS)) and
d) the Program for the Promotion of Maritime Safety (MASE)[24]
e) the Shared Awareness and De-confliction (SHADE) arrangements and Combined Maritime Forces (CMF) which were established to respond to Somali piracy
f) initiatives by the United Nations Office on Drugs and Crime (UNODC), including the Indian Ocean Forum on Maritime Crime (IOFMC)
g) enforcement of international instruments such as the Port States Measures Agreement (2016) (fisheries) and the Indian Ocean MOU (shipping)
h) the Ministerial Conference on Maritime Safety and Security[25]
i) the IORA 'Perth Principles' (2013) and Maritime Cooperation Declaration, October 2015

33. **Djibouti, Jeddah and Lomé**. The Code of Conduct concerning the Repression of Piracy and Armed Robbery against Ships in the Western Indian Ocean and the Gulf of Aden (Djibouti Code of Conduct (DCoC)) establishes a regional framework for conduct and cooperation on piracy and related maritime security challenges. The Jeddah amendment extends this cooperation to other areas of maritime security such as traffic in arms, drugs, or people and to illegal fisheries activities. A 2021 roadmap sets out steps to advance implementation of the Code.[26] The Lomé Charter is an AU-sponsored binding treaty modelled on the Djibouti Code. Despite more than 30 signatories, it is not in force, possibly because of the cost implications and the binding nature of the commitments.[27]

34. **MASE**. There are seven signatory countries of the MASE Agreements: Comoros, Djibouti, France/Reunion, Kenya, Madagascar, Mauritius, and Seychelles. MASE is coordinated by the IOC. COMESA, EAC, IGAD and IOC cooperate in implementing components of the MASE Programme, which is supported by EU funding. MASE is a 'hands-on' activity that coordinates maritime security through (i) information exchange (the Regional Maritime Information Fusion Centre (RMIFC)) and (ii) joint control operations (Regional Coordination of Operations Centre (RCOC see Box 6)).[28] The RMIFC recorded 741 maritime security events in the first three quarters of 2023.

35. **Contact Group**. The Contact Group on Illicit Maritime Activities (CG) is a reconfigured version of the Contact Group on Piracy off the Coast of Somalia (CGPCS).[29] Its role has been expanded from a focus on piracy to include other maritime security issues. The CG is a forum which includes maritime states, the shipping industry, maritime security agencies, UN agencies, P&I clubs and other concerned organisations. It operates by consensus and is supported by voluntary contributions from stakeholders. The CGPCS played a significant role in coordinating the response to Somali piracy and building regional capacity in the past.

[23] Djibouti Code of Conduct meeting 2023.
[24] Indian Ocean Commission. Maritime Security Collaborations and Institutional Arrangements in the WIO Region: Maritime Security Architecture and Blue Economy. Four scenarios. The MASE programme is progressively establishing a permanent regional maritime security architecture.
[25] Scoping Note. Third Ministerial Conference on Maritime Safety and Security in the WIO. Balaclava, Mauritius, November 2023.
[26] Enhancing the Djibouti Code of Conduct – Jeddah Amendment Information Sharing Network: Strategy Roadmap November 2021.
[27] Lomé Charter.
[28] R. Mohabeer and K. Sullivan de Estrada. 2019. Strengthening Maritime Security in the Western Indian Ocean. Ebene, Mauritius: IOC.
[29] The CGPCS was established in 2009 under UN auspices to facilitate and coordinate the counter-piracy actions of states and organisations dealing with or affected by Somali piracy.

Box 6. Components of the MASE Programme	
Regional Maritime Information Fusion Centre (RMIFC, Madagascar)	Regional Coordination of Operations Centre (RCOC, Seychelles)
• deepen maritime security awareness • monitor maritime activities in real time to accelerate the planning and organization of control operations at sea • improve the capacity on managing critical maritime information and technology • ensure the sharing and exchange of maritime information between RMIFC, national and regional centres	• promote cooperation and coordination in joint missions of regional interest as agreed • strengthen individual and institutional capacities • organize joint and/or coordinated interventions at sea or by air • facilitate cooperation in the event of a maritime security incident • promote cooperation with agencies responsible for safety and security at sea

36. **Ministerial Maritime Conference**. The purpose of the Ministerial Conference on Maritime Safety and Security in the Western Indian Ocean is to fortify the regions maritime security architecture and consolidate security partnerships.[30] The Conference evaluates progress at a political level and ensures high level commitment and strategic alignment. The Conference considers initiatives, such as a possible African Coastguard Forum and other mechanisms to enhance maritime domain awareness.[31]

37. **Wider Indian Ocean**. Regional Specialized Meteorological Centers (RSMCs) track tropical cyclones over the North Indian Ocean and categorize and issue warnings on tropical storms. Regional maritime information fusion centres (in India, Madagascar, Seychelles, and Singapore) help to combat maritime crime by coordinating information from multiple national and subregional centres on maritime security issues, illegal fishing, arms trafficking, drug smuggling, and human trafficking.

38. **Increasing cooperation**. Cooperative efforts may benefit from greater clarity on the maritime security roles and relationships among the various initiatives, ranging from the Indian Ocean Rim Association and the Indian Ocean Naval Symposium to the MASE and the CG.[32] For example, the MASE and Djibouti Code have already indicated a process for integration of relevant activities.[33] The Djibouti Code has set out operational plans on key thematic areas, including on piracy and armed robbery, illegal fishing, drug smuggling, environmental incidents, maritime safety incidents, terrorist activity, irregular migration, trafficking and contraband smuggling, hybrid maritime security threats and search and rescue.[34]

4.2 STRATEGIC ISSUES

39. **Beyond the WIO**. Extending beyond the parties to the NC, the broader Indian Ocean has several other fora, including IORA (working groups), the Indian Ocean Naval Symposium, and the Indian Ocean Forum on Maritime Crime. The actions may be somewhat fragmented because of diverse sources of support. Actions focus largely on technical issues, such as information, operational coordination, specialised training, legal and jurisdictional matters. The French territories of the Indian Ocean draw on the Maritime Basin Strategic Document to build a sustainable maritime strategy and implement the EU Marine Strategy Framework Directive. The African Peace and Security Architecture (APSA) is built around structures, objectives, principles, values, and decision-making processes relating to the prevention, management and resolution of crises and conflicts, post-conflict reconstruction and development in the continent. Understandably, the APSA appears largely focused on land-based conflicts and the potential to address tensions at sea may require greater attention.

40. **Changing maritime balance**. The 'traditional' balance of maritime power is shifting. New trade routes are being established. Competition for access to mineral and energy resources and for control of the trade corridors is increasing. Extraction of oil and gas and new corridors to interior of the African continent bring further geopolitical and security challenges. There are also several outstanding maritime boundary disputes in the WIO. Because of these pressures, the potential for

[30] For background see: Bueger, C. et al. 2019. Towards a Maritime Security Architecture for the Western Indian Ocean. A strategic review for the CGPCS. 22nd CGPCS Plenary.
[31] See Moroni Declaration for Ocean and Climate Action in Africa, June 2023.
[32] Debating the future of maritime security in the Western Indian Ocean.
[33] DCoC/ MASE letter of intent (Nov. 2023).
[34] Djibouti Code of Conduct – Jeddah Amendment Information Sharing Network: Strategy Roadmap (2021).

regional political fragmentation is increasing. Arguably, the absence of a formal dialogue to establish a WIO consensus on the changing geopolitical seascape represents a significant policy gap in the marine security architecture. Because of the complex political sensitivities, this subject is considered to lie beyond the scope of the ROGS.[35]

41. **Emerging technologies, domain awareness and cost effectiveness**. Maritime surveillance and control are generally high-cost activities, often requiring costly coastguard or naval vessels and patrol aircraft. Maritime authorities are aware that the costs of effective ocean surveillance and control can potentially be reduced through further investment in 'smart' systems, using existing and emerging technologies, and through sharing of information and coordinated port controls. Several emerging technologies are gradually bringing more affordable domain awareness and control within financial capabilities of WIO marine enforcement agencies and contribute to environmental mapping.[36] Some of these technologies and services are outlined in the following box.

Box 7. Emerging maritime control technologies

Many of the technologies are not so much new as more affordable, more efficient and interactive, and capable of being combined and targeted. There are regional economies of scale in managing these technologies and benefits in ensuring regional functionality and connectivity.

Space-based systems include:

hh) satellite imagery and its interpretation to generate maps of ocean primary productivity, predictions of fish concentration and movement of fish along thermal or oxygen barriers.

ii) VMS which uses satellite GPS and communications is used to track fishing and other vessels and is already widely used in the region.

jj) Synthetic Aperture Radar used to detect and track vessels which avoid the VMS and AIS reporting.

Shipping communications includes the mandatory Automatic Identification Systems (AIS) for some categories of vessels.

Ocean platforms include anchored and drifting buoys carrying scientific and other types of recording and sampling equipment. Acoustic (hydrophone) arrays already monitor whale migrations and submarines and could potentially be used to track shipping and fishing vessels which do not report under existing control regimes. Hydrophones are also used to detect 'dynamite fishing'.

Patrol assets include sea-going aerial and surface drones (unmanned surface vehicles or USVs) which operate either autonomously and can be remotely controlled or programmed by coast guard shore stations or from patrol vessels. The value of the global USV market size was over $2 billion in 2021.

AI. The rapid development of task-specific Artificial Intelligence (AI) is making the deployment and integration of all the above assets more efficient and cost effective at regional scale.[37]

Source: Ocean Mind, Ocean Mind enforcement.

42. **Illicit maritime and fisheries activities**. The United Nations Office on Drugs and Crime (UNDOC) addresses the range of maritime crime activities and responses.[38] Fisheries is an important part of the blue economy, and illegal fisheries activities warrant some attention. Many WIO countries implement Illegal, Unreported and Unregulated (IUU) plans of action.[39] However, these IUU plans focus largely on the catching of fish and may not always cover the series of illicit activates that are organised along the fisheries value chain (landing, processing, 'labelling', transport, distribution and marketing). Illegal fishing activities 'at sea' often rely on an illegal value chain of organised crime with activities ranging from mislabelling of products to transfer pricing, falsification of trade documents, tax avoidance and corruption of officials.[40] The broader challenge requires intelligence-led, skills-based cooperative law enforcement at domestic and international levels.[41] Fisheries crime is

[35] See: Jernberg, L. 2022. The Great Game is afloat: Africa and Indian Ocean geopolitics. ISS. Voyer, M., Schofield, C., Azmi, K., Warner, R., McIlgorm, A. & Quirk, G. (2018). Maritime security and the Blue Economy: intersections and interdependencies in the Indian Ocean. Journal of the Indian Ocean Region, 1-21. Baruah, D.M et al, 2023. Mapping the Indian Ocean Region. Carnegie Endowment for International Peace.

[36] Catapult 2011. Proteus. Environmental & marine mapping using satellite imagery & data. Case Study.

[37] State of AI for Earth Observation A concise overview from sensors to applications (AI4EO).

[38] UNODC Global Maritime Crime Programme; UNODC. Strategic Vision for Africa 2030.

[39] Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

[40] OECD, 2013. Evading the Net: Tax Crime in the Fisheries Sector.

[41] Witbooi, E., K.-D. Ali, M.A. Santosa et al. 2020. Organised Crime in the Fisheries Sector. Washington, DC: World Resources Institute.

often associated with other criminal activities including drug trafficking, and arms smuggling or illegal immigration.[42] Ports are a critical control point in breaking such value chains.

4.3 OIL SPILL PREVENTION AND PREPAREDNESS

4.3.1 Maritime spillages

43. Spillage risks range from smaller pollution incidents to larger accidents, such as the 2021 *Wakashio* oil spill off Mauritius.[43] Spills threaten biodiversity and the blue economy and can undermine marine conservation and restoration efforts. In 2021, off Sri Lanka, the *M/V X-Press Pearl* spilled about 1,680 tons of plastic "nurdles", the pelleted (~5 mm) raw material used for making plastic products.[44] The spillage raised numerous environmental, legal issues and its impacts are still under study.[45] The ROGS Task Force held a Technical Dialogue on Oil Spill Prevention and Preparedness to discuss the requirements for prevention and preparedness for response in the case of spillage in the region.[46]

4.3.2 Institutional and legal context

44. The Nairobi Convention, though its Protocol Concerning Co-operation in Combating Marine Pollution in cases of Emergency in the Eastern African Region (the 'Emergency Protocol', in force), obliges Parties to take both preventative and remedial actions, and states that:

> Article 3.1.*"The Contracting Parties shall, within their capabilities, co-operate in taking all necessary measures, both preventative and remedial, for the protection of the marine and coastal environment of the Eastern African region from marine pollution incidents."*
>
> Article 3.2. commits the Parties to preparation of *"contingency plans"* and *"development of the capability to respond to pollution incidents"*.

45. At the global level, the International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC Convention) has a pivotal role. In addition to requiring countries to establish effective national mechanisms (Article 6.1), Article 6.2. requires countries to cooperate on oil spill preparedness and response:

> *"each Party, within its capabilities either individually or through bilateral or multilateral co-operation and, as appropriate, in co-operation with the oil and shipping industries, port authorities and other relevant entities, shall establish: …"*

46. In Article 7, the OPRC, provides additional guidance on cooperation; and Article 10 advocates bilateral or multilateral agreements as a means of securing such cooperation. Annex 1 provides guidance on fair and equitable allocation of costs between parties, including giving *"due consideration to the needs of the developing countries."* The financial guidelines are triggered if one country assists another and seeks compensation for either solicited, or unsolicited emergency assistance. The issue of compensation for damage from oil spills is addressed under two other conventions, to which most WIO countries are party.[47]

47. The various conventions generally have a relatively specific mandate. Their secretariats, often assured by the International Maritime Organization (IMO), generally have limited financial and human capacity and largely rely on the efforts of individual countries to adhere to their obligations.

[42] UNODC approach to crimes in the fisheries sector.
[43] Laurette, B., et al. (2021). Remembering Mauritius's worst environmental disaster. Greenpeace International.
[44] Bourzac, K. 2023. Grappling with the biggest marine plastic spill in history *C&EN*, 2023, 101 (3), pp 24–31.
[45] The IMO's Hazardous and Noxious Substances (HNS) Convention which could potentially cover the gap in spillage compensation is not as yet in force.
[46] The TD made several presentations and background documents available via the NC web pages: Technical Dialogue Working Paper (K. Kelleher & P. Taylor). Technical Dialogue on Oil/HNS Spillage: Prevention (Kelleher, K. Ppt) ;
[47] The 1992 Civil Liability Convention, the 1992 Fund Convention and the Supplementary Fund Protocol (both in force) were developed under the auspices of the International Maritime Organization (IMO). The maximum amount payable for any one incident is 750 million SDR. All NC parties, except Somalia are party to these Conventions. Only France is party to the Supplementary Fund Protocol.

Regional cooperation is often based on consensus regional programmes which may be supported by country contributions and leverage finance or resources from international partners and industry.

4.3.3 Prevention

48. Prevention examines possible regional actions to reduce the risks of spillage and resulting damage, while preparedness considers how regional efforts can be mobilised in the event of spillage. Prevention is largely addressed through application of global conventions on shipping, notably through the application of the International Maritime Organization's (IMO) International Convention for the Prevention of Pollution from Ships (MARPOL) and its associated protocols and conventions (notably the OPRC) that address spillage of oil and 'hazardous and noxious substances' (HNS).[48] The effectiveness of these instruments depends on: the application of the MARPOL norms and guidelines; regional (WIO) and international port and flag state control of compliance with IMO rules by shipping; and the due diligence of the shipping companies and vessel operators. The OPRC applies to both ships and offshore installations, such as oil drilling rigs and oil extraction platforms. However, the OPRC provisions focus largely on preparedness for spillage, while guidance on preventative risk assessment and proactive maintenance may be less rigorous, partly because the activities of such offshore or port installations and vessels are generally addressed under national legislation.[49] In addition to the general commitment on prevention in Article 3.1, the Nairobi Convention's 'Emergency Protocol', Article 4 and Article 9(e) require exchange and dissemination of information on prevention.

49. There are several areas where regional cooperation could potentially improve prevention and reduce risks of spillage or from spillages:

a) reinforcement of port state and flag state controls over shipping that either transits the WIO or makes port calls. The Indian Ocean Memorandum of Understanding on Port State Control (1999) (IP-MOU) already facilitates cooperation on control of sub-standard shipping in the countries of the Indian Ocean rim
b) designation of highly sensitive marine areas where additional risk reduction measures could be envisaged (e.g., the Mozambique Channel)[50]
c) consideration of 'places of refuge' in the event of emergencies, as damaged vessels will not be wanted in ports
d) enhanced tracking of shipping – linked to (a) above. There appears to be an increase in 'flag-hopping' by tankers to avoid trade sanctions, so that some tankers may be actively avoiding tracking. The EU-financed, IOC-supported MASE project provides some tracking capability.

4.3.4 Preparedness and Response

50. As noted above, preparedness and response are largely addressed through the Nairobi Convention's 'Emergency Protocol', which has provided a basis for initiatives to build regional cooperation on oil spills and to secure external support for the actions required. The Protocol facilitates regional preparedness, and its provisions are 'triggered' in the event of a spill incident. A regional oil spill contingency plan (which follows IMO guidance) is currently in draft form. The original version of the plan was drafted under the WIO Marine Highway project in 2009/11 (see below) and updated through a regional workshop in 2020. The plan sets out the operational measures and procedures for emergency cooperation and coordination between countries in cases of significant marine pollution.

[48] See: IMO – Oil Pollution and Pollution Response. The key conventions include: International Convention on Oil Pollution Preparedness, Response and Co-operation(OPRC) (1990) (and the Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol) ().
[49] The 1969 Civil Liability Convention for Oil Pollution Damage (CLC) and the 1992 Civil Liability and Fund Conventions do not apply to fixed offshore installations or to oil tankers that were converted into production platforms. They do apply where there is transfer of oil from the platform to a ship. The Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matters (London Convention), 1972 and the 1996 London Protocol is applicable to platforms and other man-made structures (e.g. to discharge of contaminated drilling materials). The 2001 Bunkers Convention (ratified by 6 of the 10 NC Parties) provides compensation for fuel oil spills from non-tanker ships.
[50] IMO revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (2006).

51. There is broad regional agreement at the technical level on actions as set out in the draft plan. Given the scale of the WIO and the time required to transport spill response assets (e.g. tugs or specialised vessels and stock of chemicals required), understandably each coastal states needs an appropriate response capability. There is ongoing dialogue on how 'regional' responses and assets can most effectively be coordinated and financed. Given the national interests, it is likely that a polycentric or networked form of regional cooperation will emerge from these discussions. Ideally, the agreed regional architecture will be endorsed by the NC COP, by the RECs and other key stakeholders (e.g., IO-MOU, PMASEA) (Box 8). The possible 'gaps' in the regional arrangements may lie (i) in the 'governance' arrangements; and (ii) in resourcing and financing of activities. Both areas can potentially be addressed through the ROGS. In addition, there may also be a 'gap' in the regional arrangements for addressing spillages from or accidents involving offshore platforms.[51]

Box 8 Selected regional marine spillage stakeholders	
National public	Ministries of environment and marine transport, national oil spill / emergency response centres (via existing NC working groups on oil spills).
International	International Maritime Organisation (IMO), CLC and Funds Conventions
Regional organisations	IO-MOU, PMAESA, NC AU and RECs (through ROGS Task Force) Engaged through CRIMARIO (I & II)[52] project (now completed): IOC, EAC, IGAD and COMESA
Main regional implementing agencies	IO-MOU, IMO regional office, Port administrations
Regional Initiatives	MASE: RMIFC and RCOC; IOC, IORIS (Indian Ocean Regional Information Sharing and Incident Management Network) Operation Clean Sweep (global – not regional) helps prevent nurdle spillage (industry led)
Private sector, P&I Clubs, shipping associations	Oil and gas industry, ships agents, shipping lines and association - BIMCO[53], INTERTANKO, ITOPF[54], Protection and Indemnity Clubs (approx. 13), Ipieca[55]
Finance[56]	EU (past and ongoing/ current support to regional initiatives), insurance companies (e.g. Lloyds), major shipping companies/ tanker owners.

4.3.5 Regional projects

52. The overall goal of the Western Indian Ocean Marine Highway Development and Coastal and Marine Contamination Prevention Project was to help protect the region's coastal and marine environments and rich biodiversity from damage due to accidental spills and illegal discharges from ships, and from illegal exploitation of marine and coastal resources. The short-term objectives were:

a) to increase the safety of navigation by assessing the risks of catastrophic accidents and take action to reduce the risks and prevent accidents
b) to assist countries to undertake the technical work needed to ratify conventions and to translate their provisions into national laws and regulations
c) to build capacity in countries to assess and control pollution from shipping
d) to strengthen capacity of countries for monitoring and enforcement of regulations intended to ensure that fisheries and other coastal and marine resources are managed sustainably
e) to strengthen the capacity of countries to cooperate regionally, with relevant international and regional organizations, and with the shipping and fishing industry in managing their common marine and coastal resources, and
f) to develop financing and institutional mechanisms to sustain capacity of countries to address issues of navigation safety, to enforce laws and regulations governing the shipping and fishing industries in coordination with other countries.

53. The EU-funded MASE contributes through the Port Security Programme in collaboration with key implementing agencies, such as IMO, UNODC and Interpol. Technical support is provided

[51] There are currently no offshore oil extraction platforms currently operational in the WIO.
[52] Critical Maritime Routes in the Indian Ocean.
[53] BIMCO 'contract'.
[54] ITOPF. Oil spill preparedness and response: the role of industry.
[55] Ipieca. Oil spill preparedness and response: An introduction (2019).
[56] Combating of oil spills by funding of oil spill preparedness vs funding for compensation after the spill events . International Oil Spill Conference Proceedings (2021).

to the region's port authorities to undertake port state control inspections on board vessels to address the issue of sub-standard vessels.

4.4 SUBSEA CABLES, A VITAL STRATEGIC ASSET

54. Subsea cables carry over 95% of intercontinental internet traffic, including financial transactions and security information. As of 2018, nearly every African country was connected to the rest of the world by at least one submarine cable. Undersea cables are arguably one of the most important pieces of critical regional marine infrastructure and one of the Western Indian Ocean's governance and security lifelines.[57] Their role in maritime security, governance and geopolitics is rarely discussed at the WIO level and in Africa.

55. Between 2020 and 2025 the data-cable industry will install 440,000 km of new subsea lines. Companies such as Microsoft, Amazon, Facebook and Google are among the major owners of about 400 privately-owned subsea cables. Amazon, Google, Meta and Microsoft jointly account for about one fifth of the $12 billion in projected investments in new systems over the next four years. Increasing competition in subsea cables and their 'landfall permitting' is a geopolitical issue involving major US-backed global IT companies and their Asian equivalents. The International Cable Protection Committee is a nongovernmental organization consisting of industry and some governments represents the industry.

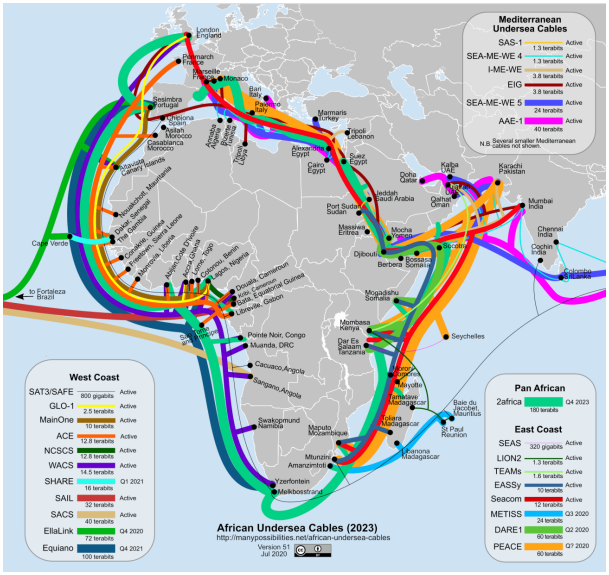


Figure 7. Map of African subsea cables and their 'owners'

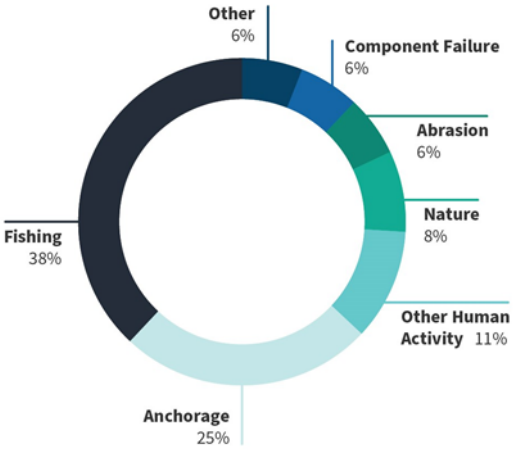


Figure 8. Causes of damage to subsea cables

56. UNCLOS Art 130 covers subsea cables. The Convention for the Protection of Submarine Telegraph Cables (Paris, 14 March 1884) applies to 'high seas' but only for the 36 signatories. All countries are understood to have rights to lay cables in the EEZ, but numerous legal issues remain unclear, including questions of liability and measures to address malicious damage.[58]

57. Subsea cables can be accidentally damaged by ships anchors or fishing activities, by natural disasters such as earthquakes and tsunamis, and by wilful damage.[59] Stakeholders affirm the need to improve the resilience of the cable network through regional awareness, coordination and information sharing across institutions and platforms, through enhanced response and repair mechanisms, and by

[57] The 14 cables include LION, MARS, METISS, SAFE, T3, 2Africa, Africa-1, DARE1, EASSy, LION2, TEAMS, SEACOM, SEAS, PEACE

[58] Int'l Law Comm'n, Report on Its Second Session, UN Doc. A/CN.4/34, at 384 (1950). Douglas Burnett et al., Submarine Cables in the Sargasso Sea: Legal and Environmental Issues in Areas Beyond National Jurisdiction, Workshop Report, Annex 7 (Jan. 16, 2015). BEREC Report.

[59] Recent maritime insecurity in the Red Sea has resulted in apparently deliberate cutting of several cables. Simultaneously, damage to cables on the Atlantic side of Africa (apparently caused by an underwater rockfall) has also caused significant disruption of Internet services. In 2022, a volcanic eruption damaged Tonga's international cable cutting Tonga's Internet connection for weeks, impeding domestic communications and humanitarian relief efforts.

improved clarity on international and corporate responsibilities..[60] The IOC has reviewed the threats and actions and called for: (i) raising awareness, (ii) designating cables as critical national infrastructure, (iii) clarifying ownership and responsibility for damage and the arrangements for timely repair. (iv) Other actions include contingency planning, surveillance and maintenance, and arranging satellite backup or other forms of IT redundancy.[61] Other advice includes, ensuring the geographic diversity of routes and spatial separation of submarine cable systems from other maritime activities; regularly update marine charts and designate submarine cable protection zones; to establish a single point of contact for permitting, repair and maintenance; and to monitor maritime threats.

4.5 INSTITUTIONAL COOPERATION ON A 'REGIONAL' ABNJ

58. The NC decided "*to invite Contracting Parties to cooperate and collaborate in ocean governance matters within existing institutional mandates and coordinate actions on biodiversity beyond national jurisdiction*" (Nairobi Convention COP10, Decision CP.10/5). Areas Beyond National Jurisdiction (ABNJ), sometimes referred to as the 'high seas', are those areas of ocean for which no one nation has sole responsibility for management. For the purposes of law of the sea the term 'Area' has a specific meaning "*the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction*" (Art. 1.1.). The Biodiversity Beyond National Jurisdiction agreement addresses governance of living resources in the ABNJ (high seas and the 'Area') but must remain consistent with other global or regional instruments (Art. 5), such as on marine mammals or fisheries (e.g., RFMO rules). Governance in or of the ABNJ goes far beyond matters of biodiversity and ecosystem connectivity. The Nairobi Convention's (NC) geographical coverage refers to the marine environment of the parties (Article 2). The scope of the WIO ROGS (working definition) is the *'jurisdictional areas of the parties to the Nairobi Convention'* and *'may extend beyond the national jurisdictional areas of the parties of the NC where the LMEs, their living aquatic resources, or the related physical processes extend beyond these limits'*.[62]

59. In the context of the ROGS, this mandate is interpreted as follows: to establish a governance regime for the 'WIO ABNJ/BBNJ' consistent with international law to help ensure the sustainable use and integrity of the ABNJ. The interests of the WIO countries in the ABNJ include shipping, seabed minerals, undersea cables (telecom), fisheries (highly migratory and deepsea/ seamount fisheries), biodiversity, critical habitats and endangered or iconic species (whales, seabirds, sea turtles, sharks/ rays, others), marine pollution, maritime security, and the physical and biological connectivity between the EEZs and the ABNJ. Future interests may include deep seabed mining.

60. **Issues**. Governance of the ABNJ falls largely outside direct coastal state jurisdiction. Rights and obligations of coastal and flag states are set out in the UNCLOS. Coastal and flag states 'govern the ABNJ' essentially through the application of rules made by international conventions (see below). There is weak compliance control outside territorial waters (UNCLOS 'freedom of the seas'), but some cost-effective compliance control is undertaken via port state controls (IO-MOU, PSMA), by 'responsible' flag states, and within the RFMO (IOTC and SIOFA) frameworks.[63] There are multiple (sometimes overlapping) decision making regimes and weak (few formally agreed means of) collaboration between the conventions at regional level. There is no consensus on a working 'definition' of the WIO ABNJ and how collaboration between all actors can be enhanced.

[60] European Parliament. 2022. In-depth analysis Security threats to undersea communications cables and infrastructure – consequences for the EU. EP/EXPO/SEDE/FWC/2019-01/LOT4/1/C/12 EN, PE 702.557 European Union, 2022. Sherman, J. Cyber Defense Across the Ocean Floor: The Geopolitics of Submarine Cable Security. Atlantic Council. EP, 2022. Security threats to undersea communications cables and infrastructure – consequences for the EU.

[61] Univ. Copenhagen & SafeSeas, 2021. Undersea cables: the Western Indian Ocean's governance and security lifeline.

[62] UNEP-WCMC (2017). Governance of areas beyond national jurisdiction for biodiversity conservation and sustainable use: Institutional arrangements and cross-sectoral cooperation in the Western Indian Ocean and the South East Pacific. Cambridge (UK): UN Environment World Conservation Monitoring Centre. 120 pp. https://www.highseasalliance.org/wp-content/uploads/2020/01/ABNJ_Institutional_Arrangement_Apr2017.pdf

[63] The Southern Indian Ocean Fisheries Agreement (SIOFA) entered into force in June 2012. Of the WIO countries only Mauritius, the Seychelles and France on behalf of its Indian Ocean Territories have ratified. Comoros is a cooperating non-Contracting Party. Kenya, Madagascar and Mozambique are signatories but have not ratified the agreement.

61. **Objectives**. The ROGS preparation process has considered ABNJ governance issues during Task Force participation in several regional fora: the WIO Science Symposium,[64] the 'Writeshop' (Zanzibar), the UNCLOS training course, and at the Marine Region's Forum. Considerable additional dialogue is required to secure consensus on regional objectives and possible regional actions. Potential ROGS ABNJ objective(s) can be (i) to ensure effective cohesion and cooperation among all authorities with a legitimate mandate to secure the interest of the WIO coastal countries, and (ii) to help WIO coastal states in formulating joint positions in conferences of the parties of the various conventions (including through the Africa Group working on the BBNJ, on the ISA Mining Code and in other conventions).

62. **Actions** proposed in the ROGS to advance the objectives are described below. :

a) facilitate or convene a series of WIO regional dialogues between representatives of global and regional conventions with a legitimate ABNJ/BBNJ mandate (e.g. (ISA, IMO, IOC/UNESCO, RFMOs, IO-MOU) to collectively coordinate their programmes of action in the WIO, including how they plan to cooperate or develop synergies in areas of overlapping interest in the WIO and underpin effective compliance controls. The NC has the convening power to group regional representatives of the key international stakeholders in the 'UN family'
b) consider establishing a permanent WIO ABNJ/BBNJ cooperation platform backed by WIO-specific MoU(s) between the international conventions or other less formal working arrangements between their secretariats. WIO regional organisations without an ABNJ/BBNJ mandate undertake a similar and complementary exercise
c) the Nairobi Convention consider an ABNJ/BBNJ protocol which reinforces Articles 1 and 2(b) of the Convention to assert or clarify that the Convention has a (lead) role in coordinating regional activities with respect to the conservation, protection and sustainable use of the ABNJ/BBNJ in accordance with international law, and preparation of joint positions in ISA meetings (i.e., in coordination with the ISA Africa Group)
d) consider other more specific or technical activities, such as research cooperation, joint oceanographic surveys (e.g., detailed bathymetric mapping), mechanisms for stewardship of genetic materials, and possible preparation of a regular 'state of the WIO ABNJ' synthesis report.

[64] Kelleher, K. and Waweru, Y, 2022. Regional Ocean Governance Deep Dive in the 'WIO ABNJ'. WIOMSA 12th Scientific Symposium.

5 BLUE ECONOMY CLUSTER

5.1 STATE OF THE BLUE ECONOMY

63. **Economic and social importance**. The annual gross marine product of the WIO (equivalent to the annual ocean GDP) is estimated to be is at least US$20.8 billion.[65] The total ocean wealth (or estimated capital value of the ocean and ocean ecosystems) of the Western Indian Ocean region is at least US$334 billion. This estimate does **not** include the value of non-market goods and assets, such as some ecosystem services or cultural values. Approximately 60 million people in the WIO live within 100km of the coast, but the precise numbers engaged in or dependent on the blue economy is not currently available. The scale of intra-WIO blue economy trade has not been estimated.

64. The WIO blue economy is subject to the pressures and trends of the broader African economy: inflation, tight monetary policies, high debt burden and high domestic interest rates.[66] There is limited connectivity between the national blue economies. However, implementation of the African Continental Free Trade Area (AfCFTA) may foster greater blue economy trade.

Table 4. WIO gross marine product and value of natural capital (2015)

WIO gross marine product/ flow of value: $20.8 billion (2015 data)					
Adjacent ocean benefits 70.2%		**Direct ocean services enabled 20.7%**		**Direct ocean output 9.1%**	
Coastal tourism	50.0%	Marine tourism	19.0%	Industrial fisheries	7.8%
Carbon sequestration	14.0%	R&D	0.8%	Small-scale fisheries	1.2%
Coastal protection	6.0%	Security and control	0.5%	Aquaculture	0.1%
Marine biotech	0.2%	Ocean survey	0.2%		
		Education and training	0.1%		
WIO asset value (wealth or capital or stocks) $333.8 billion					
Primary assets	**$ billion**	**Adjacent assets**	**$billion**		
Marine fisheries	135.1	Productive coastline	93.2		
Coral Reefs	42.7	Carbon sinks	24		
Seagrass	18.1				
Other	20.8				

Source: Obura, 2017, based on 2015 data.[67]

Box 9. Current and future ROGS priorities

Technical dialogue held	Not in current ROGS
Ports, shipping, and maritime security	Renewable ocean energy
Large scale and small-scale fisheries	Offshore oil and gas
Marine plastic pollution	Coastal protection
Marine tourism	Aquaculture
Blue carbon (no Tech. Dialogue)	Coastal mining
Deep sea minerals (no Tech. Dialogue)	

Blue economy sectors. The blue economy includes numerous sectors and activities many of which cannot be adequately addressed in this initial version of the ROGS. Selected sectors and activities were identified by the Task Force, many of which were the subject of stakeholder Technical Dialogues. The focal areas of the blue economy cluster in the ROGS are shown in Box 9, indicating those priorities for which a Technical Dialogue was held. It is expected that the other priorities will be progressively addressed during the ROGS implementation. Ideally, the Background Paper should include estimates of public and private investment by blue economy sector and theme. However, information on existing or planned private sector investment in the WIO blue economy, on the economic performance of sectors, on value of government transfers or other supports and incentives are not currently available.[68] The scope of the WIO Strategic Framework for Private Sector Engagement is largely limited to sustainable use of

[65] The estimate is based on data available in 2017. Countries included in the estimate are Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa and Tanzania. Obura, D. et al. 2017. Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future. WWF International, Gland, Switzerland. 64 pp. Reference should be made to the report for details of the methodology.
[66] IMF, 2023. Regional economic outlook. Sub-Saharan Africa. IMF, 2023. Geoeconomic Fragmentation: Sub-Saharan Africa Caught Between the Fault Lines
[67] Obura, D. et al. 2017. Reviving the Western Indian Ocean Economy: Actions for a Sustainable Future. WWF Int.
[68] WIO countries benefited from about $13 billion in development assistance in 2020. Extraction the 'blue' component from the OECD/ DAC is challenging.

natural resources. Our Blue Future (OBF) is an initiative that has been developed by the WIOGI Project (GIZ) in partnership with the Nairobi Convention and is designed to support sustainable blue economy development in the WIO, with a focus on engagement of the Private Sector. OBF currently has around 25 partners and is steadily growing, with efforts underway to engage more closely with regional governments through the structures of the Nairobi Convention.

65. **'Mega' projects.** Two types of investment dominate the blue economy: (i) oil and gas exploration and extraction; and (ii) regional hub ports and associated land corridor development. These investments are orders of magnitude larger than any others and have major influence on the national economies. The total capital investment for oil and gas exploration activities in (all) Africa reached $5.1 billion in 2022. African enterprises accounted for less than one-third of the investments. Foreign investors finance and execute most of these activities. Port and corridor (road, rail and possibly pipeline) investments are also linked to oil, gas and other extractive industries both offshore and in the interior of the continent. Despite confirmed hydrocarbon resources, the scale, financing and timescale for many of these projected investments, such as liquid natural gas (LNG) terminals, remains uncertain. A substantial part of the 'corporate' blue economy in many WIO countries is either owned by or operated by non-WIO enterprises. This includes shipping, tuna fleets, ports management, and high-end tourism.

66. **Blue equity**. Considerable inequity exists in the blue economy. Examples include the encroachment of large-scale fishing vessels into inshore fishing grounds on which small-scale fisheries (SSF) are dependent, or the alienation of public access to beaches and waterfront through hotel and property development. Marine pollution is more insidious as it is the coastal communities rather than the polluters that pay for the damage. Climate change is likely to accentuate the inequities. Many of the blue economy plans and strategies include measures to address equity with special provisions for disadvantaged coastal communities, women, youth and social safeguards and climate equity built into financing agreements. Many initiatives also recognises that additional efforts are required to ensure that social equity is embedded in development of the blue economy.[69] A global survey of over 16,000 companies, accounting for about 50% of global capitalisation indicated that only half were aware of the negative pressures their activities exert on the ocean. Only 44% took action to mitigate those impacts, but only 25% took coherent actions.[70] There are no specific ocean-related corporate reporting standards in instruments such as the Global Reporting Initiative.

5.2 BLUE ECONOMY STRATEGIES

5.2.1 Regional strategies and action plans

67. Several African and regional policy instruments, declarations and analyses provide high-level guidance. These include the Africa Blue Economy Strategy (2019), the African Integrated Maritime Strategy (AIMS 2050) , and the 2019 African Continental Free Trade Area (AfCFTA). the African Mining Vision (2009), the African Maritime Transport Charter 2010 (revised), and the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS). Additional reference materials are provided in Box 10.

Box 10. Selected resources on the African blue economy

Policies and Initiatives

Nairobi Statement of Intent on Advancing a Sustainable Blue Economy

Moroni Declaration for Ocean and Climate Action in Africa (2023)

AU-IBAR. (2019). Africa Blue Economy Strategy. Nairobi, Kenya.

Mediterranean countries use an analytical methodology to ensure alignment and coherence among compiled initiatives.[71]

Our Blue Future is a public/private/civil society alliance that fosters a diverse network of impact-oriented partnerships,

[69] High-level Panel. 2020. Towards Ocean Equity. Cisneros-Montemayor AM, et al. 2021. Enabling conditions for an equitable and sustainable blue economy. Voyer M, et al., 2018. Shades of blue: What do competing interpretations of the blue economy mean for oceans governance?

[70] Business for Ocean Sustainability - A Global Perspective.

[71] Roadmap to set the path towards the implementation of the 2021 UfM Ministerial Declaration on Sustainable Blue Economy April 2023.

Box 10. Selected resources on the African blue economy

projects and champions.

UNECA has prepared a blue economy policy handbook that sets out the linkages between the blue economy and the SDGs.

Blue Belt Initiative (Morocco leadership) is an emerging regional initiative with a focus on science and fisheries.

Blue Economy for Resilient Africa is a World Bank 'accelerator'

EU/AFR. Ocean Governance and Blue Economy: An Emerging Agenda for The Africa-Europe Partnership.

AfDB 2021. Programme for improving fisheries governance and blue economy trade corridors in SADC region

RECs

The Intergovernmental Authority on Development (IGAD) 5-year Blue Economy strategy

COMESA draft strategy[72]

The East African Community includes the great lakes and freshwater bodies in its interpretation of the blue economy. The EAC Blue Economy Strategy and Action Plan is under development.

The SADC Blue Economy strategy is also under development.

The Indian Ocean Commission (IOC) has backstopped a wide range of blue and circular economy activities, including RECOS, MASE, Hydromet, and AIODIS.

Analyses and technical guidance

UNECA, 2020. Blue Economy, Inclusive Industrialization and Economic Development in Southern Africa

UNECA, 2016. Africa's Blue Economy: A policy handbook.

Obura, D. et al, 2017. Reviving the Western Indian Ocean Economy.

WIOMSA and UN-Habitat 2021. Coastal Cities and Blue Economy in WIO sets out strategic and operational blue economy recommendations for coastal cities in the WIO region based on a series of city case studies.

Karani, P., et al. (2023). Framework for Mainstreaming Climate Change into African Blue Economy Strategies to Enhance Adaptation, Mitigation, and Resilience in Sustainable Development.

Failler P, Seisay M. Information Note on Blue Accounting in the Context of African Union Blue Economy Strategy.

Blue economy satellite account (case study Seychelles).

Kelleher, K. 2015. Building the Blue Economy in the Western Indian Ocean. 8th Conf. of Parties of Nairobi Convention

EU, IGAD. Assessment of the Blue Economy in Somalia: A Regional Project on Restoration of Degraded Ecosystems. 2020.

5.2.2 Selected national blue economy strategies and action plans

68. The global and regional policies and principles and the WIO national oceans strategies highlight the need for regional cooperation. The national plans and strategies generally set out the national ambitions, key pillars and approaches, but many lack detail on how the activities are to be financed and resourced. Because of jurisdictional overlap between ministries, or between government agencies, and because of interagency competition for scarce public funding, implementation faces the issue of determining national leadership and coordination of blue economy activities and financial resources. Some countries have established an interministerial 'committee' chaired by the prime minister, or deputy prime minister, to ensure effective cooperation. Others prefer to group ocean agencies under a dedicated oceans or blue economy ministry.

69. **Comoros**. The Comoros blue economy national policy sets out several strategic goals: (i) strengthening of national safety and security; (ii) enhancement of key sectors of BE with training and job creation for youth;[73] (iii) protection of coastal, aquatic, and marine ecosystems including waste management; (iv) adaptation of the institutional framework; and (v) reorientation of the pillars of its regional integration framework.[74] In 2023, Comoros hosted the Blue Future Ministerial Conference on Blue Economy and Climate Action in Africa. The outcome included the Moroni Declaration for Ocean and Climate Action in Africa.

70. **France (Réunion)**. France applies EU policies and practices which are beyond the scope of the ROGS. However, the marine policies and development partnership approaches have significant impact on the WIO across the entire range of blue economy activities. France's outermost regions benefit from specific measures under the common fisheries policy, including support from the European Maritime, Fisheries and Aquaculture Fund (EMFAF).[75]

[72] Hamukuaya H. DRAFT Regional Blue Economy Strategy, Governance Coordination Mechanisms Implementation Action Plan and for the Common Market for Eastern and Southern Africa (COMESA) (2022–2027). AU-IBAR.
[73] The World Bank country memorandum flags the potential of the tourist industry.
[74] Government of Comoros. Country Partnership Strategic Framework for a Blue Economy National Policy. and summary flyer.
[75] EC, 2017. Exploiter le potentiel des Régions ultrapériphériques pour une croissance bleue durable.

71. **Kenya**. Kenya's Go Blue partnership connects people, cities and the ocean through innovative land-sea planning and management for a sustainable and resilient Kenyan coast. Its focus is at county level. It targets inclusive and sustainable economic growth with employment impact, while conserving and sustainably using the coastal and marine environment and promoting effective and integrated maritime governance. Kenya's main blue economy sectors are port services, tourism and fishing and a growing investment in offshore hydrocarbons and related port infrastructure. Some estimates suggest thst the blue economy has the potential to inject up to $4.8 billion to Kenya's economy and create over 52,000 jobs in the next decade. Kenya is investing in blue economy human resources, for example, Bandari College and Maritime Academy is being developed as a centre of excellence. Kenya is the leader of the Blue Economy Action Group under the Commonwealth Blue Charter, which has completed a range of case studies on blue economy issues.

72. **Madagascar** (2022). Madagascar's Stratégie Nacional de l'Économie Bleue (2022-2033) is associated with the Plan National d'Investissement de l'Économie Bleue Malagasy (PNIEB) and a sector diagnostic. The main axes of the strategy include governance, sustainable development of natural resources, development of blue infrastructure and services, and improving resilience to the impacts of climate change. The plan calls for investments in the order of €0.9 billion in addition to regular Malagasy budget resources. The investments are largely unfunded and are the subject of discussions with development partners.

73. **Mauritius.** The blue economy accounts for about 10% of the GDP of Mauritius and an estimated 20,000 persons are employed.[76] The Oceans Economy Roadmap aims to increase this sustainable contribution. A Ministry for Blue Economy, Marine Resources, Fisheries, and Shipping has been established to coordinate ocean activities. Mauritius has a network of MPAs and is progressing an MSP. Core sectors include tourism, fisheries, seafood processing and shipping. Port Louis is seen as a regional hub for cruise tourism, fisheries and as a regional freight gateway. Mauritius has a Joint Management Agreements with Seychelles with respect to the extended jurisdiction over the Mascarene Plateau and has recently settled a maritime boundary issue with Maldives. Mauritius has expressed interest in the development of both offshore hydrocarbons and deep seabed minerals and there has been investment in ocean thermal energy conversion (OTEC).

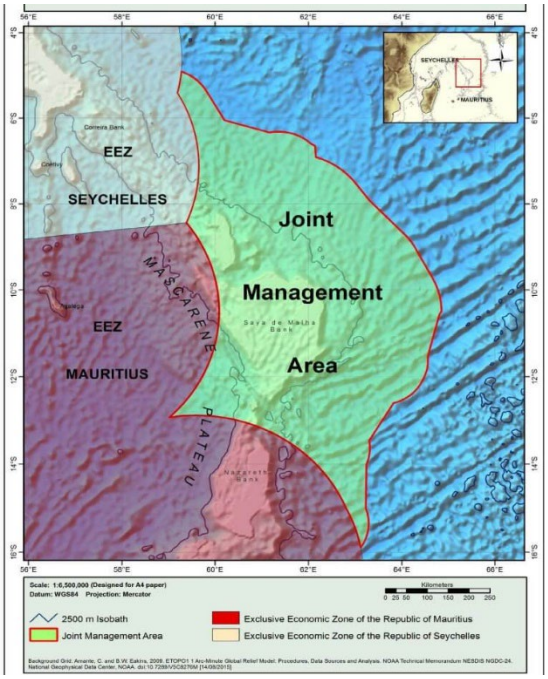


Figure 9. Mascarene Joint Management Area

74. **Mozambique**. Mozambique Policy and Strategy of the Sea (POLMAR) was developed in 2017 to serve several objectives, including the development of a blue economy.[77] The strategy indicates that the Government will establish policy directions in the following areas: (i) ports and infrastructure; (ii) maritime transport and shipping industry; (iii) fisheries and aquaculture; (iv) culture, tourism and sports; (v) minerals and hydrocarbons; and (vi) energy. Both Mozambique and Seychelles have established dedicated financing facilities to support blue economy development, PROAZUL, BIOFUND (Mozambique) and SeyCATT (Seychelles), and other WIO countries are considering similar initiatives. The offshore natural gas reserves in the Northern Mozambique Channel and Rovuma basin are among the largest in Africa. Mozambique is actively engaged in extraction of offshore hydrocarbons. Because of security issues in the area, the construction of liquid natural gas (LNG) shoreside terminals has been delayed and offshore platforms are currently used.

[76] World Bank The Ocean economy in Mauritius : making it happen, making it last (English).
[77] Government of Mozambique. The Mozambique Policy and Strategy of the Sea (POLMAR), 2017.

75. **Seychelles**. The Seychelles' Blue Economy Strategic Framework and Roadmap (2018) set out four main strategic pillars: (i) creating sustainable wealth, (ii) shared prosperity; (iii) healthy, resilient and productive oceans; and (iv) a strengthened enabling environment.[78] The framework is underpinned by seven principles: economic efficiency, sustainability, social equity, resilience, innovation, transparency and accountability and partnerships. Sustainable wealth is to be based on diversification of existing ocean-based sectors (fisheries, tourism, ports) focusing on value addition, value chains, quality rather than quantity, sustainability credentials and good practice. The framework will support new and emerging sectors, such as mariculture, renewable energy, biotechnology, digital connectivity and trade by establishing the policy setting, and supporting feasibility studies and pilot projects. Tourism, a mainstay of the economy, is guided by the Tourism Master Plan, launched in 2012, and which has been twice updated. In 2015, the Seychelles introduced a moratorium on new large (25+ rooms) hotel construction. Seychelles is advancing efforts to measure and track the blue economy.[79]

76. **South Africa**. Operation Phakisa, South Africa's Blue Economy Strategy was launched in 2014.[80] The strategy estimates the blue economy can make a contribution of up to R177 billion (about $9 billion) to the GDP by 2033 and create up to one million direct jobs. It is based on a result- driven approach to development, involving various sectors such as business, labour, academia, civil society and government. The strategy is based on the following critical areas: marine transport and manufacturing; offshore oil and gas exploration; mariculture; marine protection services and ocean governance; small harbours development; and coastal and marine tourism. It is intended that different sectors work together to develop delivery action plans, set targets, and provide on-going monitoring. It is driven by two enablers: skills and capacity building, and research, technology and innovation. The 47 initiatives identified were expected to increase the ocean economy's GDP contribution by R20 million and lead to the creation of 22,000 direct new jobs by 2019. A series of reviews and reports illustrate the achievements of Operation Phakisa and provide insights on the structural challenges Operation Phakisa faced in coordination, financing and motivation.

77. **Somalia**. With over 3,300km of coastline and an EEZ if over 1 million km^2, the Somalia blue economy has major untapped potential. In 2022, Somalia's National Economic Council prepared a blue economy assessment and in 2023 endorsed the National Blue Economy Strategy (2023-2027). In 2014 the enactment of legislation which established an EEZ, consistent with UNCLOS provisions, has been a major advance in Somali ocean governance. Interventions to address the root causes of piracy have benefited coastal communities. However, effective control of fisheries in the EEZ remains a challenge. In 2021, a maritime boundary dispute with Kenya was resolved by the ICJ.

78. **Tanzania**. The Zanzibar Blue Economy Policy (2020) focuses on fisheries (including seaweed aquaculture), trade and infrastructure, energy, tourism and governance, and also plans to use a 'blue fund' to support public and private implementation. Establishment of an autonomous 'blue authority' is planned to coordinate activities and manage the blue fund. Tanzania links the blue economy to adaptation to climate change and sustainable cities. Tanzania has negotiated a €350 million Tanzania gender and blue economy facility to provide concessional credit to the blue economy private sector, particularly to SMEs and women-owned businesses. The facility will operate through existing Tanzania financial institutions.

[78] Seychelles Blue Economy Strategic Policy Framework and Roadmap: Charting the Future (2018- 2030). See also: Malshini Senaratne. The Blue Economy: Charting a New Development Path in the Seychelles; _Barbe, C. (2018). The Seychelles Blue Economy. A Pathway for Prosperity. Clifton Hill.
[79] UNECA, 2020. Comparative analysis of the Blue Economy Impacts and Strategies in Seychelles and The Bahamas Using Blue Economy Satellite Accounts. UNECA. Socio-Economic Assessment of the Blue Economy in Seychelles: Preliminary Analytical Report-April 2021.
[80] Government of South Africa. Unlocking The Economic Potential of South Africa's Oceans.

5.3 PORTS AND SHIPPING

5.3.1 Policy and strategic context

79. **Legal framework**. UNCLOS sets out the basic framework for maritime trade and IMO-administered agreements provide the technical framework for interpretation of the UNCLOS. These instruments are complemented by a complex of conventions and agreements on shipping which frame the role of the private sector. These include agreements on oil spillage, insurance, maritime accidents, on port state measures. Shipping is also underpinned by admiralty law for the enforcement of commercial shipping agreements and for liability for carriage of freight.

80. **Regional policies**. At a regional level, the 2050 Africa's Integrated Maritime Strategy (2050 AIM-Strategy), the Revised African Maritime Transport Charter, and the African Charter on Maritime Security, Safety and Development in Africa (the Lomé Charter) provide additional guidance. Countries and regional port authorities actively cooperate through the Port Management Association of Eastern & Southern Africa (PMAESA) and the IO-MOU.[81] Key challenges identified by stakeholders include:

a) low intra-African trade volumes of general cargo or bulk traffic
b) inadequate port infrastructure and insufficient number of qualified seafarers and captains
c) unattractive investment climate with political risks or legal uncertainties and inefficient banking
d) unproductive competition between ports and corridors.

81. **Strategic assets**. Ports are core strategic assets for the region, including for the landlocked countries.[82] Shipping is a crucial part of the WIOI island economies. Transport expenditure as percentage of the value of imports reaches 20% in Comoros and 18% in Seychelles, compared to a global average of 10% (in 2004-2013). For East African landlocked countries, transport costs can be as high as 75% of the value of exports. There is growing awareness of the strategic and political issues involved in ports and shipping. For example, a recent closure of the Suez Canal added about 15 days (+40%) to the Asia/ Europe shipping route and significantly increased traffic through the Mozambique Channel. Competition between the Asian and traditional shipping operators is increasing. The strategic linkages between the ports and transport corridors and extraction of hydrocarbon and mineral resources are becoming more evident and quantifiable. The role of port development finance and port management concessions is the subject of increased scrutiny. While many of these issues lie outside the scope of the ROGS, increasing the regional awareness of the balance of strategic interests is essential for effective decision making.

82. **Ownership and control**. Although the ports may be largely publicly owned and operated by parastatal authorities, the shipping industry is largely controlled by non-WIO and non-African actors. These include ship owners, freight companies, the insurance industry and outsourced port management enterprises. Africa's share of the world merchant fleet value by country of beneficial ownership is 1.26% and 0.05% for East Africa. Over half the global tonnage is owned by Asian countries and over 90% of new shipbuilding took place in East Asia in 2022. Liberia is the world's largest flag state of registration in terms of shipping tonnage (378.3 million dead weight tons) and these vessels represent about 12% of global fleet value. The Liberia fleet tonnage grew by 12.7% between 2022 and 2023. Liberia-flagged vessels are responsible for the highest volume of carbon dioxide emissions from ships. Nigeria is the largest ship-owning country in Africa with 291 vessels and a 0.56% share of the world fleet value.

5.3.2 Regional stakeholders

83. Given the number and diversity of regional stakeholders, a structured and inter-related suite of dialogues may be useful to address the wide range of interconnected challenges. Selected

[81] Indian Ocean Memorandum of Understanding (IOMOU) on port State control (PSC)
[82] A recent agreement Ethiopia and Somaliland is proving contentious.

stakeholders are grouped in Box 11. There is a strong trade rationale for increased investment in maritime transport.[83] However, ports and shipping are only part of the transport value chain which includes the coastal and inland transport corridors.[84]

Box 11. Selected WIO port and shipping stakeholders

Port management
Port and terminal authorities
Port Management Association of Eastern and Southern Africa
Port management concession companies
Port police and security

Environment
National environmental agencies
Waste management service providers
Oil spill funds

Shipping
Shipping companies/ Cruise lines/ bulk carriers
Shippers Council of Eastern Africa
Ships agents & Stevedores organisations
Insurance agents
IMO and IO-MOU
Fishing and port fish processing companies

Freight & Corridors
Corridor Authorities, e.g., Beira, Mombasa, CCTTFA (Uganda)
Road and rail hauliers
Importers/ Exporters

Finance and Capacity
National treasuries/ customs
International banks
SSATP[85]

Policy coordination
RECs and IOC
UNECA, IORA
Women in the Maritime Sector in East and Southern Africa (WOMESA)
International Association of Ports & Harbours (IAPH)

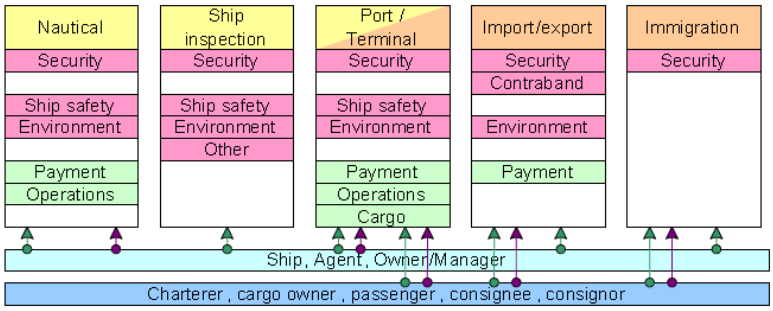


Figure 10. Stakeholders engaged in the clearance of ships.

5.3.3 Improving WIO port performance

84. **Performance**. In East Africa, only Djibouti ranks in the global top 10 container ports in terms of efficiency (Table 5).[86] Durban is the largest SSA container port. Durban handles about 4,500 vessels yearly, over 8,3000 containers per month, and has an annual trade flow of over 45 million tons worth over $45 billion.[87] The low ranking of the WIO ports underlines the need for improved port efficiency and possible opportunities for regional cooperation. In addition, the expansion of COMESA and the implementation of the AfCFTA (Box 12) will result in increasing demand for port services. [88]

Table 5. WIO container ports performance rank

Africa Rank	Global Rank	Container port	Country
1.	26th	Djibouti port	Djibouti
2.	144th	Berbera	Somaliland
7.	221st	Mogadisho	Somalia
8.	223rd	Beira	Mozambique
10.	227th	Toamasina	Madagascar
	248	Maputo	Mozambique
	249	P. Victoria	Seychelles
	267	Mayotte	
	291	P. Elizabeth	South Africa
	298	P. Reunion	France
	312	Dar es Salaam	Tanzania
	326	Mombasa	Kenya
	327	P. Louis	Mauritius
	341	Durban	South Africa
	344	Cape Town	South Africa
Source: Container Port Performance Index (CPPI)			

85. The EAC has made significant progress in harmonised transport/ transit for the Mombasa and Dar es Salaam corridors which link landlocked countries to the ports. For example, the time to move cargo from Mombasa to Kampala has been reduced from 18 days to 3 days and the cost of transport from Mombasa to Nairobi has been reduced

[83] W. Matekenya & R. Ncwadi. The impact of maritime transport financing on total trade in South Africa. Journal of Shipping and Trade volume 7, Article number: 5 (2022).
[84] E.g., see: Shipping Fertilizer Logistics in East Africa, 2022.
[85] SSATP, 2022. Annual Report. Building the Foundation for Decarbonizing Africa's Transport Sector.
[86] The World Bank, 2023. "The Container Port Performance Index 2022: A Comparable Assessment of Performance based on Vessel Time in Port (Fine)." World Bank, Washington, DC.
[87] GBS, East African Ports 2022.
[88] For strategic analysis see: AfCFTA (2023): Overview and Issues for Congress

by 56%. However, the relatively low performance of most of the major WIO ports suggests congestion, lack of physical port capacity (or of the associated road/ rail connectivity), deficiencies in the physical handling of cargo and the associated documentation and cargo clearance.[89] In some cases, the electronic cargo tracking systems (such as the RECTS) used may not be fully compatible across the region's cargo network.

Box 12. Key elements of the African Continental Free Trade Area agreement

The AfCTA objectives are to:

- increase **trade** among African countries (currently 15-18%).
- stimulate development of regional **value chains**, e.g., manufacturing and agro-processing.
- strengthen the capacities of African **companies** to access and supply world markets.
- strengthen African's economic and commercial **diplomacy**.

The AFCFTA provides for:

- **Rules of Origin**: Common rules under which a product or service can be traded duty free across the region.
- **Tariff** concessions: 90% tariff liberalisation will take place over 10 years with a 5-year transition period. An additional 7% reduction for "liberalised products" will also apply.
- Online **monitoring**, reporting and elimination of non-tariff barriers, whether physical, like poor infrastructure, or administrative such as the behaviour of customs officials.
- Pan-African **payment and settlement** system: To facilitate payments on time and in full, by ensuring that payments are made in local currency and at the end of the year including net settlements in foreign exchange.
- African Trade **Observatory:** A trade information portal to address hindrances to trade in Africa due to lack of information about opportunities, trade statistics as well as information about exporters and importers in countries.

86. The relatively weak performance of many of the major ports and the projections of the increase in demand for shipping argue strongly for investment in port infrastructure and services. Studies indicate that the weak performance of ports is a development bottleneck. While the requirements vary by port, in general they include:

a) expansion of the numbers and size of berths in main ports and further development of bulk terminals (dry and liquid goods) and terminals for appropriately sized cruise vessels
b) improved landside access (road and rail and warehousing) is of equal importance in some corridors
c) increased port efficiency, given that many of the ports are less than half as productive as similar ports across the world
d) development of new ports with associated special economic zones and the transfer of major port operations from the centre of older cities to facilitate and modernise access
e) adoption of digital international and regional standards for freight documentation to facilitate multimodal freight transport, reduce administrative costs and delays

5.3.4 Development of green ports

87. The rationale for green ports is to balance the social, economic and environmental costs and benefit from ports and to reduce the environmental footprint of shipping. In the interests of making exports competitive and reducing the costs of import, ports need to keep user charges competitive while also taking due account of worker wellbeing and safety and addressing a wide range of environmental challenges.[90] In practice, WIO green port plans may have to prioritise green investments which improve port performance. The challenges to WIO sustainable ports include:

a) ensuring efficient and cost-effective operations
b) ensuring the safety of the port and shipboard workforce, including provision of effective fire and emergency services
c) reduction of noise and GHG emissions from shipping and port operations[91]
d) sourcing of reliable renewable energy for port operations and ships in port

[89] Mombasa benefits as Dar port deals with congestion (December 2023).
[90] Walker, T. R. et al. (2019). Environmental effects of marine transportation.
[91] Alamoush, A.S. et al. 2022. Port greenhouse gas emission reduction: Port and public authorities' implementation schemes. Le verdissement des ports dans les Etats insulaires d'Afrique et de l'océan Indien.

e) waste management including garbage disposal, disposal of waste oil (possibly incinerated for energy production), management of sewage, ballast water, cooling water and waste water
f) for 'historical' ports, the impact on the city (traffic, noise, air quality)
g) habitat loss in many WIO ports (e.g., coral reefs, mangroves or seagrasses, (Figure 11)).
h) the impacts of port construction and maintenance (e.g., dredging)
i) inclusion of climate impacts, such as sea-level rise, in plans
j) finance and human resources.

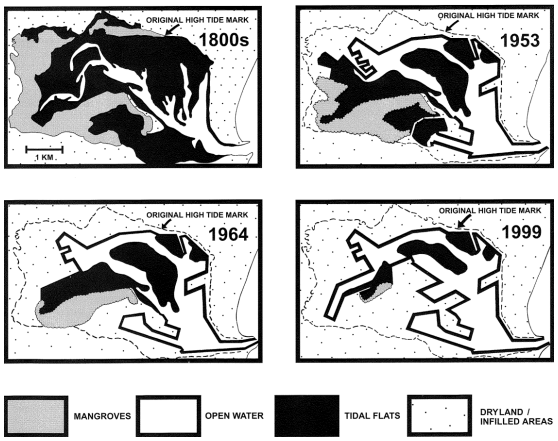


Figure 11. Habitat losses in Durban Bay
(Weerts et al. citing Allan et al. 1999)

88. **Green performance.** Investment in improved port performance is fundamental to justifying and financing green investments. The experiences of other ports offer useful lessons.[92] The NC has developed a green port toolkit which focuses largely on the environmental dimensions.[93] Port authorities may seek environmental certification through systems such as ISO 14001.

89. **Emissions from ports and shipping**. Shipping accounts for 2%–3% of global GHGs emissions and additional air pollution. The region may consider the development of an agreement to submit a joint and coordinated proposal to the International Maritime Organization (IMO) for the designation of WIO, or parts thereof, as an Emission Control Area under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL). The provision of stable and reliable electric power, preferably from renewable sources is a common challenge. In a move towards being a green port, Mombasa has installed electric cranes powered with renewable energy and the Kenya Ports Authority has a Corporate Social Investment programme that targets local communities. The Mauritius Ports Authority has commissioned a feasibility study to identify the best approach for reducing emissions from cruise ships, including possible use of solar PV and OTEC. A port carbon footprint estimate may be restricted to the physical boundary of the port, or it may include part of the associated freight network and other port-related services, such as waste disposal and ships emissions in port.

90. **Regional Maritime Single Window** (MSW). In 2022, the IMO's Facilitation Committee amended the Facilitation (FAL) Convention making the maritime single window for data exchange mandatory in ports around the world. This digitalisation in shipping entered into force on 1 January 2024. The MSW makes shipping more efficient through harmonised digital freight documentation, clearance and handling and enabling more integrated regional multimodal freight arrangements.[94] The IOC in coordination with PMAESA and COMESA has promoted a regional MSW to harmonise the national MSWs of the WIO countries.[95]

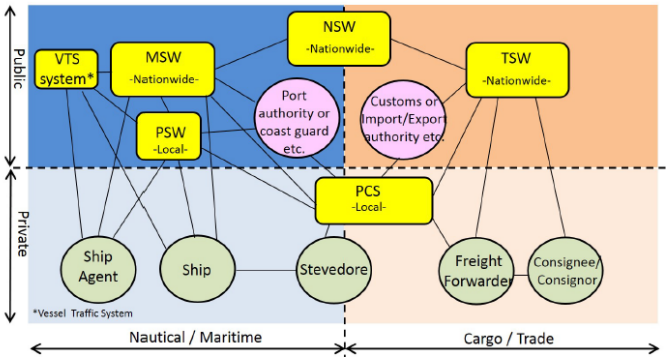


Figure 12. Single window architecture

[92] ECDPM 2023. Navigating green economy and development objectives: The political economy of greening transport in East Africa. Briefing Note No. 159, 2023.
[93] NC-COP Decision CP.9/13. Enhancing cooperation, collaboration and support with Partners (9) requests "*the secretariat, in collaboration with the International Maritime Organization, the Port Management Association of Eastern and Southern Africa and other partners, to undertake a baseline study and scenario analysis, and develop a toolkit for green port development and expansion in the Western Indian Ocean region*".
[94] UNECE. Terminology for Single Window And other ePlatforms.
[95] Open Plan Consulting. 2022. Legal framework for Operationalization of the Regional Maritime Single Window for the SWIO Countries.

91. **Admiralty law**. The Hamburg Rules have been largely superseded by the Hague-Visby Rules to which most WIO countries are party. (Comoros and South Africa are not). The Hamburg Rules are being increasingly adopted, but only France and Madagascar have ratified the convention (not in force).[96] The convention establishes a comprehensive, uniform legal regime governing the rights and obligations of shippers, carriers and consignees under a contract for door-to-door shipments that involve international sea transport. The various 'rules' regimes have implications for legal alignment of the maritime single windows in the event of freight disputes.

Box 13. Additional information sources on sustainable development of ports and shipping

- World Ports Sustainability Program (WPSP) Charter
- NC and CSIR.: Green Ports in the WIO Region and the Green Ports Toolkit: Regional WIO Applications.
- PMAESA. An Overview of Regional and International Shipping, Connectivity, and Unlocking Financing in the WIO: Challenges and Opportunities.
- Africa Maritime Cabotage & Blue Economy Conference (2023)
- Initial IMO Strategy on reduction of GHG emissions from ships
- World Ports Climate Initiative (WPCI). Carbon footprinting for ports. Guidance Document.
- ISO 14046-1, covering the estimation and documenting of GHG emissions.
- EU Ports European Economic Interest Group Guidance for Greenhouse Gas Emission Footprinting for Container Terminals December 2017
- Guidelines for setting up a maritime single window (FAL.5/Circ.42/Rev.3) The IMO FAL convention is the anchor framework on creation of single windows in the maritime sector. It mandates ships and ports to exchange maritime traffic data electronically. See also: IOC Enhancing Maritime Connectivity Project.
- SSATP, 2017. Container Terminals Concession Guidelines, World Bank, June 2017
- SSATP 2013. Transport Governance Indicators in Sub-Saharan Africa. WP95. World Bank
- ECDPM, 2023. Navigating green economy and development objectives: Opportunities and risks for African countries. The centre for Africa-Europe relations.
- C40 Cities is the Global Ports Forum, see also: Ports Environmental Network- Africa
- Towards Sustainable Port Development in the Western Indian Ocean Situation Assessment February 2023
- Green Ports Forum which is supported by green funds, development partners, eco-business and others and brings the idea of intercontinental green shipping corridor in the Pacific.
- WPSP. Onshore Power Supply
- IO-MOU annual report.
- Logistics innovation for Trade (LIFT) project targets improved performance by private sector transporters
- Öberg M., et al. (2016), Governance of major transport corridors involving stakeholders. Transportation Research Procedia, vol. 14
- Humphreys, M. et al. 2019. Port Development and Competition in East and Southern Africa: World Bank

92. Financial constraints and operational requirements may constrain transformative investments in green ports and the multiplicity of port actors may make effective implementation difficult. However, WIO ports can progressively improve enforcement of regulatory measures (such as IMO rules on waste and emissions), undertake environmental audits and focus on hotspots which can contribute to both port performance and green initiatives. As noted above, Kenya Ports Authority (KPA) has invested in energy-efficient mobile port cranes, the development of a waste management plant, and the installation of solar panels. Mauritius Ports Authority has also taken steps to reduce GHG emissions. Moroni port is to be expanded and modernised with AfDB assistance and use of climate adaptation funding. Regional stakeholders have suggested several approaches to emissions reduction:

a) Corridors. creation of end-to-end green shipping corridors including for intra-African trade. The corridors can be linked to emerging clean(er) fuels export hubs, such as those which can provide LNG[97]
b) LC40 Cities. Many of the region's 'historical' ports are in the centre of cities. The environmental policies of these cities have a bearing on the greening of ports. Under the C40 Cities, the Global Ports Forum, port cities are taking collective action to decarbonise

[96] Rotterdam Rules. United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea. Patwari, S. 2014. Rotterdam and Hague-Visby Rules -- A Comparative Analysis.
[97] AU, 2020. Strategic Note. The Integrated Corridor Approach. A Holistic Infrastructure Planning Framework.

c) Networks.[98] Strengthening port management associations, such as PMAESA, the Association of African Maritime Administrations, networks of shipping agents and corridor agencies, and reinforcing the regional platforms for improved performance and greening of ports
d) a planned Africa Green Ports Forum organised through the AU transport ministers of more than 30 counties is expected to contribute to climate resilient ports in Africa by establishing collaborative framework between the port stakeholders, use of similar UNCTAD initiatives, and other forums
e) use of SSATP, an international partnership to facilitate policy development and related capacity building in the transport sector in Africa (mainly focused on land transport)

93. **Reviewing the scope of regional cooperation**. During the implementation of the ROGS, some further reflection could be directed to the scope and prioritisation of this cooperation, including:[99]

a) prioritisation of the regional actions (as opposed to similar national actions) and assessment of their cost effectiveness
b) a unified interface with the global shipping companies[100]
c) distinguishing unproductive competition between regional shipping hubs and freight corridors
d) coordinated introduction of green port activities to avoid possible cost increases undermining port competitive advantages
e) equity in relation to freight corridors
f) consideration of a green port regional financing window (see Regional Blue Portfolio, section 8.4.2).

5.4 SUSTAINABLE FISHERIES

94. The ROGS focuses primarily on enhanced cooperation between the responsible regional institutions, as the regional fisheries governance challenges revolve around international cooperation. Sustainable fisheries links to many other clusters and ROGS priorities (Figure 13). The priority areas include:

a) Development of a common regional position on the management of the 'international fisheries. These are the fisheries for tuna and highly migratory species (HMS), managed by the Indian Ocean Tuna Commission (IOTC); and the high seas fisheries for fish, molluscs, crustaceans and other sedentary species, which are managed under the Southern Indian Ocean Fisheries Agreement (SIOFA)

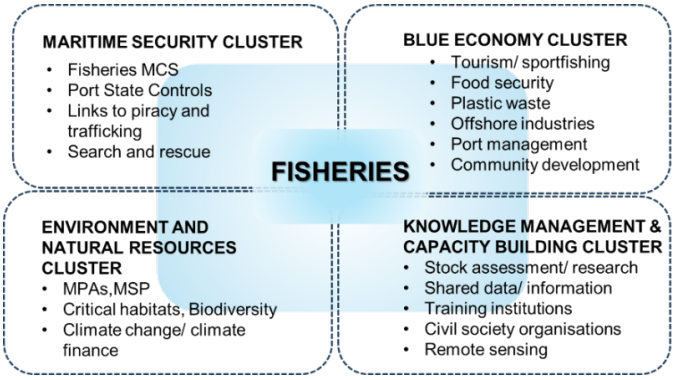


Figure 13. Fisheries has linkages to all four ROGS clusters

b) monitoring and enforcement of international fisheries management measures at sea and in ports
c) cooperation and alignment on trade in fish products[101]
d) management of transboundary stocks or fisheries within contiguous jurisdictions
e) sharing of lessons and best practices in small scale and community fisheries and potential regional project financing

[98] Others include: the African Ship Owners Association (ASA), the Maritime Business Chamber (MBC), and Women in the Maritime sector in Eastern and Southern Africa (WOMESA),
[99] Transport Governance: theoretical and policy perspectives.
[100] E.g., Ocean Disclosure Initiative. Maritime Transportation Industry Review
[101] Mailu, S, et al. 2015. Tuna Fisheries within the West Indian Ocean: Is there a Role for COMESA?

f) addressing the impact of climate change on fisheries (this is addressed under the 'environment' cluster, section 6.3.5)
g) knowledge management and capacity building, which is addressed under a separate cluster (section 7)

95. A wide range of environmental issues impact on fisheries. As noted above, the multiple linkages between fisheries and the other clusters and priorities are illustrated in Figure 13. Selected issues are addressed through the 'environment' and 'knowledge' clusters and in relation to financing the ROGS.[102] These challenges include ecosystem management, development of MPAs and MSP, responses to climate change, such as blue carbon and GHG emissions, payment for ecosystem services. and building fisheries science capacity. Regional dimensions of fisheries enforcement and compliance control is addressed under the maritime security cluster.

5.4.1 Regional fisheries policies and institutions

96. At the AU level, the Policy Framework and Reform Strategy for Fisheries and Aquaculture (PFRS) is a key fisheries policy instrument. It provides general guidance and calls for close collaboration between the regional fisheries bodies (RFBs). The PFRS was adopted by the AU summit in 2014 following endorsement by the African Ministers for Fisheries and Aquaculture (CAMFA). The PFRS is consistent with the overarching AU policy on agriculture, the Comprehensive Africa Agriculture Development Programme (CAADP). However, fisheries has limited visibility in the CAADP process, hence the need to revisit the CAADP plans at national and regional levels, including in the context of climate change.[103] The Africa Platform of African Regional Fisheries, Aquaculture and Aquatic Systems (APRIFAAS) was established in 2015 as part of the African Mechanism for Fisheries Reform (AFRM). APRIFAAS' main missions are: (i) to coordinate and facilitate the systematic exchange of information between regional fisheries institutions; (ii) to improve dialogue between stakeholders with a harmonised work programme; (iii) to strengthen the capacity of the African continent to speak with one voice in international fora and in dialogues with partners. It also monitors implementation of the harmonized work programme which is supported by the EU-financed FishGov project which is administered by AU-IBAR (CAADP implementing agency). Administratively, the blue economy is also placed under AU-IBAR. SADC has had a Protocol on Fisheries since 2001 and the EAC Fisheries and Aquaculture Policy dates from 2018. IGAD developed a five-year fishery and aquaculture strategy in 2016.

97. Regional fisheries governance presents a complex suite of inter-governmental and private sector arrangements (Table 6). All WIO countries are party to the main RFMOs, the Indian Ocean Tuna Commission (IOTC) and the Southern Indian Ocean Fisheries Agreement (SIOFA). WIO countries are also party to the South Western Indian Ocean Fisheries Commission (SWIOFC), which does not have a fisheries management mandate. Its role is advisory in support of regional fisheries cooperation and as such, it has a leading role in regional fisheries coordination within the ROGS.

98. The ROGS Technical Dialogue on Fisheries provided useful stakeholder input on the actual and potential future roles of the existing regional organisations and reaffirmed numerous perceptions:

a) **SWIOFC** has the lead role in regional coordination on fisheries and is already linking its agenda to other ROGS clusters, including through a joint project with the NC. SWIOFC may have a strategic advantage in the management of regional projects, but is likely to require strengthened financial management capacity[104]

[102] Planet tracker. 2020. Can blue bonds finance a fish stock recovery? Ocean Recovery Briefing Paper August 2020.
[103] Karani, P. et al. 2023. Framework for Mainstreaming Climate Change into African Blue Economy Strategies to Enhance Adaptation, Mitigation, and Resilience in Sustainable Development. September 2023American Journal of Climate Change 12(No. 3):1-26
[104] FAO. 2023. Report of the Twelfth session of the Southwest Indian Ocean Fisheries Commission.

Table 6. Selected regional organisations and initiatives related to fisheries (indicative)

Type	Intergovernmental	Includes non-WIO parties	Private sector associations	NGOs
Fisheries Management (RFMOs)	IOTC, SIOFA,[105] CCAMLR, CCSBT	yes	IOTOA (tuna)	NGOs are observers or have an advocacy role, ISSF
Cooperation	SWIOFC AU-IBAR FAO	No African only Yes	SIOTI (tuna), FPAOI (small-scale), Distant water assoc. (France, Spain, other)	Generally linked to project implementation. SWIOTUNA
Targeted	SADC-MCS RECs/ IOC IORA WIOTO (convention) (not in force)	Contact Group on Illegal Maritime Activities, WTO (trade), IOC-PRSP (surveillance) Yes (S.Lanka, Maldives)	Seafood Hub (Mauritius) Plastics Associations PMAESA (port state controls)	Fisheries Transparency Initiative, Marine Stewardship Council, Traffic (e.g., shark, beche)
Conservation	Nairobi Convention CBD, CITES, IWC and others	Yes (focus is mainly on bycatch and deepsea habitats)		IUCN, WWF, WCS others, Traffic, others
Initiatives/ projects	€COFISH (EU), SWIOFish (WB), SmartFish (closed) MASE (EU/IOC), Japan (CR fisheries), FAO, Norway/ Nansen, AIODIS (IOC)	IOTC[106]	Certification (snappers, other)	North Mozambique Channel Initiative, Great Blue Wall Initiative, Our Blue Future
	MTC[107] Framework Agreement(?)	SWIOFC only (WB and WWF support)	Not directly	
	SADC-MCS center	no	no	Stop Illegal Fishing
		BBI (Morocco led) BE4RAF (WB)	na	SANSAFA
Commercial	access agreements, EU SFPAs		Tuna fishing companies and processors	Industry associations (STA), ISSF, SWIOTUNA

b) **AU-IBAR** can help ensure coherence of WIO policies with AU or continental policies and programmes and help ensure that WIO positions are adequately reflected in AU actions. AU-IBAR may also have a useful role in managing projects in its area of technical competence, such as in relation to policy reforms, trade in fisheries products, or linkages between the blue economy and environmental sustainability[108]

c) **The Indian Ocean Commission** has a proven record in managing regional fisheries projects, (some of which have covered more than 20 countries and multiple RECs) and has a proven and cost-effective financial management capacity. Its procurement procedures meet EU, World Bank, AFD and other partner requirements. The IOC performs a key role in regional cooperation among the island countries. Broader engagement with the continental WIO countries is welcomed, as illustrated by the regional projects, but it is generally conditional on supplementary financing and resourcing

d) **WIOMSA.** There was a high level of consensus that WIOMSA could take a more prominent role in fisheries science, potentially as a peer review mechanism, as a focus for stock assessment, in relation to social and economic issues in small-scale fisheries, and as a manager of regional fisheries science projects or initiatives

e) **Civil society engagement.** Core issues include the means of engagement at community level, strengthened voice and capacity to engage in protracted dialogues on financing, tenure and access, and environmental issues and MSP.[109]

[105] SIOFA Secretariat (2022). Overview of SIOFA Fisheries 2022. Southern Indian Ocean Fisheries Agreement (SIOFA).
[106] Options Paper for Strengthening the IOTC Vessel Monitoring System. February 2019
[107] Guidelines for Minimum Terms and Conditions (MTC) for Foreign Fisheries Access in the Southwest Indian Ocean Fisheries Commission (SWIOFC) Region.
[108] E.g., African Fisheries Reform Mechanism (AFRM)
[109] There are numerous national organisations, for example: Mozambican Association of Industrial Shrimp Fisheries (AMAPIC), South African United Fishing Front, Mauritius Fishermen Cooperative Federation Ltd and many others. AU-IBAR has established a Southern African Regional Platform for Non-State Actors in Fisheries and Aquaculture (SANSAFA) linked to the EARFISH platform.

5.4.2 State of the fisheries

99. Some 44% of coastal fish stocks are overexploited (sea cucumber and some shark species are severely depleted) and two key Indian Ocean tuna stocks (yellowfin and bigeye) are considered overexploited.[111] Consequently, the flow of benefits from these fisheries comes at the cost of capital depletion (fish stock reduction) so that increases in production or the value of catch does not necessarily reflect sustainable benefits. In addition, as fish become scarcer, the cost of catching tends to increase, although some of these costs may be offset by higher market prices and advanced technologies. The forgone economic rent (potential annual economic loss attributable to overfishing) for the WIO fisheries has been estimated at $224 million/ year.[112]

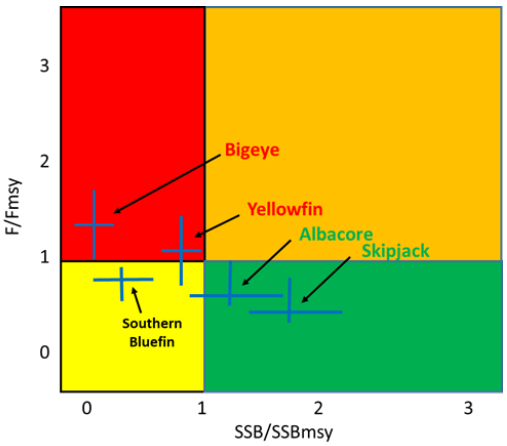


Figure 14. Indicative status of Indian Ocean tuna stocks
(Adapted from IOTC)[110]

100. The fish stock assessments are undertaken or compiled by SWIOFC, IOTC and SIOFA.[113] IOTC assessments indicate that the exploitation level of yellowfin and bigeye, two important commercial species, is unsustainable. Out of 110 coastal fish stocks identified by WIO countries in 2019, almost 80% were assessed. Of these, 56% were considered 'non-overexploited' compared to a global average of 67%. Sea-cucumbers, lobster and other high-value species are among those species most overexploited.

101. It may be useful for the ROGS to review the design, implementation modalities, outcomes and impacts of fisheries projects and programmes which have been undertaken during the recent decades. The interventions have often focused on similar themes and target areas but with different approaches, goals and language, thematic agendas and financing. Although the rationale for different interventions may have changed (poverty reduction, food security, climate change), the basic social, economic and environmental goals have remained largely unchanged. Nevertheless, many of the fisheries resources are overexploited, or fully exploited and many coastal communities dependent on fisheries continue to be marginalised, suggesting that project outcomes may have had limited sustainability.[114]

5.4.3 Large-scale fisheries

102. The large-scale fisheries fall into four broad categories: (i) the tuna purse seine and longline fisheries; (ii) the deepwater fisheries mainly on seamounts; (iii) the shrimp trawl fisheries; and (iv) the finfish industrial and semi-industrial (mainly trawl and line) fisheries. There is a strong case for regional cooperation on the tuna/HMS and ABNJ/ deepsea fisheries. The shrimp and coastal finfish fisheries are largely discrete national fisheries where there is less room for regional cooperation. However, they face common challenges in management, conflict with small-scale fisheries and market access, suggesting ample scope for exchange of experiences and lessons at regional level. Other fisheries that fit into this general category include the relatively small deepwater shrimp trawl and crab fisheries.

[110] Four separate Kobe plots have been transposed to a single figure.
[111] SDG indicator 14.4.1 Proportion of fish stocks within biologically sustainable levels. WIO assessment: stock status 'not on target' (32% of stocks unsustainable); trend - deteriorating. (Source FAO). Aee also: Zeller, d. et al. Trends in Indian Ocean marine fisheries since 1950: synthesis of reconstructed catch and effort data.
[112] Kelleher, K, 2015. Building the Blue Economy in the WIO Region. Blue Economy Workshop, Nairobi Convention COP 8, 22-24 June 2015 Mahe. Estimate based on pro-rata extrapolation from The Sunken Billions, SWIOFC and IOTC data.
[113] SIOFA Secretariat (2023). Overview of SIOFA Fisheries 2023.
[114] The MedFish4Ever Ministerial Declaration (2017), adopted by most Union for the Mediterranean countries, offers an example of a regional fisheries initiative. It provides a comprehensive ten-year regional strategy focused on the socio-economic dimensions of fisheries management and sustainability of resources, based on best scientific advice.

103. **Tuna fisheries**.[115] The tuna fisheries are managed by the IOTC which includes some 28 country parties. The distribution of the target stocks extends well beyond the 'WIO region' so that, even as a group, the WIO countries have limited, though important, influence over management decisions. WIO countries may also have different interests, for example in securing raw material for processing and provision of services to the fleets (fuel, repair and maintenance, crew exchange, transhipment).[116]

104. **Tuna value-added**. Most value-added processing (canning, loining) takes place in Seychelles (Port Victoria), Mauritius (Port Louis) and Madagascar (Diego Suarez). Historically, loining also took place in Mombasa and small canneries existed in Somalia. Tuna processing is an important source of employment although some of the labour force is from outside the WIO region. Some processing facilities are owned by non-WIO enterprises, several of which have a global presence in tuna production and marketing. Exports of canned products are predominantly to the EU, where products benefit from tariff preferences under EPAs. The erosion of these preferences is a matter of common concern as some of the tuna harvested in the WIO is processed in Asia and elsewhere and the products may compete with WIO production on European supermarket shelves. WIO processing costs tend to exceed Asian costs because of the need to import many of the raw materials (e.g., cans, oil, energy) and some processed raw material (loins) is exported for canning in other countries, either for niche markets or where the costs of canning is lower than in WIO countries.

105. **Tuna fishing operations**. Most (over 80%) of the WIO region's large-scale tuna fishing is done by non-WIO-flag vessels (mean value 2007-2016). However, many coastal fishing communities are dependent on the tuna resources and associated migratory species, such as Spanish mackerel or bonito. The quantities caught by the small-scale fisheries are uncertain. The purse seiners harvest fish primarily destined for canning. These vessels are largely Spanish and French-flag vessels operating under the EU sustainable fisheries partnership agreements (SFPAs). SPFAs are currently in force with Madagascar, Mauritius and Seychelles. Previous agreements with other WIO countries have expired. The longline fleets are predominantly Asian-flag and mainly target the markets for raw (sashimi) fish which can be marketed fresh (chilled) or frozen. A growing number of vessels are flagged in WIO countries, mainly in Seychelles and Mauritius, and some longliners in Mozambique and South Africa. The Maldives tuna fishery is distinctly different as the tuna are individually caught by the pole and line technique.

106. **Tuna management**. As noted above, regional bigeye and yellowfin stocks are harvested at unsustainable levels.[117] IOTC have introduced a range of management measures for the tuna, other HMS, bycatch species and for the use of some fishing gears (e.g., fish aggregating devices).[118] However, control of the 'non-industrial' line and gillnet fisheries has proved challenging and enforcement on the high seas remains a sensitive issue. All but two WIO countries have ratified the FAO Port State Measures Agreement (PSMA). The SWIOFC Working Party on Collaboration and Cooperation in Tuna Fisheries (WPCCTF) coordinates the WIO country activities and policies. Discussions on the allocation of tuna fishing 'quotas' between countries has been the subject of ongoing and unresolved dialogues. The nature of historical fishing activities generating 'rights' to future fishing opportunities is among the issues in question. WIO countries have established a suite of minimum terms and conditions (MTC) of access for non-flag vessels to the EEZs. The MTC are partly based on those used by the countries party to the Forum Fisheries Agency (Pacific Island states) and consistent with the SADC Protocol on Fisheries. A proposed Fisheries Framework Agreement has been explored through the SWIOFC. The proposed framework agreement would build on the MTC to increase the economic benefits to the region through approaches like those of the Nauru Agreement.

107. There are several initiatives at an industry level. OPAGAC, representing nine Spanish purse seine tuna companies, received Marine Stewardship Council (MSC) certification in 2021. The major WIO tuna processors established the Sustainable Indian Ocean Tuna Initiative (SIOTI) in 2017 partly

[115] World Bank. The paradox of sustainable tuna fisheries in the Western Indian Ocean: between visions 2 of blue economy and realities of accumulation 2018. Towards a sustainable and inclusive tuna industry in the Indian Ocean. Washington DC.
[116] Andriamahefazafy, M, et al. 2019. The paradox of sustainable tuna fisheries in the Western Indian Ocean: between visions 2 of blue economy and realities of accumulation.
[117] Report of the 26 th Session of the IOTC Scientific Committee India, 4 – 8 December 2023
[118] Compendium of Active Conservation and Management Measures for the Indian Ocean Tuna Commission

to ensure sustainable supplies of tuna for their businesses. The South West Indian Ocean Tuna Forum (SWIOTUNA) represents civil society organizations (CSOs), local fisherfolk communities and other non-state actors with local presence in the South West Indian Ocean (SWIO) region.[119] Seychelles has initiated a sustainable certification scheme in association with the snapper exports from the small-scale fishery. The Mauritius seafood processors have established the Sustainable Tuna Association to provide a collective voice. Conservation and environmental NGOs, such as Stop Illegal Fishing (SIF) and the World Wide Fund for Nature (WWF) are also active. At global level the International Seafood Sustainability Foundation (ISSF) is an industry-supported independent organisation that monitors and advises on sustainability of tuna fisheries.

108. **Trawl fisheries**. The shallow-water shrimp fisheries are significantly overfished. Production may be less than half of the historical high. There are two main reasons: (i) overcapacity in the industrial trawl fisheries and (ii) growth of artisanal fisheries which frequently use gears which harvest juveniles from the inshore nursery grounds. Unsustainable practices by the artisanal producers have proved particularly difficult to control, while reduction in the numbers of fishing licenses, extension of closed seasons and closure of inshore areas to trawling have not yielded sustainable benefits. Deepwater shrimp fisheries have generally proven to be relatively fragile.

109. Coastal finfish trawl fisheries are mostly concentrated in South Africa, although historically some finfish trawling has occurred in Somalia. The deepsea trawl fisheries fall largely under SIOFA, although some seamount fisheries are located within the EEZs (particularly off southern Madagascar). SIOFA has mapped the vulnerable marine ecosystems and various management measures are under discussion.[120] Some coastal fish stocks are known to have a transboundary distribution and these may be subject to bilateral arrangements. Similarly, some artisanal fishers may traditionally fish in the waters of adjacent countries. In several of these areas, the potential for establishment of transboundary MPAs is under study.

110. **SIOFA fisheries**. The Southern Indian Ocean Fisheries Agreement (SIOFA) is an RFMO responsible for international management of sedentary species in the 'Area' (i.e., the ABNJ) in the Indian Ocean. A small number of WIO-flag vessels (<5 vessels) fish 'SIOFA fish stocks'. However, some of the SIOFA stocks may be straddling and may also fall under the UN 'stocks agreement'. Annual SIOFA recorded catches range from about 12,000 tons to 25,000 tons and fishing is largely carried out by Thai and Chinese Taipei-flag vessels which mainly operate in the WIO area. WIO mainland countries are not party to SIOFA. The main WIO regional activity could be to articulate a common regional position in SIOFA decision making sessions and support compliance with SIOFA management measures, including through application of the PSMA.

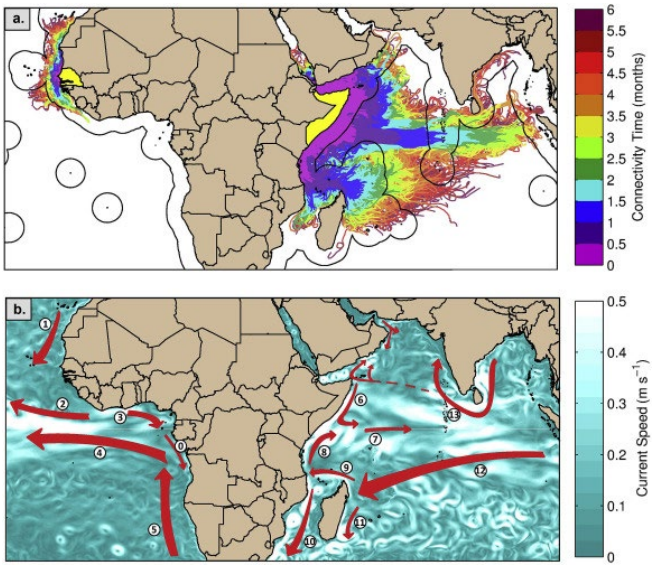


Figure 15. Ecological connectivity in the WIO

5.4.4 Small-scale fisheries

111. The SSF are arguably the most important blue economy segment in terms of social contribution and employment. There are at least 400,000 fishers in the WIO with an estimated 7 million persons dependent on fisheries (2005 estimate).[121] Unlike West Africa, there is far less movement of fishers between countries and many important fish stocks (other than the large pelagics)

[119] SWIOTUNA Position statement IOTC.
[120] Bioregionalization of the SIOFA area based on VME indicator taxa.
[121] Fish, fishers and fisheries of the Western Indian Ocean: Their diversity and status. A preliminary assessment (2005).

are assumed to be national rather than transboundary. However, as there is an shortage of genetic studies on the commercial species populations, a precautionary approach may be appropriate where species have an extended pelagic phase in their life cycle (e.g., lobster, octopus).[122] Connectivity studies also show that recruitment of many coral species has an important transboundary component (Figure 15).[123]

112. While fisheries are a mainstay of coastal community livelihoods, several social surveys suggest that many fishers do not envisage a bright future in fisheries and look to education to open opportunities for youth. This perception is also supported by global and regional experiences: that the problems facing coastal fisheries cannot be resolved solely by improved management of fisheries as growing populations and improved fishing techniques progressively increase pressure on fish stocks and ecosystems. Fisheries policies refer to science-based approaches, but stock assessments and social and economic analyses are often deficient.[124] Even where robust scientific advice is available, implementing management measures (such as effort reduction) involves social and political challenges and sensitivities which are often beyond the scope of the fisheries management agencies.[125] There is a recognition that reduction of fishing effort is essential, but the political will for action is often weak.

113. A range of co-management approaches are in place throughout the region (LLMAs, BMUs and through local NGOs and fisher associations). These community or participatory initiatives have generally proved more effective than 'top-down' regulatory measures. However, the modalities for empowerment at local levels have often proved challenging, and the design, approval, acceptance and enforcement of locally developed fishing rules has required innovation and flexibility.[126] Studies show that strong community leadership is the most important factor contributing to co-management success but that other factors, such as long-term technical and financial support can create sustainable systems.[127] Community limits on fishing or catches, or fishing capacity, community social cohesion, and establishment of protected areas can all be crucial. Support for community led or co-managed fisheries is widespread throughout the region with support from conservation NGOs, bilateral projects, climate funds, international development banks and increasing national commitments linked to disadvantaged groups, food security, and community resilience.

114. **Bêche-de-mer**. The bêche-de-mer (sea cucumber) fisheries are an example of a high-value community resource which is heavily overfished throughout the WIO and globally.[128] Typically, the more accessible inshore resources are depleted and poorly regulated diving progressively moves to exploit deeper waters, often with serious health effects on the divers. Enforcement of fishing regulations is generally challenging in these widely dispersed fisheries. The direct benefit to communities means that regulations may have little local support. Export controls have been shown to be repeatedly undermined by misreporting, corruption, and weak institutional capacity. Traditional controls have generally been eroded. Other approaches have included banning of hookah gear, community concessions, and the creation of a national export monopoly concession with associated enforcement powers, and introduction of sea cucumber farming.

5.4.5 National and regional dimension of the fisheries priority

115. The ROGS considers the fisheries priority under two headings: (i) internationally managed and (ii) small-scale nationally managed fisheries. However, some WIO fisheries do not fit neatly into these categories. These include the semi-industrial (e.g., vessels using ice and with trips of up to 15

[122] Several genetic studies were carried out under the GEF-funded SWIOFP. See: van der Elst RP, et al. 2009. Nine nations, one ocean: a benchmark appraisal of the South Western Indian Ocean Fisheries Project (2008–2012).
[123] Ecological connectivity in the WIO. Van Nieuwenhove AHM, et al. (2019) Cryptic diversity and limited connectivity in octopuses: Recommendations for fisheries management. PLoS ONE 14(5): e0214748.
[124] WIOFish database: A catalogue of small-scale fisheries of the western Indian Ocean: Biennial Report for 2016 and 2017.
[125] Hilborn, R. Managing fisheries is managing people: what has been learned? Fish Fish. 8, 285–296 (2007).
[126] Menezes, A. et al. 2009. The Changing Dynamics of Local Institutions in Fishing Communities in Mozambique: Responses to Policy—Public Participation and Decision Making. Environmental Practice 11(01):32 – 51.
[127] Gutierrez, N. Hilborn, R. and O. Defeo. Leadership, social capital and incentives promote successful fisheries. Pomeroy, R.S., et al, 2022, Guidebook for evaluating fisheries co-management effectiveness. FAO.
[128] Advances in sea cucumber aquaculture and management FAO Fisheries Technical Paper. No. 463. 2004. Sea cucumbers A global review of fisheries and trade. FAO Fisheries and Aquaculture Technical Paper.

days); and transboundary small-scale fisheries. Genetic analysis undertaken by the SWOIFP project identified stocks with a transboundary signature, while studies on connectivity strongly suggest a regional dimension in recruitment of some species with a pelagic larval stage. The Technical Dialogue (TD) on Fisheries undertook a stakeholder poll to identify the thematic areas which had a strongly regional (or weak national) dimension. The survey indicated a wide diversity of views suggesting that substantial additional discussion is required during the implementation of the ROGS. This may be partly because even though (for example) fisheries may be grouped under a regional heading such as 'shrimp fisheries' the challenges at national level may be substantially different and development of a coherent regional approach requires detailed analyses and dialogues.[129]

116. The TD identified additional challenges which could be addressed during the ROGS implementation (largely within the proposed ROGS recommendations):

a) arrangements for an increased voice for small-scale or community fisheries at both national and regional levels
b) the economic importance of the post-harvest segment which can provide as much as 25% of export revenue in some countries and the need to ensure the supplies of raw materials for processing
c) the closely linked question of equity in the allocation of (international) fishing opportunities and the possible reduction in the 'removal' of raw, or unprocessed fish from the region[130]
d) closing enforcement gaps in management of large-scale fisheries and sharing experiences in the design, application and enforcement of management rules in small-scale fisheries
e) potential for replication of models for transboundary MPAs, including, for example, model agreements and statutes, resolution of jurisdictional and enforcement issues, EIAs, management, community engagement and financing.

5.4.6 Mariculture

117. Aquaculture is promoted as an important source of food, incomes and alternative livelihoods for coastal communities. Future global demand for seafood is expected to substantially exceed the supply creating market opportunities. Most East African projects or programmes have focused on freshwater aquaculture and there have been relatively few regional institutional initiatives on mariculture.[131] Shrimp, seaweed, shellfish, for example, abalone, oysters, and sea cucumber are among the more important WIO mariculture activities. Key constraints to finfish and shrimp culture include the high costs of feeds, poor economies of scale in provision of services, such as monitoring of disease, water quality and red tides, transboundary transmission of diseases (such as white spot in shrimp), and a weak investment climate. The latter is reflected in poor access to capital, lengthy environmental impact assessments, conflicts with tourism and fisheries, and issues related to licencing, or concessions for aquafarms. Meeting the import requirements levels of contaminants in seafood can also be a challenge.

118. Many mariculture systems depend on feeds such as fish meal and fish oil and production of aquafeeds produces other environmental impacts. Aquafeed production in the WIO relies heavily on imported ingredients and WIO products may compete with intensive and efficient Asian production which may benefit from more substantial government support. Technology is unlikely to fully resolve the production and environmental challenges. A transition to more plant-based production is more likely to produce products with a reduced environmental cost or footprint (seaweeds, bivalves and other plankton feeders). The transition requires investment both in the production systems and the development of processing and markets for these alternative products.[132]

---

[129] Action plan for the improvement of the industrial shrimp fishery in Madagascar. Plano de Gestão da Pescaria de Camarão do Banco de Sofala (2021-2025).
[130] It may be noted that for some products raw or frozen (unprocessed) fish may have a higher market value than if processed.
[131] Hinrichsen, J.K. et al, 2022. Prospects for Aquaculture Development in Africa: A review of past performance to assess future potential. ZEF Working Paper.
[132] Wang F., et al. Avoiding Aquafailure, Planet Tracker (2023). AUDA-NEPAD (2020). Unlocking the Potential Contribution of Fisheries and Aquaculture to Agricultural Transformation in Africa: Towards Integrating Fisheries and Aquaculture into CAADP for Implementation of the Malabo Commitments. Murekezi, P., et al. Assessment of the

119. The current iteration of the ROGS does not prioritise mariculture as mariculture activities are largely national rather than regional in character. However, there are opportunities for improved regional cooperation on mariculture in several areas. These include replication of promising approaches, such as community-level sea cucumber farming (Madagascar); seaweed culture (e.g., Zanzibar); and bivalve culture through ranching or concessions as suggested by several studies and initiatives.[133] Niche production of shrimp, oysters and finfish for a local 'captive' hotel market has also shown favourable economic returns. Nevertheless, investments have encountered significant risks and losses and a sub-regional biosecurity strategy that proposes regional networking and sharing of information has been developed.[134] A general weakness in the technical capacity (e.g., water quality testing laboratories) to test and screen for aquaculture diseases also contributes to the vulnerability of shrimp farming. Several regional networks and initiatives have supported aquaculture.[135]

120. The consensus of the Technical Dialogue stakeholders was that, while aquaculture has considerable importance, it does not currently merit being considered as a regional priority. Nevertheless, where there is an opportunity for inclusion on existing regional agendas then provisions could be made to address selected regional aquaculture challenges. These could include, for example, capacity building, technology transfer, monitoring of diseases, financing, research cooperation, and sharing of lessons learned.

integration of fisheries and aquaculture in policy development. Framework and application in Africa. FAO Fisheries and Aquaculture Technical Paper No. 663. FAO. 2018. The FAO Blue Growth Initiative: Strategy for the Development of Fisheries and Aquaculture in Eastern Africa. FAO Fisheries and Aquaculture Circular No. 1161, Rome, Italy. See also: TNFD. Draft sector guidance Aquaculture.

[133] Blue Ventures (Madagascar) demonstrates how fishers, private sector seafood companies, government and non-governmental agencies can work together to successfully manage natural resources, resulting in the sustainment of livelihoods, economy and biodiversity. World Bank. 2023. Global Seaweed: New and Emerging Markets Report. The Kenya Coastal Development Project (KCDP) improved the efficiency of seaweed farmers (Nyundo, 2017).

[134] Case Study of the Outbreak of White Spot Syndrome Virus at Shrimp Farms in Mozambique and Madagascar: Impacts and Management Recommendations.

[135] SARNISSA, an EU-funded Sustainable Aquaculture Research Networks in Sub Saharan Africa (€1.2m closed 2011). SARNISSA had 2,000 members, a portfolio of 35 case studies and established a comprehensive repository of information. Networks include: the Southern African Non-State Actors platform in Fisheries and Aquaculture (SANSAFA) and the East African Platform of Non-State Actors in the Fisheries and Aquaculture Sector (EARFISH).

5.5 BLUE TOURISM

5.5.1 The potential of blue tourism

121. **Global**. Blue tourism is part of the broader tourism sector and many of the structural issues need to be seen in this broader context. For example, many tourists combine the coastal and marine tourist products with safaris, visits to cultural sites, wildlife parks and other activities. Consequently, blue tourism is usually only part of more general national or regional tourism strategies and plans.[136] Tourism accounted for about 10% of global GDP in 2019 (some $9 trillion), or three times the GDP contribution of agriculture.

122. Coastal and marine tourism is estimated to account for over 50% percent of total global tourism and is the largest contributor to GDP for many SIDS and coastal states.[137] The sector relies on clean and healthy coasts, oceans, and marine ecosystems, The sector is extremely vulnerable to threats from climate change, pollution and biodiversity loss. The High Level Panel offers some guidance and examples of national actions to secure and sustain blue tourism (Box 14).[138]

Box 14. Advancing Action Towards Sustainable Coastal and Marine Tourism

- invest in sustainable tourism that regenerates the ecosystems on which it depends, builds the resilience of coastal communities, reduces inequality and addresses climate change and pollution
- implement sustainable tourism management strategies that advance environmental, social and economic priorities and enable monitoring and transparent reporting with the full participation of coastal and indigenous communities
- implement mechanisms to increase the reinvestment of tourism revenue into local capacity and skills for increasing local employment in tourism, to diversify economic opportunities and increase resources for coastal and marine restoration and protection
- accelerate financial incentives for including nature-based solutions in sustainable tourism infrastructure
- invest in sewerage and wastewater and waste management infrastructure for coastal and marine tourism

123. Some global initiatives focus on developing and supporting industry codes, standards and guidelines for inclusive and environmentally-sustainable tourism.[139] Other more general declarations call for actions to support sustainable blue tourism.[140] At least two SDG indicators refer to tourism. Indicator 8.9.1 tracks tourism's direct gross domestic product and indicator 12.b.1 calls for monitoring the economic, environmental, and sustainability aspects of tourism.[141] The World Economic Forum (WEF) tracks the competitiveness and sustainability of tourism (Box 15).

Box 15. WEF Travel & Tourism Competitive Index indicators

- air transport infrastructure
- business environment
- cultural resources
- enabling environment
- environmental sustainability
- ground and port infrastructure
- health and hygiene
- human resources and labour
- ITC readiness
- infrastructure
- international openness
- natural resources
- non-leisure resources
- price competitiveness
- safety and security
- socioeconomic resilience & conditions
- travel & tourism (T&T) development
- prioritization of T&T
- T&T demand pressure & impact
- tourist service infrastructure
- T&T demand drivers
- T&T policy and enabling conditions
- T&T sustainability

World Economic Forum 2021. Travel & Tourism Competitiveness Report

124. Tourism lost 62 million travel and tourism jobs during the pandemic. As a result, labour supply and demand remain out of balance and many smaller businesses have been decapitalised or have a high debt burden. There have been calls for digital upgrades (e.g., for reservations and linkages with services) to keep abreast of travellers' changing habits and to rebuild post-pandemic tourism in a more sustainable and environmentally-friendly manner.

[136] Global and regional tourism performance.
[137] Blue Tourism Initiative, 2023.Towards sustainable blue tourism: trends, challenges and policy pathways. World Bank blog, (2017). Sustainable tourism can drive the blue economy: investing in ocean health is synonymous with generating ocean wealth.
[138] High Level Panel. Advancing Action Towards Sustainable Coastal and Marine Tourism.
[139] European Travel Commission. Encouraging sustainable tourism practices. This handbook provides a wide variety of case studies and sustainable 'solutions' or approaches.
[140] Examples include: the UN One Planet Initiative, the Tourism Panel on Climate Change, and One Ocean. The Glasgow Declaration on Climate Action in Tourism aims to lead and align climate action across tourism stakeholders.
[141] https://tourism4sdgs.org/

125. **Africa**. In 2019, 84 million travellers visited Africa and contributed around $186 billion to the continent's GDP (about 7%), down from 8.5% (or $194.2 billion) in 2018. Employment in the sector doubled in two decades to about 25 million in 2019 and the sector is forecast to grow at 5% per annum. Since 2000, capital flowing into Africa's travel & tourism sector has more than tripled with major investment in hotels, restaurants, waterfronts and parks.[142] Africa is the second fastest growing tourism region in the world, with 5.6% growth in 2018 against a 3.9% global average. Tourism in Africa is mainly leisure-driven (71%), or business-driven (29%) and in 2018 comprised 56% domestic and 44% international tourism.

126. Tourism is important in most East African and WIO island countries, but Africa accounts for less than 5% of the over $8 trillion global value of the tourism industry, suggesting significant additional development opportunities. In 2023, tourism in Africa recovered to 92% of pre-pandemic visitor levels. Available tourism statistics do not always separate blue tourism from other segments (e.g., safaris, conferences). However, tourism in the island economies (including Zanzibar) offers insights into blue tourism. About 26% of the Seychelles GDP is attributable to tourism while in South Africa it accounts for less than 3% of GDP. A Seychelles value chain analysis indicates that about 70% of tourist expenditure is on accommodation with about 70% going to large hotels. Tourism contributes 10-26% of GDP in the COMESA island member states: Seychelles, Madagascar, Mauritius and Comoros.

5.5.2 Policies and action plans

127. **African Union**. The AU/NEPAD Tourism Action plan (2004) emphasised the potential of tourism to contribute to economic regeneration and diversification, to employment and to generate foreign exchange earnings.[143] The plan identified a range of investments and cooperative actions. A review of the plan identified several weaknesses in its implementation and suggested a somewhat disjointed development of national and REC action plans. The African Tourism Strategic Framework (2019-2028) addresses many of these weaknesses. It highlighted the potential of tourism, which generated 8% of the continent's GDP (or over $165 billion in 2016), accounted for 6.5% of total investments, provided over 20 million jobs, and over 10% of employment in some countries. The Framework sets out three strategic directions and identifies 12 strategic priorities which provide a useful orientation for the ROGS (Box 16).

Box 16. African Tourism Strategic Framework (2019-2028)

Strategic direction 1: Develop a globally competitive African Tourism brand.
- quality and diversified tourism product
- development of tourism facilities and services
- tourism promotion and marketing
- human resource development

Strategic direction 2: African tourism is a sustainable, inclusive driver for regional integration
- increased inter and intra-African travel
- visitor safety and security
- natural and cultural heritage conservation and protection

Strategic direction 3: Adopt an enabling tourism policy
- regulatory and institutional framework
- establish an enabling tourism policy, regulatory and
- institutional framework
- financing tourism development. the Implementation and evaluation of the ATSF 2019-2028 is estimated to cost $2.8 million.

128. **Regional Economic Communities**. At the level of the RECs, IGAD endorsed the Sustainable Tourism Master Plan for the Inter-Governmental Authority on Development (IGAD) Region, 2013-2023, which set out a detailed roadmap for the implementation of strategies and actions. Key points include: an improved policy and regulatory framework; tourism product development and marketing; safety and security; tourism infrastructure and conservation of natural and cultural heritage. COMESA has developed a Sustainable Tourism Development Framework. SADC has established an institutional framework, the Regional Tourism Organisation of Southern Africa (RETOSA) to coordinate and boost tourism in its region and implements the SADC Protocol on Tourism. The EAC Tourism Marketing Strategy (2021-2025) envisages branding the EAC as a single tourism destination and has been backstopped by the EAC Tourism

[142] WTTC, 2023. Unlocking opportunities for travel & tourism growth in Africa.
[143] UNCTAD (2017) Economic Development in Africa Report 2017: Tourism for Transformative and Inclusive Growth; Isingizwe, G.P et al. 2023. The African Union's Agenda 2063 and Africa's Tourism Industry. Advances in African Economic, Social and Political Development; WTTC, 2023. The Social Impact of Global Tourism.

Recovery Plan (2020-2021), a capacity building programme designed in close collaboration with the East African Tourism Platform. Several analyses of the tourism sector are compiled in the following SWOT analysis (Box 17).

Box 17. Regional SWOT analysis for tourism

Strengths	Weaknesses
• existing tourism diversity • major unspoiled marine tourism potential • numerous national parks and World Heritage Sites • existing political will and prioritization of the sector • tourism investment support and facilitation agencies • existing national and regional action plans • tourism highly developed in some destinations • rapid growth of ICT sector • countries at different levels of tourism development facilitates for learning	• weak understanding of the tourism sector by public and private investors • weak marketing and varied pricing policies • WIO countries competing for same/ similar tourists • weak tourism policies, strategies, standards and regulations, e.g. for accommodation • weak institutions, e.g. national tourism boards, industry associations • lack of skilled labour force and training institutions • limited regional and national transport connectivity, including coastal transport connections • multiple visa regimes • poor infrastructure, including ICT, poor statistics collection • perception of insecurity in some areas
Opportunities	**Threats**
• investment opportunities, 'doing business' reforms and use of best practices, learning from other member states • creating a single regional tourist visa • embrace open skies policy • REC have already prioritized intra-regional tourism & regional marketing • transboundary cross border tourism corridors • improved regional transport connectivity • product diversification, e.g. MICE, culture and heritage tourism • developing cross-cutting policies (i.e. environmental policies	• Different levels of tourism development • Complex, multiple visa regimes • Tight airline regulation, limited connectivity, and lack of support for open skies policy • Political instability & negative image of parts of the region • Competition among regional blocks • Lack of financial capital to develop tourism products and infrastructure • Climate change • Increased over-reliance on tourism in selected destinations • natural attractions not well protected *Source: Adapted from COMESA STD Framework*

129. Despite the availability of plans with well-designed strategies, many have not been fully implemented or effectively implemented. The plans often call for substantial investments including in infrastructure (airports, roads, cruise terminals or waterfront development), but without setting out the means of financing the investments. In particular, the investment climate for private investment is often weak and effectively integrating or coordinating public and private investment can prove challenging. The COVID pandemic also resulted in substantial private sector losses and many national tourist enterprises will take several years to rebuild their capital and business. The pandemic also affected infrastructure investment. For example, by mid-2020 African airlines had suffered losses of over $4 billion.

130. **Segments and models**. Stakeholders including coastal and indigenous communities, industry and governments have tried to collectively identify the most appropriate tourism models at the national, segment and destination levels. Blue tourism has several segments, each with its cost, benefits and challenges. 'Sun, sea and sand' is the largest segment, mainly focused on beach and coastal resorts. Large 'corporate' hotels may yield significant tax revenues, while the SME or 'guesthouse' model tend to generate greater community engagement and local income distribution.[144] Cruises and recreational boating are among the fastest growing and most profitable segments of the blue tourism sector in the Caribbean. In the WIO, cruise operations will need to be appropriately scaled to match the port and amenities of WIO destinations. Nature-based blue tourism is an emerging segment that helps direct tourists towards less mainstream locations and activities and alleviate the impact on more environmentally stressed tourist destinations. There is increasing interest in surfing and in marine cultural tourism, such as exploration of the cultural heritage and lifestyles of coastal and fishing communities. Sport fishing and diving can be particularly profitable,

[144] Tourism in Zanzibar: Incentives for sustainable management of the coastal environment.

but require effective enforcement of best practices to ensure sustainability.[145] Aquaculture (e.g. pearl farms, clam gardens, coral rehabilitation) can complement tourism in marine parks and MPAs.

5.5.3 State of WIO blue tourism

131. **Governance of tourism**. Tourism is generally managed by state controlled tourist boards that include industry representation. The National Directorate of Tourism manages tourism in the Comoros.[146] The Kenya Tourism Board presents Kenya at local, national, regional, and international levels as a premier tourist destination. The Madagascar National Tourism Board (ONTM) is a private organization created in 2003. It represents the private sector and acts as a platform for dialogue between the public and private sphere. Its helps promote Madagascar tourism, identifies training needs of the sector, and seeks financing for development projects. The Mauritius Tourism Promotion Authority (MTPA) is a statutory board under the Ministry of Tourism. The Seychelles Tourism Board aims to (i) develop and maintain an authentic, dynamic and sustainable tourism product, reflecting the importance of Seychelles tourism industry in its economy and in the standard of living of its population; and (ii) promote the gradual expansion and enhancement of existing tourism infrastructure to provide additional activities for visitors, increased revenue potential and appeal across a broader spectrum of markets. The following details draw largely on WIO coastal and 'island tourism' as their tourism approaches are largely focused on blue tourism.

132. **South Africa**. As part of Operation Phakisa, during 2017 cabinet approved the Coastal and Marine Tourism Implementation Plan with a focus on Cape Town, Durban and the Garden Route municipalities. The key findings of a 2015 analysis were that coastal destinations account for 28% total tourism trips, 33% of bed-nights and 40% total tourism spend in South Africa. Overall, coastal destinations are dominated by domestic rather than international tourists.[147] In 2015, domestic tourism trips numbers were estimated at 9.8 million compared to 1.6 million international trips.

133. **Mozambique**. Mozambique had an annual growth rate of tourist arrivals of 13% in the mid-2000s. Most arrivals were either for business or visiting friends/ relatives. Several studies indicate both the high coastal and marine tourism potential and the constraints faced by the sector. In general, many of the constraints predate the COVID 19 pandemic and are mirrored by several other countries to a greater or lesser degree. These include: the uncertain business climate, transport logistics, accommodation standards, visa issues, security and access to medical facilities.[148] The sector has made significant advances in recent years. In 2016-2019, a yearly average of 2 million tourists contributed 4.5% to GDP and accounted for 32% of services exports. In 2018-2022, tourism was the third largest category of approved investments (11% of total investments).[149]

134. **Islands tourism**.[150] Mauritius and Seychelles rank at the top of the African countries on the Tourism Development Index. In keeping with its sustainability goals, Seychelles is moving towards diversification of tourism activities and away from mass tourism.[151] The updated Seychelles Tourism Master Plan 2012-2020 identifies several sources of 'leakage'. These are: imports for construction; import of goods, such as food and beverages; repatriation of income or profits by foreigners; interest payments on foreign loans; and marketing expenses abroad. In addition, there are significant revenues retained overseas by airlines and travel operators. The plan identifies measures to address these leakages. Pillars of the strategy are increasing Seychelles ownership and benefits, and repositioning Seychelles tourism at the upper end of the market with the active engagement of the private sector.

[145] EIFAC Code of Practice for Recreational Fisheries (Europe, freshwater). There is no global code for marine recreational fishing.
[146] Rajeriarison, P. (2012) Note de Politique sur le Tourisme: Union des Comoros, Policy Note prepared for World Bank's Appui à la Bonne Gouvernance Economique (ABGE) Project.
[147] Rogerson C and J. 2019. Emergent planning for South Africa's blue economy: Evidence from coastal and marine tourism.
[148] The tourism sector in Mozambique: a value chain analysis (2006). The Economic Contribution of Tourism in Mozambique.
[149] UNWTO (2023). Tourism Doing Business – Investing in Mozambique.
[150] World Bank, 2013. Tourism Sector Reviews of Comoros, Madagascar, Seychelles and Mauritius (unpubl.). World Bank. 2022. Blue Tourism in Islands and Small Tourism-Dependent Coastal States: Tools and Recovery Strategies.
[151] Seychelles Strategy 2017. See also: The Seychelles Tourism Master Plan: Facts and Findings from 2000 to 2020.

135. **Comoros.** Several studies affirm the substantial blue tourism potential of Comoros.[152] A Sustainable Tourism Management Plan was prepared in 2021 and the operationalisation of the National Tourist Office and the Special Fund for the Promotion and Development of Tourism is expected to bootstrap key actions. Tourism is a flagship project of the Comoros Emergence Plan,[153] that includes projects on the creation of a tourist hub and improved island connectivity, both of which are expected to realise that potential. The investment costs (over €0.7 billion) are supported by a range of partners but may be contingent on structural reforms and enhanced political stability.[154]

136. **Mauritius.** The Tourism Authority is the regulatory body as set out in the Tourism Authority Act 2006**.** The Mauritius Tourism Strategic Plan (2018-2021) identifies several challenges facing the islands: climate change; dominance by a limited number of large operators causing inequity and conflict; seasonality; air connectivity; and low non-hotel spending. About 400 tour operators serve as a bridge between tourists and local service providers. The tour operators generate about 50% of hotel customers and over 70% of crafts and artisan product sales. The stakeholder organisations include the Mauritius Tourism Promotion Association, the Association of Hotels & Restaurants in Mauritius (AHRIM), the Association of Hotels de Charme, the Association of Tour Operators Mauritius (AIOM), the Association of Tourism Professionals (ATP), and the Association of Tourist Operators (ATO). Digital marketing and market intelligence are seen as key tools in accessing new markets and tourist product development.[155] Opportunities are seen in cruise tourism, new markets in the Gulf States and ASEAN even as there is a decline in Russian and Chinese tourists. Upgrading of the Rodrigues 'green' airport and infrastructure has been planned under the Mauritius' 2022 Tourism Development Plan.

137. **Zanzibar**. In 2018, tourism contributed an estimated 28% of GDP, 82% of foreign exchange earnings and about 68% of approved investments. The Zanzibar Commission for Tourism (ZCT) has overall responsibility for tourism. The national tourism strategic plan focuses on local and inclusive economic growth and employment, fiscal revenue, environmental sustainability, and preserving Zanzibar's rich cultural heritage.[156] It addresses the largely *ad hoc* development, the high level of imported goods and services, and environmental issues, such as waste management. It provides a vision which bears similarities to that of the Seychelles. It recognises the finite 'carrying capacity' of the island (currently over 0.5 million visitors per year) and aims to move away from mass tourism to a model which supports higher quality tourism, generates higher net economic returns, and facilitates sustainability. It has a particular focus on human capacity building and SMEs.[157] The plan was developed through stakeholder consultations. It takes the views of the Zanzibar Association of Tour Operators (300 members) into account, specifically their Strategic Plan 2021 - 2025 which provides a cogent private sector vision and analysis.

138. **Somalia**. The Department of Tourism of the Ministry of Information is responsible for tourism. The vision of the national tourism policy is to make Somalia a recognised tourist destination by 2030 and recognises that it is essential to reform and re-brand the country's tourism sector.

5.5.4 Challenges to sustainable marine and coastal tourism

139. Marine tourism faces a range of environmental, social and economic sustainability issues depending on the type of tourism (e.g., cruise, use of MPAs, ecotourism, community-based tourism, use of cultural assets). All forms of tourism have a significant environmental footprint. However, it is difficult to quantify the negative impacts of tourism, particularly as regards social sustainability, environmental justice, or well-being of coastal communities.[158] A recent study indicated that less than

[152] World Bank, 2013. Comoros Tourism Sector Review. Smartfish, 2013, Comoros ecotourism evaluation & support programme. C3-Comores (2008) Priorities for Sustainable and Equitable Development of the Tourism Sector on Mohéli.
[153] Flagship and Structuring Projects List (2019).
[154] AfDB. Country Strategy Paper 2021-2025.
[155] WTO (2023), Tourism Doing Business – Investing in Mauritius, UNWTO, Madrid.
[156] Economic value of marine ecosystem services in Zanzibar: Implications for marine conservation and sustainable development.
[157] Zanzibar: A Pathway to Tourism for All Integrated Strategic Action Plan July 2019,
[158] Leposa, N. 2019. Problematic blue growth: a thematic synthesis of social sustainability problems related to growth in the marine and coastal tourism.

25% of tourism-sector companies studied acknowledge the pressure that the industry places on coastal and marine biological integrity and diversity.[159]

140. Through a WIO Blue Tourism workshop (April 2023), the ROGS Task Force reviewed regional challenges and opportunities for sustainable blue tourism.[160] The consultations identified that weak technical and financial capacity and poor consumer knowledge of sustainable tourism choices were major challenges.[161] SMEs face particular challenges in financing and marketing. Poor infrastructure, logistics and connectivity were common issues for the region. The financial sustainability of some marine parks and MPAs was considered a serious problem, as visitor fees or user charges may not accrue to the park management but be absorbed by the exchequer. Many of the challenges require essentially national solutions, but can benefit from support from the regional level:

a) unsustainable tourism infrastructure and tourism activities with a high ecological footprint, including habitat destruction, biodiversity loss, high energy and freshwater requirements, wastewater and solid waste management
b) cultural erosion, changing consumer preferences and tourist 'consumerist' lifestyles
c) overtourism - new destinations tend to be pioneered by local SMEs, then 'taken over' by the international corporate sector leading to economic leakage and distributional inequities
d) volatility due to seasonality, extreme weather, political and security issues
e) climate change driving sea level rise, coral bleaching and extreme weather events
f) high dependence of marine parks and MPAs on conservation finance and on tourism revenue, while weak management effectiveness reduces tourists' willingness to pay
g) user conflicts with sectors such as fisheries, aquaculture, offshore energy and shipping
h) land conflicts, gentrification, displacement of local people from their homes, alienation of ancestral land, loss of traditional livelihoods, loss of public access to beaches or landing sites for traditional fishers.

141. **Changing tourism economy**. The blue tourism market is changing. Destinations need to cater to a more environmentally conscious generation, e.g., demand for blue/green accommodation has grown by over 30 percent between 2016 and 2021. Most tourists want to travel more sustainably. Demand for adventure tourism, culture, or nature-based tourism, diving, whale watching, golf and for similar activities is growing. Health and safety concerns, access to digital services and food safety are key issues. There is likely to be increased competition for high-spending tourists which requires measures to avoid 'overtourism'.[162] A review of tourism project interventions provides useful guidance on leverage and incentives.[163] Box 18 summarises key issues and proposed solutions.

142. **Revenues**. The corporate (international) segment has proved relatively resilient to the pandemic shock while many smaller national hotels, guesthouses and services have been decapitalised during the epidemic and have been slower to recover. A tourism business generally aims at a profit margin between 9% and 14%. This can help offset seasonality. Composite products like holiday packages (flights, accommodation, ground support, transportation) tend to have inbuilt "operating" margins in the order of 10-30% but these margins may not accrue to the SMEs. A review of economic costs and benefits of protected areas suggests that tourist expenditures associated with protected areas are orders of magnitude greater than expenditures on their protection.[164] Approaches to generating finance for more effective protection include: (i) tools to generate funds and improve efficiency of management; (ii) better communication of the costs and benefits of protected areas; and (iii) increased long-term support from developed countries and global funds for protected-area systems and the global goods they provide in developing countries.[165]

[159] Business for Ocean Sustainability.
[160] Report including presentations by Kenya Association of Tour Operators (KATO), on Mafia Island Marine Park, Chumbe Island Coral Park and on whale watching and shark diving.
[161] Pathways for Sustainable Blue Tourism in the Western Indian Ocean Region. Webinar, April 20th, 2023.
[162] AU, 2016. Enhancing Africa's Tourism Competitiveness; World Bank. 2022. Blue Tourism in Islands and Small Tourism-Dependent Coastal States: Tools & Recovery Strategies.
[163] CIIP. Review and analysis of CIIP-funded tourism and tourism-related projects: What has/has not worked and why?
[164] Balmford A, et al. (2015) Walk on the Wild Side: Estimating the Global Magnitude of Visits to Protected Areas. PLoS Biol 13(2): e1002074.
[165] See GEF replenishment estimates for estimates of financing needs (e.g. for CBD targets).

Box 18. Challenges for regional tourism integration		
Constraints	**Challenges**	**Recommendations**
air connectivity	• intra-regional flights very expensive • limited intra-regional routes and frequencies	• reinvigorate "Air Pass" program • reevaluate some bilateral air agreements • explore prospects for entry of low cost carriers
capacity building and employment	• uneven level of tourism training in region • low quality of service in many establishments	• create database of qualified tourism trainers in region • partnerships among tourism training institutes • create regional quality label • jointly develop e-learning training
regional product packaging	• gaps in cruise development efforts • limited packaging of multi-country trips	• develop regional cruise tourism strategy • conduct familiarization trips/ exchanges for Indian Ocean tour operators
marketing	• limited visibility of region, especially in emerging markets • uneven and inconsistent statistics collection hinders regional market intelligence efforts	• work through Vanilla Islands Ass. to raise profile of region, especially in emerging markets • collect and publish regional tourism statistics

Source: World Bank, 2013. The way forward for Indian Ocean Island tourism economies: Is there a role for regional integration?

143. **Emissions.** In the 2010-2019 period, global tourism GDP increased by 4.3% compared to the tourism GHG emissions increase of 2.5% (4 billion tons of CO_2 in 2019, including emissions from international transport). Many countries have experienced declining tourism emissions intensity and several saw their absolute tourism GHG emissions decrease over the 2010-2019 period, despite expansion of their tourism economy.[166] Common challenges across all tourism segments are emission measurement and reporting, the fragmented regulatory landscape, lack of government support, insufficient internal and external budgets for a net zero transition, and dependency on (external) air travel infrastructure.[167] It is also difficult for small and medium-sized enterprises (SMEs) to define and follow decarbonisation approaches.

144. **Sea-level rise**. Depending on the rate of local sea-level-rise (SLR) and associated erosion, a high proportion of coastal resorts are at risk of flooding and erosion damage by the end of the century. This will have major implications for communities, employment and revenue. Global loss and damage associated with the impact of SLR on World Heritage sites has not been estimated, but both cultural and ecological heritage is at risk.[168]

5.5.5 The role of regional initiatives

145. The key areas for improved regional cooperation on tourism are identified in the various regional policy documents. The shared nature of the challenges provide scope for potential project or programme financing of selected items at a regional scale.

a) air and sea transport and connectivity[169]
b) visa facilitation, codes and standards for accommodation and service quality and possible certification schemes[170]
c) training and capacity building at all levels
d) improved digital services and digital marketing, including monitoring and correction of materials on digital tourism interfaces, e.g., Tripadvisor
e) connectivity for cruise tourism and charter yachts, 'dhow' tourism and sport fishing
f) joint marketing or branding strategies, including for transboundary marine protected areas and at tourism fairs or exhibitions[171]

[166] WTTC. The environmental impact of global tourism. This review focuses largely on materials use by tourism rather than its impact on ecosystems.
[167] A net zero roadmap for travel & tourism.
[168] Tourism Panel on Climate Change (2023). Tourism and Climate Change Stocktake 2023; Assessing marine world heritage from an ecosystem perspective: the Western Indian Ocean. About 30% of the WIO Countries' global heritage sites are marine and may be vulnerable to SLR (e.g., Aldabra Atoll, Stonetown (Zanzibar)).
[169] Yamoussoukro Decision. Liberalisation of Access to Air Transport Markets in Africa. World Bank (2013) Open Skies for Africa: Implementing the Yamoussoukro Decision. Also see: AVIADEV Africa.
[170] Services in COMESA – an industry perspective.
[171] VoyagesAfriq is a publication with several national tourism partners and is dedicated to presenting the continent's travel & tourism to a global audience. COMESA has suggested offering tourism packages across multiple countries, for example historical, cultural or religious or culinary/ cooking tours, mountain climbing, birdwatching tours, trekking.

g) arrangements for closer regional cooperation among national and regional associations (see below)
h) financial and technical support for SMEs, including guest houses, lodges, private conservation efforts, services (such as sport fishing, diving). While these are mainly national actions, there is scope for regional financing channelled through appropriate national agencies
i) joint reviews on the leakage of revenues and development of common solutions, including joint negotiations with global tourism reservation companies if appropriate
j) financing for SMEs with technical and business support provided though national or international agencies and partnerships.

146. 'The islands' have been particularly active in promoting regional cooperation. Several studies and initiatives provided strategic guidance (Figure 16). The initiatives (i) identified priority competitive resources for each island; (ii) assessed traditional and emerging markets; and (iii) fostered organisational arrangements that could execute the plans. The Strategy focused on the development of inter-island packages developed by the private sector, improved organisation of regional destinations and the national tourism offices, harmonised accommodation grading systems, common visa arrangements, defining cruise-ship itineraries, and harmonising the training programs. For example, smaller cruise vessels can access smaller ports, visit several islands on the same cruise and reduce the carbon footprint of the tourists.[172] Cultural events such as festivals and carnivals extend and broaden the tourist experiences and tourist season. The "Vanilla Islands Association" was created in 2010 by the region's tourism offices to link destinations in the six islands (Reunion, Mauritius, Madagascar, Seychelles, Comoros, and Mayotte) by promoting the islands common tourism development The initiative created new products (combinations and cruises) to complement existing tourism experiences, and to attract new or returning tourists.

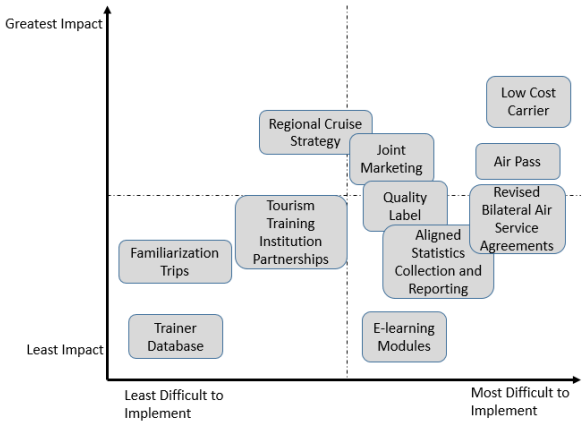


Figure 16. Challenges and rewards from elements of regional tourism integration

Source: World Bank, 2013. The way forward for Indian Ocean Island tourism economies: Is there a role for regional integration?

147. **Industry platforms**. At the regional level, associations include the East Africa Tourism Platform, Southern Africa Tourism Services Association and Regional Tourism Organization of Southern Africa and the COMESA Sustainable Tourism Forum. The role of the East Africa Tourism Platform (EATP) is to reduce obstacles to intra and inter-regional tourism through common marketing, skills development, promoting harmonized standards and codes of conduct for tourism facilities and services, facilitating access to finance and risk management services and sharing information and opportunities. However, few regional platforms focus specifically on blue tourism. In the islands, the Union of Chambers of Commerce and Industry of the Indian Ocean (UCCIOI) has a close partnership with the Vanilla Islands Association. With over 600 members, the African Travel & Tourism Association (ATTA) is arguably the leading pan-African business organisation and represents African tourism interests at the high levels through ongoing dialogues with tourism ministries, authorities and associations across the continent. At continental level the African Union's Specialized Technical Committee on Transport, Intercontinental and Interregional Infrastructures, Energy and Tourism has a leading role and may also be engaged in implementing the Yamoussoukro Decision on air transport connectivity.

[172] Towards sustainable cruise tourism. Presentation Pascal Viroleau, CEO of Vanilla Islands Association.

5.6 MARINE PLASTIC POLLUTION

5.6.1 Regional Action Plan to Combat Marine Plastic Pollution

148. Marine plastic pollution (MPP) is part of the broader problem of plastic waste management. Both UNCLOS and the NC Land-based Sources (LBSA) protocol (Art. 5) require parties to take measures to "*prevent, reduce and mitigate*" marine pollution and to "*cooperate* [to] *harmonize their programmes, policies, laws and other regulatory frameworks".* Marine plastic pollution (MPP) has been the subject of a detailed Regional Action Plan to Combat Marine Plastic Pollution in the area of the Nairobi Convention. The Plan was prepared under the guidance of the Indian Ocean Commission and at the request of the island countries. This Regional Action Plan has been 'adopted' by the ROGS Task Force and regional stakeholders as an effective approach to combatting MPP in the region.[173] Marine litter is essentially a symptom of marine plastic pollution. Marine litter is mainly composed of waste plastic (about 80%) but may also include other products. All key elements of the WIO action plan on marine litter and microplastics have been embedded in the Regional Action Plan.

149. **Rationale**. The Regional Marine Plastic Pollution (MPP) Action Plan

a) creates a platform to engage RECs, the Regional Seas Conventions, the sources of finance and technical support, industry representatives and other key stakeholders at regional scale
b) an opportunity to create norms of conduct and establish 'due diligence obligations' under Regional Seas LBSA protocols
c) a mechanism to access and deliver investment and resources to manage plastic pollution
d) a means to harmonise regional measures on trade, MPP from fisheries, and monitoring of pollution from shipping
e) a means to support science, technology and circular economy innovation and investment
f) a way to transmit consensus actions to 'higher' policy levels, such as the AMCEN and the Africa negotiators of the global plastics treaty.

150. **Pillars**. The MPP Action Plan has four main pillars:[174]

a) support for development and implementation of national action plans as core building blocks
b) enhanced and shared regional knowledge and capacity, including for monitoring of MPP
c) regional alignment on:
   (i) trade measures and national regulations on plastics
   (ii) responsibilities of industry (e.g., for regional 'polluters and waste mangers')
   (iii) regional consensus positions in the plastic treaty, in the WTO Committee on Environment and other fora (e.g., Basel and Bamako Conventions and linkages between plastics and the UNFCCC activities).
d) access to affordable finance to implement national action plans, including for solid waste management, development of a circular plastics economy, monitoring of MPP, raising public awareness and other actions planned at national or regional level.

151. **Trade in plastics**. Alignment of trade in plastics enhances the investment climate at regional scale creating economies of scale for improved design of products and a circular plastics economy. Specifically, alignment of trade measures:

a) creates a 'regional market' for plastics and plastic waste management investments
b) helps to establish a common position in the WTO Committee on the Environment and Basel Convention (rules on trade in plastic waste) which is likely to be a major arbiter in the implementation of any global plastics treaty
c) means that WIO countries aim for equivalence in customs codes and tariff regimes, plastic product standards and product definitions, additives, labelling and extended producer

[173] See the Report of the Joint Workshop. Indian Ocean Commission, African Indian Ocean Developing Island States and Nairobi Convention Regional Ocean Governance Strategy Task Force. Action Plans to Combat Marine Plastic Pollution in the areas of the Abidjan and Nairobi Conventions. July 2023; and presentation.
[174] Regional Action Plan to Combat Marine Plastic Pollution in the area of the Nairobi Convention.

responsibility. The African Continental Free Trade Area (AfCFTA) offers the opportunity for driving such alignment.

152. **Investment**. The demand for investment is mainly for waste management by municipal authorities, by private sector service providers of landfills, collection systems, sorting and recycling centres. There is demand for investment in the circular economy, to address social issues in informal waste management (waste pickers), to mainstream beach clean-ups, to raise public awareness and for disposal of waste or lost fishing gear. Financing can be seen as part of the broader blue financing architecture discussed under the proposed ROGS implementation arrangements (Regional Blue Portfolio).

153. **Roles and responsibilities** under the Action Plan. Given the multipolar and dispersed nature of the 'plastics problem', the Action Plan can be used to generate cooperation among the different actors:

a) the national and municipal authorities which have direct responsibility for solid waste management. National authorities generally support about 50% of the current municipal costs involved
b) the RECs have a key role in the alignment of trade and regulatory measures between countries and between RECs
c) the private sector generators of plastic waste (e.g., plastic manufacturers, supermarkets and major users of plastic packaging) have responsibility to support an implement the management measures and facilitate a circular economy
d) and the enterprises and organisations engaged in waste management (e.g., landfill operators, waste picker associations, recyclers) have responsibilities to apply best practices, including making provision for legacy issues such as for landfills. It is acknowledged that for commercial contractors that moving towards best practices will be contingent on the economic performance of the waste economy
e) the financial partners. commercial banks, international financial institutions (e.g., WB, AfDB), environmental funds (e.g., the GEF, FFEM, climate funds), development partners, impact investors, philanthropic foundations and other partners have a responsibility to cooperate in leveraging investments and providing affordable finance
f) facilitators, or institutions that can support or manage the design and coordination of the regional-scale financing arrangements can align and harmonise their approaches. The facilitators include (for example): UNECA, the AU/AMCEN secretariat, AfCFTA Secretariat, the Regional Seas Conventions and at a global level, the World Bank (PROBLUE/ IFC), the World Economic Forum, and the Ellen MacArthur Foundation and many others.

5.6.2 The global plastic ecosystem

154. **Production**. Production of plastic and plastic waste is projected to increase significantly and unmanaged plastic waste will have environmental, economic and social costs. The cost of waste plastic is not included in the market price of plastic. Plastic is relevant under many SDGs but production of plastic accounts for about 8% of global oil and gas production and is projected to grow to 15-20%. Plastic annually generates at least 3.8% of global GHG emissions. The numerous different plastic material and products have complex global life cycles which involve multiple production chains, decision points, decision makers and waste streams. The industry is dominated by a limited number of American, European and Asian multinational oil and chemical companies which produce and distribute (virgin) plastic raw material.[175] These companies have close commercial relationships with major hydrocarbon producers. Waste plastic increases with GDP (Figure 17). Packaging and textiles are the two most important contributors to mismanaged plastic waste (Figure 18).

[175] The term 'virgin plastic' is used to distinguish from raw material produced by recycling.

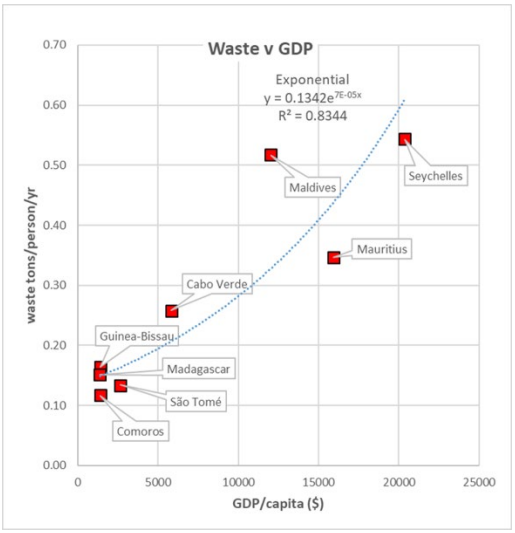


Figure 17. Waste increases with GDP

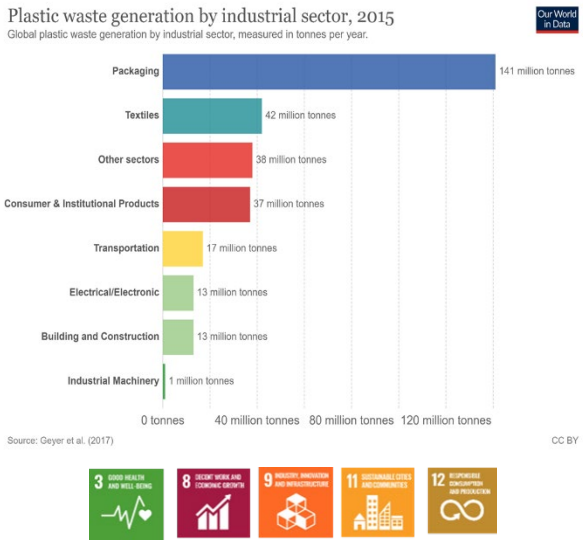


Figure 18. Packaging & textiles - key plastic wastes

155. **Impacts**. At global level the annual cost of plastic pollution (not only MPP) is conservatively estimated to be at least $500 billion, including the growing contribution of plastics to global GHG emissions. While similar estimates are not available for Sub-Saharan Africa, the cost of MPP to South Africa alone was recently estimated to be over $700 million per year. The total estimated economic cost to tourism in Zanzibar (Unguja) has been estimated at over $13 million for 2019.[176] These costs are mainly attributed to loss of ecosystem function, losses to tourism, to shipping, and to fisheries. There is also growing concern that the accumulated plastic pollution may affect human health, food supplies and the quality of drinking water of future generations. In the environment, waste plastic generally degrades to microplastics which have been found in foods, drinking water, and human tissues. Without concerted action, the level of MPP is projected to grow by about 75% by 2040.

2. **Plastics life cycle**. Africa's representatives to the global plastics treaty negotiations recognise that marine plastic pollution (MPP) is part of a larger plastic pollution and waste management problem which involves the entire plastics life cycle - from production of raw material through improved design of plastic products to management of wastes, including through development of a circular economy for plastics. They recognise, that the despite an increasing demand for plastics and plastic products, a reduction in production of raw plastic is required; elimination, or reduction of un-necessary plastics including many single-use-plastic products is necessary; and that the environmental costs of plastics need to be reflected in the price of plastics.

5.6.3 The global plastics treaty

156. SDG 14.1 states: "*By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution*". Between 80% and 90% of marine litter, or marine debris, is estimated to be plastic. A global plastics treaty is being negotiated pursuant to a UNEA mandate.[177] The Intergovernmental Negotiating Committee (INC) addresses the entire plastic life cycle, including the root causes of plastic pollution, not just the result - pollution. Africa's 'common position' in the negotiations is to ensure the management of the entire plastics life cycle. The negotiations are currently (INC-4) largely stalled, in particular by the oil producing countries, which do not wish to have mandatory limits or restrictions on raw plastic production. The INC revised draft text considers the plastic life cycle in three main segments:

a) upstream: measures to reduce plastic production and use and virgin plastic in particular
b) midstream: the design and production of 'improved' plastics which reduce microplastic generation, eliminate toxic products and additives, and facilitate recycling

[176] UNEP estimates that MPP cost fishing, aquaculture and tourism $6 to 19 billion in 2018.
[177] Zero draft text of the international legally binding instrument on plastic pollution. September 2023.

c) downstream: management of the waste streams, including microplastics and fostering the plastic circular economy.

157. **All necessary measures.** There is wide consensus that no single measure will resolve the 'plastics problem' but that all available means must be deployed to make an effective impact. These include regulations, taxes, harmonised trade rules, investment in solid waste management and in the circular economy. Extended producer responsibility schemes, enhanced public awareness, and changed consumer and industry behaviour are all required. There is a shared understanding that countries, regional economic communities and industry must act together to build common consensus and implement coordinated measures along the entire plastic life cycle, including monitoring of MPP.

158. **Regional coordination**. The global plastics treaty may take several more years to negotiate, but countries and regions need to act now and cooperate to curb this growing problem. Assuming a global plastics treaty comes into force, states will have to develop plans to implement the treaty. However, countries already have international legal obligations (under UNCLOS and the NC LBS Protocol) to cooperate on marine pollution, including at regional level. There is a growing understanding that in addition to a global treaty, coordinated actions are required at the level of the regional economic communities, in the large marine ecosystems, in the ocean basins, or through other means that can coordinate efforts at scale. Regional action plans are being implemented in several regional seas, or by economic groups, e.g., in the Caribbean, the Mediterranean, by the EU, by ASEAN and by South Asian countries. The East African Community already has common regulations on some plastic products.

5.6.4 Marine plastic pollution in the WIO

159. **Marine plastic pollution at regional level**. The Indian Ocean island countries annually generate over an estimated 5,500 tons of marine plastic pollution (Table 7) and over 90% of this plastic is imported.[178] The African mainland countries are estimated to generate levels which are orders of magnitude greater (Table 8). For example, the East African mainland countries (excluding Somalia) generate at least 150,000 tons of marine plastic pollution annually, or more than 25 times the estimated quantity generated by the WIO island states.[179] The vast majority of the pollution is generated from land-based sources. The main marine sources are fishing gear and ships garbage. Some MPP is transported by ocean currents from South and Southeast Asia (Figure 19 and model (video simulation)).[180]

Table 7. Estimated MPP generated annually by WIO island countries

Countries	tons
Comoros	1,814
France (Reunion)	na/ v.low
Madagascar	3,478
Mauritius	158
Seychelles (assuming 5% leakage)	78
Total (excl. Reunion)	5,528
Maldives	256

Data: *AIODIS country reports (Kelleher, 2021)*

Table 8. Estimated MPP generated by WIO mainland countries

Mainland country	Kenya	Mozambique	South Africa	Tanzania
MPP (tons/yr)	37,000	17,000	40-197,000*	29,000
MPP per person (kg/yr)	0.8	0.6	1.9	0.5
Plastic waste per person(kg/yr)	11	6.1	41	5.7
Waste collection rate (average %)	27%	32%	70%	
Recycling (%)	7%	1%	14%	0.50%
Burning plastic (%)	~56%		~38%	~42%

* This range reflects the uncertainties in the assumptions underlying various estimates for South Africa.

[178] Kelleher. K. (2021). Prevention, reduction and control of Marine Plastic Pollution in African and Indian Ocean Developing Island States. SWIOFish2 (World Bank/ Indian Ocean Commission).
[179] Note that the estimates rely on models (Jambeck, 2015) and waste data sets (What a Waste 2.0 database (Kaza et al., 2018)).
[180] Video simulation modelling the dispersal of plastic waste across the Indian Ocean over a four-year period.

160. Many WIO countries have regulatory measures (mainly bans or taxes on single use plastic bags) and have prepared action plans to curb and monitor plastic pollution. Baseline studies on plastic waste management have been prepared for all the island countries.[181] The EAC has Community legislation banning certain plastics. The African Union has prepared an African plastics policy assessment. A decision of the African Ministers Conference on the Environment (AMCEN) on plastic pollution identified key actions to be supported nationally and regionally, including the establishment of an African Group of Negotiators on the global plastics treaty and a call for financing national and regional priority actions.[182] Both the Abidjan and Nairobi Conventions have prepared regional action plans on marine litter as a result of COP decisions and regional action plans on MPP have been prepared for both Regional Seas at the request of the island countries (AIODIS).

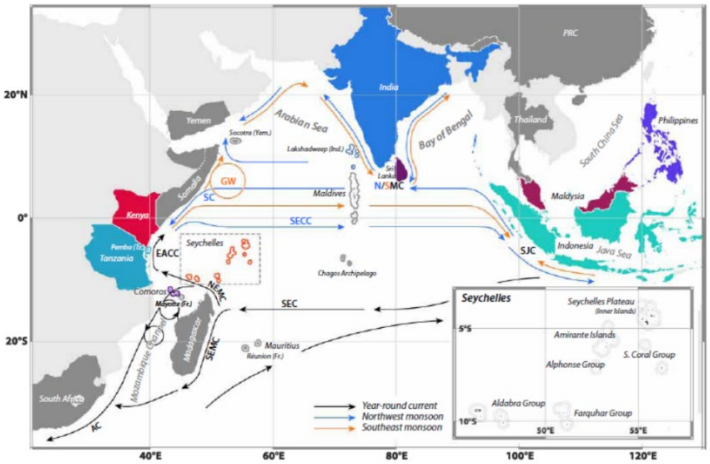


Figure 19. Currents driving dispersion of MPP from Asia

5.6.5 Circular economy for plastics

161. Plastics are among the prime targets for circular economy initiatives. The other targets include packaging, electronic waste, glass, aluminium cans and 'white' goods. The circular economy has not been the focus of a Task Force technical dialogue and the topic is largely beyond the scope of the ROGS. However, a declaration by the concerned WIO islands ministers and the African Union's Green Recovery Action Plan provides guidance.[183] Key stakeholders include the African Circular Economy Alliance (ACEA) and the AfDB-hosted Africa Circular Economy Facility (ACEF). The ACEF provides support for development of national roadmaps, fostering 'champions' and for innovation and business start-ups. At least three WIO countries already have circular economy policy and four countries have an extended producer responsibility policy.[184]

162. Recycling of fishing gear is already progressing in the Indian Ocean region (Seychelles and Maldives) and the case has been made for introduction of EPR schemes for fishing gear and to address the disposal of end-of-life plastic (GRP) fishing and leisure boats.

5.6.6 Financing solid waste management

163. Solid waste management typically costs $35/ton and absorbs up to 20% of municipal budgets in low-income countries.[185] Globally about half of investments in waste services are made by local governments, with an estimated 20% 'subsidy' from national governments, and 10–25% invested by the private sector (depending on the services provided by the private sector). National governments typically finance up to 50% of the recurrent costs of municipal waste management. The capacity to impose user charges (such as collection fees) for waste services varies widely with the regulatory

[181] Kelleher, K. 2022. Prevention, reduction and control of Marine Plastic Pollution in African and Indian Ocean developing island states (AIODIS)
[182] AMCEN, Dakar, 2022.
[183] See also, WTO. Circular economy: Africa's perspectives.
[184] IOC, SWIOFish2/AIODIS project. Circular economy in the African and Indian Ocean Developing Island States, Existing strategies and state of play: Review report, 2021.
[185] Kaza, S. et al. 2018. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development. World Bank. See Chapter 5 on financing. See also: Kaza, S. et al. 2021. More Growth, Less Garbage. World Bank. Washington, DC. for updated waste projections for Sub-Saharan Africa.

regime, the effectiveness of the municipal authorities, and the income level of the municipality, or community.[186]

164. There is a strong regional demand for finance to combat MPP and solid waste management more generally. The financing needs are broadly similar throughout the region and fall into several broad categories:

a) capital investment in infrastructure for solid waste collection, for reuse, for recycling, or for final disposal
b) investment in a circular economy for plastics and other wastes (e.g., innovation accelerators)
c) investment in institutional arrangements to underpin sustainable waste management. Institutional investments may include the design of waste management systems at municipal level. These designs are likely to require stakeholder consideration of financing recurrent costs; cost recovery mechanisms; private sector contracting arrangements; and a reduced carbon footprint. Design may include provisions for raised consumer awareness and for establishing the enabling environment for circular business and consumer behaviours.

165. Many solid waste management investment projects are individually financed and assessed (baselines, risks, returns, economic viability, social and environmental benefits and safeguards and management modalities). The high transaction costs, preparation delays and financing issues means that many projects are 'shelved'. However, a range of financing innovations can be considered. The demand for solid waste management investments can be 'bundled' or aggregated across the region and the individual projects (or proposals) structured as a 'portfolio' of potential investments in sustainability, in environmental resilience and in adaptation to human pressures on the environment. Solid waste management investment draws on a 'menu' of common components, for example: waste reduction and collection, circular waste economy, landfill, incineration, managing cost recovery and municipal finance, regulatory reform, extended producer liability schemes, or awareness raising campaigns. More recently Ghana is one of the beneficiaries of Plastic Waste Reduction-Linked Bond expected to provide investors with financial returns through plastic and carbon credits generated in waste reduction and recycling projects in vulnerable communities (for details see Box 41).[187]

5.7 OFFSHORE EXTRACTIVE INDUSTRIES

5.7.1 Benefits and challenges

166. The scale of the investments in offshore (and coastal) extractive industries are orders of magnitude greater than in any other ocean activities. These activities may generate significant negative environmental impacts and dominate the blue economy. Many WIO countries are committed the development of the extractive industries, as they can unlock transformative benefits, underpin industrial development, investment in infrastructure and transport, and create employment, revenues, and human capacity.[188] This complex priority lies primarily in the domain of national economic development and industrial policy, although it has important links to the blue economy, sustainable oceans and the ROGS.

167. Several forms of extractive activities can impact on the ocean and the coastal environment and economy: (i) offshore oil and gas, including construction of shore facilities; (ii) coastal mining (such as for titanium and heavy metals); (iii) inland mining activities which can pollute rivers and oceans; and (iv) shipping of extracted products, which can underpin port infrastructure investments but also create risks of pollution and spillages.

[186] For more details, see: World Bank. 2021. Bridging the Gap in Solid Waste Management: Governance Requirements for Results. Washington, DC. (Chapter 4).
[187] Prepared under the World Bank Sustainable Development Bond Framework.
[188] Gylfason, T. (2001). Natural resources, education, and economic development.

168. Offshore extractive industries and coastal mining may cause unwanted environmental impact or damage. Offshore exploration generates high levels of noise pollution which is known to affect cetacean and other marine species. Figure 20 illustrates the scale of the seismic surveys which have taken place on the Mozambique continental shelf, the extent of the potential hydrocarbon resources and some of the transboundary basins targeted. Ensuring that extractive industries generate these benefits faces several significant challenges: that the benefits remain in the country; that the flow of benefits is distributed equitably, that the benefits are reinvested in long-term sustainable development, and that the likely environmental damage caused by the mining or extraction activities minimised and remedied.

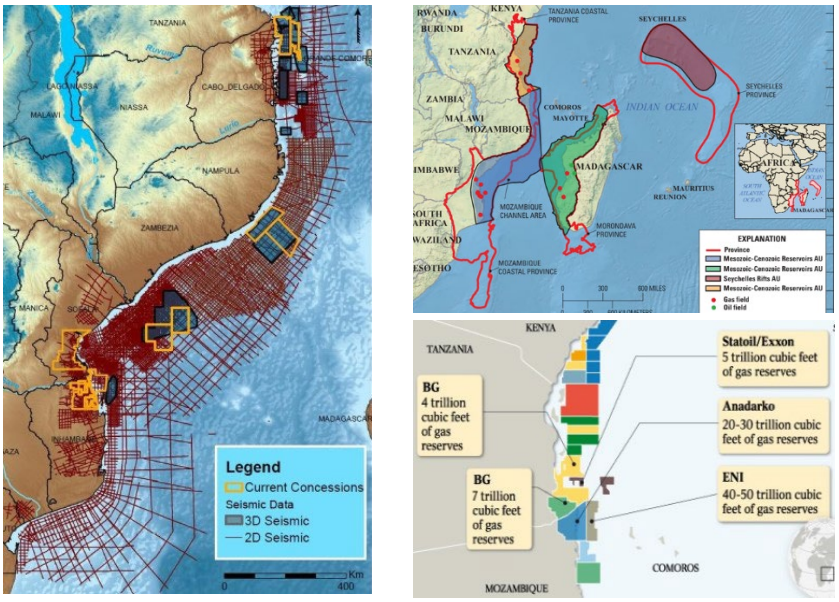


Figure 20. Seismic surveys, resource potential. transboundary basins

5.7.2 Policy guidance

The Africa Mining Vision calls for "*transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development*". It identifies several key opportunities: resource rents, infrastructure development, upstream (extraction) and downstream (raw material processing) value addition and technology and knowledge transfer. It recognises that 'sustainable mining' may be an illusion, or an oxymoron and that the benefits from use of non-renewable resources (capital depletion) need to be transformed into other forms of capital or national wealth such as infrastructure, human capital and development of more sustainable economic opportunities (Figure 21).

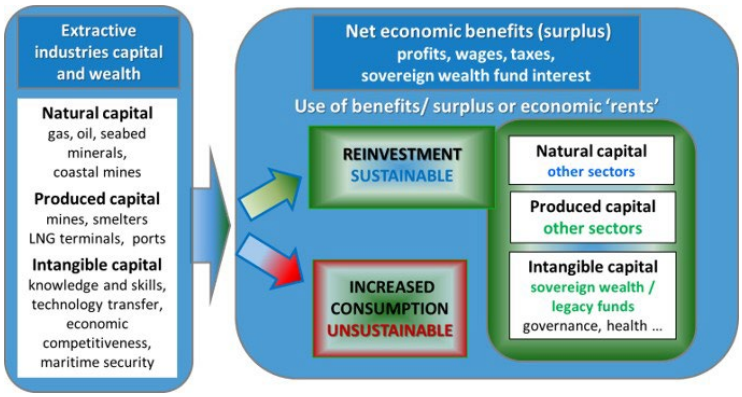


Figure 21. Investing depleting resources for sustainability[189]

169. The Mining Vision provides guidance on key policy and operational approaches. It recognises the need for foreign capital investment, the balance of risks and benefits and counsels adhesion to, or use of international instruments which can support good governance of extractive industries and the flow of revenues generated. These include the Natural Resources Charter and the EITI, which require support through national legislation.[190] In 2004, a multi-stakeholder working group co-convened by the Global Reporting Initiative (GRI) and the ICMM developed the GRI Mining and Metals Sectors Supplement to accompany the GRI 2002 Sustainability Reporting Guideline.

[189] Kelleher, K. Building the Blue Economy in the WIO Region. NC COP8, Seychelles 2015.
[190] E.g., the US Dodd-Frank Act and similar EU legislation protects the public from irresponsible or egregious acts including transfer pricing by corporations and their financial partners.

170. The African Minerals Governance Framework and the "Sustainable Development Charter for Africa's Minerals and Mining Sector" also provide guidance on mineral policy formulation on the continent. In 2007, SADC Mining Ministers adopted a framework for the "Harmonisation of Mining Policies, Standards, Legislative and Regulatory Framework in Southern Africa". The African Development Bank (AfDB) has established the African Legal Support Facility (ALFS) to support crafting concession agreements.

5.7.3 Offshore oil and gas in the WIO

171. The development of offshore oil and gas in the WIO presents a complex array of technical economic and environmental issues which have major political and strategic dimensions.[191] These activities can have a transformative effect on national economies, but generate numerous inter-related economic, financial and political challenges that are beyond the scope of the ROGS. At the political level, the more tangible and immediate economic benefits from oil and gas vastly outweigh the long-term and uncertain environmental losses. Apart from the direct environmental impacts of the exploration and extraction processes, the products (oil and gas) contribute to global GHG emissions and climate change. This impact on climate change which is attributable to that country's production of oil or gas is unlikely to be a significant factor in any cost benefit analysis of the investment.

172. **Resources**. Oil and gas resource potential in offshore and coastal East Africa is estimated to be in the order of 27 billion barrels of oil, 440 trillion cubic feet of natural gas, and 14 billion barrels of natural gas, excluding the resources of South Africa and Somali.[192] The basins extend along the East African mainland coasts, Madagascar and the Seychelles/ Mascarene plateau. Tanzania is expected to launch its fifth oil and gas licensing round by June 2024, possibly for 11 offshore blocks. The Tanzania Petroleum Development Corporation and partners are continuing seismic surveys in deepwater blocks located near gas discoveries made by Shell, Equinor and ExxonMobil. In 2021 Mozambique announced a sixth round of licencing for 16 areas in the Rovuma, Angoche, Zambezi delta and Save areas.[193] Some resource basins may be transboundary and the potential for their development has already resulted in maritime boundary disputes in SSA.[194]

173. **LNG production**. Companies in several East African countries are already producing offshore oil or gas. Projected investments in LNG production facilities are in the order of tens of billions of dollars in Mozambique and Tanzania.[195] Discussions on construction of pipelines to distribute LNG in the region or export from the region are also under way.[196] Because of commitments to competing LNG investment in the Gulf States and in Australia, the investment in East African LNG plants may come under additional scrutiny. Some investments may be directed at mobile floating offshore LNG production vessels rather than to fixed onshore infrastructure.

174. The role of the ROGS in relation to this vital sector will require a structured stakeholder dialogue, noting that many of the policies and practices have application in both offshore and inland extractive industries. Subject to regional consensus and through agreed channels, the ROGS processes could consider advocating for the inclusion of appropriate governance measures to support sustainable oceans in the resource extraction agreements, for example:[197]

a) use of global best practice in exploration, extraction, and production, and transparent communication on verifiable use of such practices to national stakeholders

[191] African Energy Chamber 2024 Outlook Report.
[192] Assessment of Undiscovered Oil and Gas Resources of Four East Africa Geologic Provinces.
[193] Davison, I. and Steel, I. 2018. Geology and hydrocarbon potential of the East African continental margin: a review. Petroleum Geoscience.
[194] ITLOS Maritime Delimitation Somalia v. Kenya and Ghana v. Côte d'Ivoire.
[195] The estimated investments are in the order of $40 billion (Tanzania) and $20-30 billion each for investments. in Mozambique. Negotiations on financing have been ongoing with the global oil and gas companies including Equinor, Shell and ExxonMobil.
[196] The African Renaissance Pipeline (ARP) (estimated cost $6 billion) plans to provide Mozambique energy to South Africa.The East African Crude Oil Pipeline (EACOP) (estimated cost 43.5 billion) shareholders include Total (France, 72%), the China National Offshore Oil Corporation (8%), the Uganda National Oil Company (15%) and the Tanzania Petroleum Development Corporation (5%).
[197] Africa Progress Panel. 2013. Equity in extractives: stewarding Africa's natural resources for all.

b) establishment of adequate social and environmental baselines and independent monitoring of impacts, for example through the African Peer Review Mechanism
c) transparency in the reporting of economic, financial, social, and environmental activities and outcomes of the investments, including through established transparency protocols (such as the Extractive Industries Transparency Initiative)
d) anticipate potential conflicts of interest in relation transboundary resource basins and consider the prior establishment of cooperative approaches to resolve potential issues
e) establishment of mechanisms to finance any remedial actions which may be required to address social or economic damage (e.g. to local fishing communities, or biodiversity)
f) draw attention to the apparent policy conflicts between hydrocarbon production and commitments to climate change mitigation, including in terms of the relative scale of the investments (e.g., application of the producer/polluter pays principle).[198]

5.7.4 Deep seabed mining

175. **Legal context**. There is growing interest in mining deep seabed mineral (DSM) deposits. Some deposits may lie within the areas under national jurisdiction. Most deposits are located on abyssal plains, seamount and fracture zones in areas beyond national jurisdiction (the Area).[199] DSM is included in various regional blue economy strategies[200] and concerns over the environmental impact and the distribution of potential benefits have been the subject of considerable discussion.[201] DSM may cause significant permanent and irreversible environmental damage to deep sea ecosystems. Even if these ecosystems can (in theory) be restored, the cost of remedial actions are considered to greatly outweigh the value of the minerals.[202]

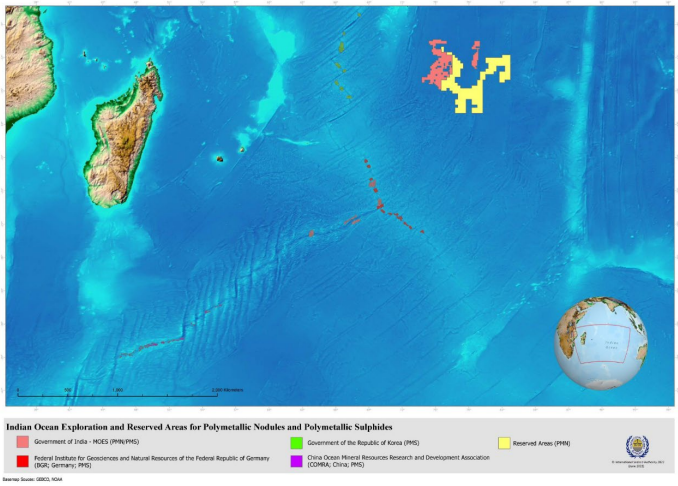


Figure 22. Location of DSM exploration concessions

176. **Exploration contracts**. The International Seabed Authority (ISA) has awarded over 30 contracts solely for exploration purposes. Most of the DSM concessions have been granted to state agencies or corporations which have been specifically established for DSM purposes. Several Caribbean and Pacific Small Island developing states, among them the Cook Islands, Kiribati, Nauru, Tonga and Jamaica, have sponsored entities to secure ISA exploration contracts. Africa is the only regional group that has not sponsored an entity to explore the Area. Approval of contracts for mining activities is pending until the ISA has approved The Mining Code, the regulations for exploitation. These are currently in draft form and the subject of ongoing negotiations (see below).

177. **Legal framework**. Under the UNCLOS, the DSM resources are 'the common property of mankind' (Art. 136) and the International Seabed Authority (ISA) is mandated to manage the Area. Mining faces numerous issues which are addressed by the ISA. These include the mining code, EIA requirements, liability for environmental damage, management of potential revenues and means of allocation and monitoring of concessions, environmental impacts and revenues. DSM activities could

[198] Who is Financing Fossil Fuel Expansion in Africa?
[199] Metals and minerals of interest on the deep seabed include copper, cobalt, nickel, zinc, silver, gold, lithium, rare earth elements (REEs) and phosphorites.
[200] E.g., UNECA African Blue Economy Handbook.
[201] Edwin Egede, E. 2022. From apathy to action. Africa's role in deep seabed mining. Institute for Security Studies. Bell, K.L.C., et al., 2023. Exposing inequities in deep-sea exploration and research: results of the 2022 Global Deep-Sea Capacity Assessment.*Frontiers in Marine Science*
[202] Planet Tracker. 2023. The Sky High Cost of Deep Sea Mining.

expose investors, sponsors and financial institutions to significant policy, regulatory and reputational risks. To clarify state responsibilities for environmental damage, Nauru and Tonga requested the International Tribunal on the Law of the Sea (ITLOS) to further clarify the legal position. The ITLOS opinion was issued in 2011 (Box 19).

Box 19. Responsibilities of state sponsors of deep seabed mining

In 2008, Nauru and Tonga made corporate applications in the ISA designated reserved areas in the Clarion Clipperton zone making them subject to special ISA procedures. The reserved areas are reserved for the beneficial use of developing states. As a result of discussions with the ISA, a request to ITLOS for an advisory opinion was made. The ITLOS was requested to advise on the following questions:

1. What are the legal responsibilities and obligations of States Parties to the Convention with respect to the sponsorship of activities in the Area in accordance with the Convention, in particular Part XI, and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982?
2. What is the extent of liability of a State Party for any failure to comply with the provisions of the Convention, in particular Part XI, and the 1994 Agreement, by an entity whom it has sponsored under Article 153, paragraph 2 (b), of the Convention?
3. What are the necessary and appropriate measures that a sponsoring State must take to fulfil its responsibility under the Convention, in particular Article 139 and Annex III, and the 1994 Agreement?

In 2011, the ITLOS issued its opinion. In summary it states:

- There is a direct obligation of "due diligence" on the sponsoring State and an (indirect) obligation on the sponsoring States to make best possible efforts to secure compliance by the sponsored contractors.
- There is an obligation to take into consideration the special interests and needs of developing States
- There is an obligation to ensure the use of best environmental practices. The opinion makes specific reference to Principle 15 of the Rio Declaration and the Nodules Regulations and the Sulphides Regulations, part of the ISA Mining Code: Exploration Regulations.
- Sponsoring states are also obliged to make appropriate arrangements for guarantees and compensation
- Environmental impact assessment is considered a general obligation under customary law
- The conditions for the liability of the sponsoring State to arise are: (a) failure to carry out its responsibilities under the Convention; and (b) occurrence of damage

ITLOS. Responsibilities and obligations of States with respect to activities in the Area, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, p. 10.[203]

178. **The Mining Code draft text**. A consolidated text of the DSM draft exploitation regulations (The Mining Code) is under review by the ISA. Some countries have called for a moratorium, or a complete ban on DSM in the international seabed, and an increasing number of countries are indicating that they will not approve of any mining activity in the absence of a completed and adopted regulatory framework (The Mining Code). There is a strong divergence of opinions as to whether the benefits of DSM outweigh the risks, and if mining would help promote the environmental goals, e.g., through the supply of materials for manufacture of renewable energy products.[204] Over 30 major outstanding issues in the draft mining code remain to be resolved, including:

a) equitable transparent sharing of revenues, economic planning mechanism, mining license contract terms and conditions
b) permissible harm, criteria and thresholds, baselines, means of monitoring, EIAs, payment for environmental damage, estimating the cost of damage
c) lack of understanding of the impacts of disturbance of the deep sea carbon sink and the oceanic carbon pump, noise from mining operations
d) lack of an agreed metrics and means to assess the value of the ecosystem services provided by the Area (or the loss of such services attributable to DSM)[205]
e) means of enforcing the mining code
f) modalities for possible 'compensation' for loss of (current) mineral incomes due to DSM.

179. There is an MOU between the ISA and the African Union. The Africa Group has made inputs to the ISA discussions on the Mining Code and an African Deep Seabed Resources Project (ADSR) was established in 2017.[206]

[203] Nauru submission. https://www.reuters.com/world/asia-pacific/race-bottom-deep-sea-minerals-centers-tiny-nauru-2023-04-14/ ; ISA Africa group (example only) https://www.isa.org.jm/wp-content/uploads/2023/03/Council28-AGSpeakingNotes.pdf
[204] Deep-sea mining review (environmental brief).
[205] Report on the value of ecosystem services and natural capital of the Area.
[206] From apathy to action Africa's role in deep seabed mining.

180. The Africa Group does not currently support a moratorium but has repeatedly expressed concern regarding the environmental issues, the need to have agreed regulations and an equitable system for distribution of benefits, The most recent statements of the Africa Group are provided in Box 20. The ISA manages a multi-donor trust fund which supports marine scientific research in the Area.

Box 20. African Group statements ISA meetings. 2024

- environmental plans of contractors should be coordinated with REMPs; mechanisms for contractors to share environmental monitoring data and reports are required
- mining plans must be subjected to rigorous assessment and approval by the ISA before operations
- mechanisms must be in place to monitor environmental impacts, protect underwater heritage. and implement effective mitigation measures
- exploitation activities should not commence until the fund is financed
- supports an independent compliance committee rather than an appendage of the LTC.
- need to disclose revenues from deep-sea mining contractors as key element of transparency.

Source: Deep–Sea Mining Negotiations ISA Tracker

6 ENVIRONMENT AND NATURAL RESOURCES CLUSTER

6.1 WATER QUALITY AND CHEMICAL POLLUTION

181. **Multiple stressors**. To facilitate specific proposals or recommendations, the ROGS treats the multiple stressors on the ocean and coastal environment as separate challenges. However, many of these stressors have a compounding effect on species, habitats, ecosystems, or ocean function.[207] Prevention, reduction and control of these stressors generally requires national, regional and global action.[208] Chemical pollution is among those stressors that requires regional action as these pollutants are dispersed regionally by ocean currents, by transboundary rivers, or carried by affected organisms. Ocean acidification, marine plastic pollution and invasive species are among those other stressors that require regional and global efforts to manage. The current ROGS focuses on guidelines for (marine) water quality. However, this focus on water quality can be regarded as an entry point for a complex of complementary additional actions, including regulations, investments in management of waste water and control of industrial and agricultural chemicals.

6.1.1 The LBSA Protocol

182. The NC Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities (the LBSA protocol) provides a policy basis for regional actions. The parties to the NC have the general obligation "*to prevent, reduce, mitigate, combat and, to the extent possible, eliminate the pollution or degradation of the Protocol area from land-based sources and activities, using for this purpose the best practicable means at their disposal and in accordance with their respective capabilities*" (Article 4). This Article also requires the use of the precautionary and polluter pays principles, EIAs, and implementation of policies, regulations and other measures. The scope of the LBSA Protocol extends far beyond the coasts and marine environment and includes the rivers and inland waters, and the parts of the watersheds of the river basins draining into the WIO that are under the jurisdiction of the parties to the NC.

183. Ideally, the LBSA Protocol could provide for mandatory national reporting of the marine pollution hotspots with a view to progressively establishing a basis for financing priority actions to prevent, reduce and control pollution.

6.1.2 The Regional Strategic Framework

184. **Development of the Strategic Framework**. The Parties to the NC agreed to develop the regional Strategic Framework for Coastal and Marine Water Quality Management (C&MWQM) through a consultative process.[209] The activity is planned in two phases. The GEF-financed WIOSAP undertook to develop phase one, the development of the regional Strategic Framework for C&MWQM. Phase two, the implementation of the Strategic Framework at national and sub-national levels awaits the formal endorsement of the Strategic Framework by the NC-COP. Based on the outcomes of the ROGS Technical Dialogue and the ROGS Task Force and extended stakeholder dialogues the key ROGS recommendation on water quality is for the COP to formally endorse the Strategic Framework for Coastal and Marine Water Quality Management (C&MWQM) for the WIO region, including the Guidelines for Setting Environmental Quality Objectives & Targets for Coastal and Marine areas (Box 21). Phase two would then become part of the implementation of the ROGS and folded into the proposed ROGS financing and institutional arrangements.

[207] IOC-UNESCO. 2022. Multiple Ocean Stressors: A Scientific Summary for Policy Makers.
[208] The following terminology is used in UNCLOS in numerous articles: "States shall cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention" (e.g., Art 197).
[209] The activity was supported by the WIOSAP, SAPPHIRE and ACP-MEA Phase III projects.

Box 21. Proposed COP Recommendation on the Strategic Framework for Water Quality Management

NC Contracting Parties

- adopt the Strategic Framework for Coastal and Marine Water Quality Management (C&MWQM) for the WIO region, including the Guidelines for Setting Environmental Quality Objectives & Targets for Coastal and Marine areas.
- formally establish a Regional Task Force (RTF) for C&MWQM (currently a project-level task force under the WIOSAP – RTF for Water, Sediment and Biota Quality)
- establish **national** C&MWQM Task Forces to facilitate and coordinate C&MWQM at national level, feeding into the RTF through national focal points.
- adopt, as appropriate, the Strategic Framework for C&MWQM at national level, including the Guidelines for Setting Environmental Quality Objectives & Targets for Coastal and Marine areas.
- coordinate the identification of national-level hotspots, as well as the establishment of local C&MWQM committees to oversee the execution of 'hotspot' implementation programme.
- national C&MWQM Task Forces coordinate the compilation of national-level status reports that would feed into overarching regional status reports - coordinated by the RTF – to inform various regional processes (e.g. WIO State-of-Coast reporting, Ecosystem Monitoring Strategies).

The Nairobi Convention Secretariat work with partners to support capacity building programmes in support of the effective implementation of the Strategic Framework for C&MWQM, including the Guidelines for the development of Environmental Quality Objectives and Targets.

Source: UNEP and CSIR, 2021. Western Indian Ocean: Strategic Framework for Coastal & Marine Water Quality Management. Final Draft.

185. The regional Strategic Framework sets out the policy context and recommends on the regional institutional arrangements. It does not address the planning and financing for 'implementation', such as the investment required in water quality monitoring or waste water treatment, enforcement of the relevant environmental legislation and measures to change in the behaviour of polluters. As indicated above, phase two is foreseen to be addressed under the implementation of the ROGS and to be part of the overall financing plan for the ROGS.

186. The Strategic Framework is based on several regional reports (2009 and 2021) and other COP Decisions. A 2009 assessment suggested a series of actions related to the SAP and National Programmes of Action (NPAs). These recommendations are still largely relevant (Box 22). The recommendations identify three root causes of water pollution: inappropriate governance, inadequate knowledge and awareness, and inadequate financial resources. NC COP Decision CP. 9/3 addresses municipal wastewater which is a major source of water pollution.[210]

6.1.3 The 'invisible wave' of marine chemical pollution

Most marine pollution is largely invisible.[211] There has few comprehensive global, WIO regional, or (in many cases) national efforts to collect, collate, assess and synthesise the information required to build a picture of marine chemical pollution and its impacts.[212] Plastic pollution has received attention because it is highly visible. There is awareness of nutrient pollution because it causes dead zones and beach closures. However, the pollution caused by microplastics, mining, offshore industries, industrial chemicals (heavy metals, persistent organic chemicals (POPs)) sewage, air pollution and pharmaceuticals make up an invisible wave of ocean pollution. Thousands of new synthetic chemicals enter the oceans each year.[213] There is limited understanding of the scale or impacts of these pollutants on ocean ecosystems, on human health, food supply or biodiversity.[214]

187. While some chemicals such as POPS have been regulated, thousands more unregulated chemicals are believed to have similar negative effects. The environmental costs and costs to human health are not included in the price of these chemicals, so society bears the costs. The chemical pollution problem parallels the 'plastics problem'. Many of these chemicals are important for economic development and are used in multiple sectors, products, industrial processes, in agriculture and in the health sector. The products have long, complex and varied value chains and life cycles.

[210] ***Decision CP.9/3. Management of marine litter and municipal wastewater in the Western Indian Ocean***. *To encourage the Contracting Parties to implement action programmes on municipal wastewater and to conduct outreach and public awareness activities on the impact of municipal waste and marine litter on marine species and their habitats.*
[211] The Invisible Wave: Getting to zero chemical pollution in the ocean (infographic) and white paper.
[212] The Zero-Pollution Ocean: A Call to Close the Evidence Gap. See also: Back to Blue Initiative.
[213] There are at least 350,000 synthetic chemicals and mixtures of chemicals in the ocean. Thousands are added each year.
[214] Damania, R. et al. 2019. "Quality Unknown: The Invisible Water Crisis." World Bank.

Production is dominated by multinational which resist expanded regulation and tend to advocate a form of inverse precautionary principle – if the product is not clearly shown to be hazardous, then there is no need for regulation. This places the burden of proof on society rather than on the primary producer of the chemicals. Currently financial institutions do not adequately factor the potential risks of investments in chemical manufacture (pharmaceuticals may be an exception).

Box 22. Summary recommendations adapted from the 2009 report

Governance. Develop specific management tools (e.g. regional best practice guidelines, environmental quality objectives, pollution limit standards and guidelines, applying the 'polluter pays' economic incentives) and demonstrate best practice technologies and management approaches for:

- Municipal and industrial wastewater and solid waste
- Ports and harbours (including issues related to on- and offloading, disposal of waste from vessels, disposal of used oil and oil-related products, and contingency planning in cases of accidental spills)
- Agricultural activities (including issues related to soil erosion, agrochemical application and livestock raising).
- Develop targeted investment plans and proposals for the establishment of appropriate wastewater and solid waste management infrastructure in priority hotspots of pollution, e.g. based on the above-mentioned guidelines and lessons learnt from demonstration projects.
- Mainstream the guidelines and investment plans into national policies, strategies, legislation and budgets.
- Enforce legislation/regulations for industries to conduct EIA studies and regular audits to assess and evaluate potential impacts on the coastal and marine environment and ensure that local-level mechanisms are in place to audit and enforce compliance (e.g. monitoring programmes, and incentive and penalty systems).
- Develop registers and permitting systems for wastewater and solid waste management facilities, manufacturing industries, agro-chemicals use (e.g. fertilisers, pesticides, herbicides, etc), specifying allowable products and limits

Knowledge and awareness

- Develop and implement monitoring and assessment programmes to fill gaps in knowledge of priority pollutants (e.g. those identified in the national pollution status reports), including major sources of pollution and their driving forces, with special emphasis on the identified coastal hotspots of pollution.
- Develop and implement regional training programmes to build capacity in wastewater and solid waste management (in many instances focusing on local municipalities and harbour authorities).
- Develop and implement regional education and awareness programmes to inform all sectors of society (including the general public, politicians and managers) on their roles and responsibilities in the generation, collection, treatment and disposal of wastewater and solid waste, as well as the consequences of pollution on the environment and their socio-economic wellbeing
- Develop and maintain a web-based regional information management system that includes information on best practice technologies, registers (listed above) as well as tools and guidelines for the selection of appropriate technology, institutional and policy frameworks and financial mechanisms.

Improve access to financial resources

Identify and establish sustainable financial mechanisms including the development of public-private Partnerships

Source: UNEP/Nairobi Convention Secretariat, CSIR and WIOMSA, 2009. Regional Synthesis Report on the Status of Pollution in the Western Indian Ocean Region. UNEP, Nairobi, Kenya, 116 pp.

Table 9. Sources and types of water pollution

Source	Sewage/ urban waste water	Agricultural runoff	Industrial activities
Type of pollution include	nutrients, microplastics, pharmaceuticals detergents, microbial suspended solids, thermal (waste water)	nutrients, pesticides/ POPs, herbicides fertilisers (N, P) pharmaceuticals (animal and human) sediments	manufacturing, mining, flocculants, mercury, dyes cyanide; waste disposal logging/ deforestation, offshore oil and gas, shipping, dredging, textiles, aquaculture
Polluters include:	local government >50% of WIO urban sewage is discharged untreated; dispersed sources e.g. rural areas	agricultural chemical companies farmers with poor farm management intensive livestock producers	'dirty' manufacturers mining companies 'irresponsible' waste management companies pulp/ paper manufacturers
Stakeholders Selected regional & global actors	local government, national environment agencies, environmental NGOs; NC through LBA protocol, river and shared lake authorities, Basel, Bamako & Stockholm conventions, GESAMP, UN Oceans, IMO (shipping)	responsible farmers chemicals suppliers farmer associations river basin authorities national environment agencies & ministries of agriculture	national environmental agencies & industrial development agencies. local authorities, responsible industry associations (through standards, certification, corporate social responsibility)

Many WIO critical ecosystems, deepwater and coastal, are subject to declining water quality due to chemical pollution.[215] The main sources of chemical pollution are untreated sewage, agricultural runoff and industrial chemical from manufacturing and extractive industries.

188. (Table 9). The types of pollutants and the scale of contamination vary widely by country, by watershed and as a result of the human activities in the area. Chemical pollution is often transboundary. It spreads by ocean currents and through shared river basins. Chemical pollution is a largely unseen threat and often comes to public attention only through 'events' such as fish kills, beach closures, or prohibitions on fishing, or on the sale of seafood. Many WIO countries lack a clear picture of the scale and type of chemicals polluting the ocean.[216] This is partly due to deficiencies in the institutional framework for monitoring water quality, weak control of the use of chemicals and diffused authority for ensuring compliance with rules on chemical pollution.

189. The impacts of some chemical pollution on ecosystem, or on health are well known (e.g., nutrients, mercury, POPs). Of the hundreds of thousands of different man-made chemicals that pollute the oceans, thousands meet the criteria to be considered as POPs, although they not listed among approximately 30 POPs controlled under the Stockholm convention. The impact and the fate (e.g. decomposition rate) of most of these pollutants is unknown. Similarly, the scale and 'geography' of most chemical pollutants is unknown. The cumulative impact and the collective influence of chemical pollutants on other stressors is poorly understood.

190. **Dead zones**. Oxygen concentrations in both the open ocean and coastal waters have been declining for decades. The resulting oxygen-minimum zones, or 'dead zones' not only impact on ecosystems but become powerful are GHG (N_2O) emitters rather than carbon sinks.[217]

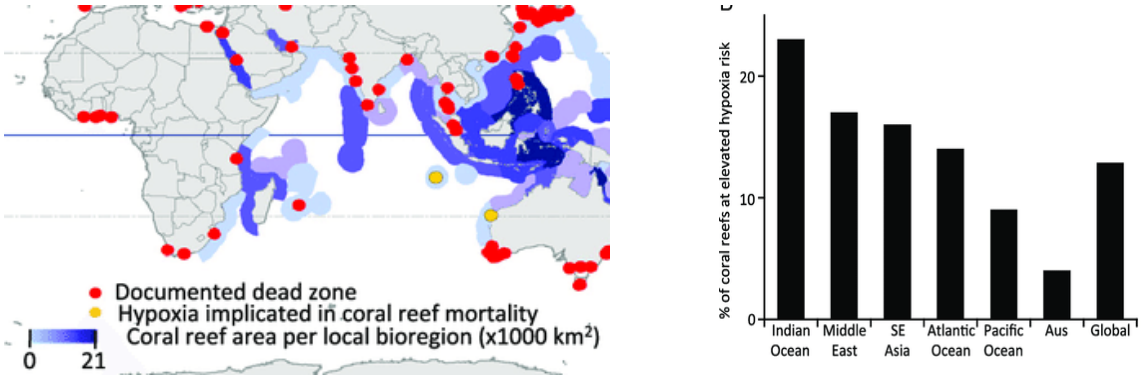


Figure 23. Tropical dead zones and mass mortalities on coral reefs – mapping and risks

191. Analyses suggest that the risk posed by dead-zones to coral reefs has been seriously underestimated.[218] Nutrient pollution and nitrogen pollution, in particular, is the main cause. For example, agriculture is considered to use twice as much nitrogen fertiliser as is necessary.[219] The world's largest dead zone is in the Gulf of Oman.

6.1.4 Financing marine water quality

Arguably, the solutions start by addressing the sources of water pollution. However, this involves a wide range of issues beyond the normative scope of the NC. It means investment in urban waste water management, management of agricultural chemicals, enforcement of mining and manufacturing regulations, investments in water management and sanitation in addition to the focus on marine pollution hotspots and the monitoring of marine water quality. However, a spatial prioritisation may start with the focus on marine pollution hotspots and risks to critical ecosystems, assessment of the

[215] UNEP, GEF, CSIR. 2009. Regional Synthesis Report on the Status of Pollution in the Western Indian Ocean Region.
[216] UNEP, Nairobi Convention Secretariat and CSIR. 2021. Western Indian Ocean: Situation Assessment on Marine Pollution and Coastal & Marine Water Quality Management. UNEP, Nairobi, Kenya, 61 pp. See also: WIO-LaB water and sediment quality monitoring programmes.
[217] Breitburg, L., et al. (2018) Declining oxygen in the global ocean and coastal waters. Science. Vol. 359, 6371.
[218] Altieri, A, et al. (2017). Tropical dead zones and mass mortalities on coral reefs. Proceedings of the National Academy of Sciences. See also dead zone slide show.
[219] Yale Environment 360 (2018) Can the World Find Solutions to the Nitrogen Pollution Crisis?

sources of pollution and targeted actions on point or dispersed sources of pollution in the selected watersheds contributing to major pollution. Actions in selected watershed can help map the financing, policy, cooperation and enforcement modalities and roles at a manageable scale, and inform national and regional approaches, including financing at national or river basin scale.

192. **Urban waste water treatment**. Less than 10 percent of urban areas in Africa have access to sewerage services and as a result, only a small fraction of the sewage produced is treated. The capital costs of urban waste water treatment are substantial. For example, the estimates for Mombasa County are $105 million (for the medium term (2021-2025) and an additional $48 million for the longer term. Mauritius invested about $150 million in the 2015-18 period but needs to source additional finance to reach a target coverage of 50% by 2030.[221] In South Africa, up to 50% of the waste water receives some form of treatment. Based on these values the total capital costs for waste water treatment for the region's coastal urban areas alone may be more than $5 billion.[222] However, given that the inland municipalities areas also contribute to ocean pollution the costs are likely to be far greater. It should be noted that the capital costs of urban waste water treatment represent only part of the total capital costs and that the public and private recurrent costs also need to be considered. However, the costs of inaction may be higher.[223]

Table 10. Relative Waste Water treatment coverage in the WIO

Country	WW treatment plants (no.)	Population served by WWT
France (Mayotte)	3	189,447
Kenya	24	189,447
Madagascar	2	2,736,019
Mauritius	2	65,715
Mozambique	3	294,200
Seychelles	1	270,420
South Africa	964	15,662
Tanzania	10	25,118,907
Grand Total	**1,009**	514,828

Data source: Hydrowaste database10. Note: This table should be interpreted in relation to the Hydrowaste reporting methodology used and values treated with due caution.[220]

6.2 CONSERVATION OF BIODIVERSITY

193. Conservation of biodiversity was not the subject of a specific Task Force Technical Dialogue. However, Task Force members participated in several regional dialogues of direct relevance and many also participated in relevant regional working groups. A Technical Dialogue on Marine Protected Areas and Marine Spatial Planning was held in 2023 (see section 6.3). A wide range of paradigms, studies, regional workshops, consultations and strategic action proposals have identified key actions.[224] These are broadly grouped under three headings:

a) area-based management approaches including the marine spatial planning (MSP) and establishment of functional marine protected areas (MPA). Area based approaches are seen as a key multi-functional tool and discussed in a separate section (section 6.3)
b) **ecosystems**. Conservation and sustainable use of critical ecosystems, in particular coral reefs, mangroves and seagrass and kelp beds. Because of its social, economic and environmental importance, coral reef conservation is discussed in a separate section (section 6.4).
c) **species**. conservation or restoration of threatened or endangered species, including their habitats, migratory routes or nursery grounds.

[220] Hydrowaste database. Macedo, E. et al. 2022. Distribution and characteristics of wastewater treatment plants within the global river network, Earth Syst. Sci. Data, 14.
[221] Voluntary National Review Report of Mauritius 2019.
[222] Final Wastewater Master Plan Report for Mombasa County. See also: Kaluli, J.W. 2011. Towards a National Policy on Wastewater Reuse in Kenya JAGST Vol. 13(1) 2011 116
[223] UNEP, 2015. Economic Valuation of Wastewater - The cost of action and the cost of no action.
[224] These include: Dasgupta, P. (2021), The Economics of Biodiversity. Arrow, K. J., 1983. The organization of economic activity: issues pertinent to the choice of market versus non-market allocations. CBD 2012. Ecologically or Biologically Significant Marine Areas (EBSAs) Volume 3: Southern Indian Ocean; WWF and others. 2010. Western Indian Ocean Marine Ecoregions Strategy and Action Plan 2010-2015; UNEP-NC, WIOMSA et al. 2021. A regional Marine Spatial Planning Strategy in the Western Indian Ocean; A Strategic Action Programme for Sustainable Management of the Western Indian Ocean Large Marine Ecosystems; and the SIOFA bioregionalisation and VME project.

6.2.1 Policy framework

194. **Convention on Biodiversity**. The Convention on Biodiversity (CBD) is the primary global legal and policy framework. All WIO countries are party to the CBD. National commitments focus on implementation of the CBD's Global Biodiversity Framework (2022) which has four generic global goals related to: (i) ecosystem integrity; (ii) sustainable use of nature; (iii) equitable distribution of benefits (including from genetic resources); and (iv) adequate means of implementation. The twenty three (23) targets fall into three broad categories: (i) reducing threats to biodiversity; (ii) meeting people's needs through sustainable use and benefit-sharing; and (iii) tools and solutions for implementation and mainstreaming. Building on the Aichi Biodiversity Targets and previous CBD strategic plans, the goal of the "30 by 30" (target 3) is for governments to designate 30% of land and ocean area as protected areas by 2030. Target 2 aims to restore 30% of degraded ecosystems by 2030. The targets specify that countries stop subsidizing activities that destroy wilderness, such as mining and industrial fishing. Under the Framework, Parties to the CBD committed to setting national implementation targets. Non-state actors develop and communicate their own commitments.

195. The GBF monitoring indicators are set out in national templates to be completed by the Parties. A key metric is the coverage of protected areas and other effective area-based conservation measures (OECMs) and link to the IUCN red lists and other species status determinants. The results are summarised in the Global Biodiversity Outlook and there is more detailed analyses in the various IPBES reports.[225]

196. **CBD supporting instruments**. A wide range of other legal and policy instruments link to, or make provisions to implement the CBD resolutions and the GBF. These include the UNCLOS, the BBNJ agreement, UNFCCC, the IMO, the International Seabed Authority, the Intergovernmental Oceanographic Commission of UNESCO, the Ramsar Convention, the Convention on the Conservation of Migratory Species of Wild Animals, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). UNEP, the FAO, the regional fishery bodies and regional seas conventions all make provisions to implement aspects of the CBD resolutions. Implementation also draws on support from the International Coral Reef Initiative, the UN Decade of Ocean Science for Sustainable Development and the UN Decade on Ecosystem Restoration and many other sources.

197. **AMCEN**. In 2023, the African Ministerial Conference on the Environment (AMCEN) called on countries to implement the GBF, consider regional means of cooperation, to ratify the BBNJ, to improve scientific information on biodiversity, including valuation of ecosystem services, and called for increased technical and financial support to implement the GBF. An African Biodiversity Strategy and Action Plan is in preparation. The plan is expected to support updating of national biodiversity and strategy and action plans to incorporate the priority targets of the GBF.

198. **Nairobi Convention.** The key instrument is the Protocol Concerning Protected Areas and Wild Fauna and Flora (Biological Diversity) in the Eastern Africa (Western Indian Ocean) Region and its proposed revision.[226] The formal endorsement of this is considered to be a separate but parallel workstream. The ROGS will support the actions required to implement the Protocol.[227] RECs and WIO countries also have biodiversity strategies or plans prepared in response to the CBD and other national commitments.[228] In general, the global, regional and national policies and instruments are aligned.

6.2.2 Status and action on WIO marine biodiversity

Of some 4,000 species identified in the WIO, about 12% are considered to have 'threatened', or worse status.[229] However, the status of 17% of species is unknown while 71% are rated 'least concern'. Turtles, sharks, marine mammals and sea cucumbers are among the critically endangered (in that

[225] Global assessment report on biodiversity and ecosystem services. The second assessment is due in 2028.
[226] See proposed revision and justification for revision.
[227] For examples of possible future directions, see Amendments to Annexes II and III to the Protocol concerning Specially Protected Areas and Biological Diversity (SPA/BD) in the Mediterranean.
[228] E.g., the SADC Regional Biodiversity Strategy (2008), revised 2024 (with Action Plan).
[229] Bullock, R. et al. 2021 The Conservation Status of Marine Biodiversity of the Western Indian Ocean. IUCN.

order). At species level 100% of sea turtles (5 species), 72% of sea cucumbers (125 species), 59% of sharks (264 species) fall into the 'threatened or worse' group. Of potentially greater concern at ecosystem level, 33% of the 492 species of reef-building corals are also 'threatened or worse'. Fisheries, pollution and coastal development are seen as the major drivers of biodiversity loss. Approaches focus on vulnerability and irreplaceability to identify initial priorities, and to refine selection of marine areas which can feasibly be managed and protected, and possible selection of 'champion' species. Raising community, public and political awareness of the value of biodiversity is considered fundamental and can be strengthened through dissemination of initiatives such as the State of the Coast Report, 'Outlook reports' on MPAs and Critical Habitats, and strategic action plans for iconic species, habitat conservation or campaigns to combat pollution. Development of materials for school curricula and use of social media and local languages can all contribute. WIO threatened species working groups, or task forces have also been established or proposed, and in the case of turtle conservation an MoU has been prepared in association with the NC.[230]

199. WIO countries recognise that actions to implement the GBF and the Protocol require enhanced scientific mapping, monitoring and understanding of biodiversity, management of species and spatial data sets; improved national and regional human and institutional capacity, all of which requires additional financing. Many biodiversity conservation actions are addressed under separate parts of the ROGS as many have multiple objectives, including supporting responsible fisheries and blue tourism, addressing pollution, capacity building and knowledge management, and enforcement of regulations.[231] The sources of financial or technical support may have different approaches embedded in their business models. The approaches range from the ecosystem approach, nature-based finance, source-to-sea, community management or co-management, to payments for ecosystem services, area-based instruments, gene banks, species or habitat focus, or targeting hotspots. Although approaches vary in emphasis or focus, they share the same overall objectives of biodiversity conservation and sustainable use of natural resources and are not mutually exclusive. Financing and resourcing can potentially be provided in several ways:

a) regional and international technical cooperation and sharing of expertise and scientific and technical know-how, including regional data sets, models and training opportunities
b) user-pays and polluter pays schemes
c) drawing on payments for ecosystem services and 'global goods', including the preservation, rehabilitation or expansion of critical ecosystems and MPAs
d) preparation of a regional plan which can bring the national actions to scale through a medium to long-term financing proposal.

6.2.3 Critical marine and coastal ecosystems

200. Critical marine and coastal ecosystems and their habitats are those that are essential to human wellbeing either at local, regional, or global level. In the WIO, these habitats include the mangrove and kelp forests, seagrass beds, coral reefs and coastal wetlands. Such ecosystems and habitats are among the most biologically productive environments in the world and their existence at the terrestrial and marine interface exposes them to diverse human and natural stressors. Some are particularly vulnerable to climate change and threats to their ecological integrity, to their role in conservation of biodiversity, and to the flow of goods and services provided.

201. **Coasts**. The coastal waters are (arguably) the most valuable and vulnerable. Recent assessments highlight the health the coastal ecosystems and coastal communities and the pressures exerted by an estimated 60 million WIO costal dwellers which are placing increasing stress on the sustainability of these ecosystems.[232] Extreme weather events, sea-level-rise, ocean warming and ocean acidification are among the additional external pressures that drive shoreline erosion, reduce water quality and change trophic structures. Marine noise pollution arises mainly from shipping, port construction and seismic exploration. It is known to have negative impacts on many marine species.

[230] Conservation and Management Plan of the IOSEA Marine Turtle MOU. Not all WIO countries are signatories.
[231] Conservation of species under IOTC mandate.
[232] UNEP-NC & WIOMSA, 2015. The Regional State of the Coast Report: Western Indian Ocean. The report provides numerous recommendations, many of which are included in the ROGS.

However, knowledge of scale and impacts of marine noise pollution and the legal framework to manage noise pollution is generally deficient in WIO countries.[233]

6.2.4 Endangered species and habitats

202. Detailed discussion of the conservation of endangered species and habitats is beyond the scope of the ROGS due the diversity of species, approaches, geographical spread and the complexity of the issues involved. These range from migratory routes to genetic diversity, connectivity and dispersion of larvae or juveniles of species, and enforcement of CITES trade rules.

203. Over 11,000 marine species have been described in the WIO. Of a recorded 4,000 WIO marine species IUCN reports that 473 are endangered to varying degrees.[234] These include turtles, dugongs, whales, sharks and rays and the iconic coelacanth. Over 20 Ecologically and Biologically Significant Areas (EBSAs) have been characterised in the deep sea and offshore/pelagic habitats.[235] Understanding of the genetic diversity and connectivity in the WIO is at an early stage, but the importance of the connectivity attributable to current systems is already becoming evident.[236]

6.3 MARINE SPATIAL PLANNING AND MARINE PROTECTED AREAS

204. Marine spatial planning (MSP) and marine protected areas (MPAs) are essential area-based management tools that serve multiple ocean governance objectives.[237] Conservation of biodiversity, protection of critical ecosystems and ecosystem functions are among those objectives. Spatial management tools also guide the development of infrastructure, fisheries, development of tourism, offshore industries, and coastal development. They build on the mapping of biodiversity and critical ecosystems, and on economic, social and other information which is spatially defined to craft rules and guidelines for allocation and best use of coastal and ocean spaces. MSP in particular aims to balance use of ocean and coastal space between often competing uses for ecosystem services and economic development. Most WIO countries either plan to, or are undertaking, or have completed MSP activities. The NC ICZM Protocol and various NC COP decisions provide guidance on area-based-management for the ROGS (Box 23. Selected NC COP decisions and Protocol related to MSP and MPAs[238]

Box 23. Selected NC COP decisions and Protocol related to MSP and MPAs

ICZM Protocol (2023). **Decision CP.9/11**. **Development of marine protected areas and critical habitats outlooks**: 4. To request the secretariat, working jointly with the Contracting Parties, to periodically prepare thematic outlooks on the state of the marine and coastal environment, including marine protected areas, and critical habitats such as coral reefs, seagrass and mangroves.

Decision CP.9/13. Enhancing cooperation, collaboration and support with partners. To request the Contracting Parties to form partnerships with the International Maritime Organization to identify and designate as "particularly sensitive sea areas" marine areas which are of significance in terms of ecological, social, economic or scientific criteria and are vulnerable to damage by international shipping activities

Decision CP.9/10: Marine spatial planning for the blue and ocean economy 2. To also urge the Contracting Parties, within the framework of the United Nations Convention on the Law of the Sea, to cooperate with existing regional institutions on ocean governance and the conservation of marine biodiversity in adjacent areas beyond national jurisdiction, to build and develop area-based management tools, such as marine spatial planning, to promote blue economy pathways in the Western Indian Ocean region; 3. To request the secretariat, in collaboration with partners, to develop capacity-building programmes on marine spatial planning as a tool for sustainable economic growth; 4. To also request the secretariat, in collaboration with partners, to prepare a report on the feasibility, options and scenarios for the establishment of marine protected areas in areas

[233] Karomo, A. et al. Get with the beat! The regulation of underwater noise in South Africa. Obiter vol.44 n.2 2023; IUCN World Congress. Weilgart L (2023). Best Available Technology (BAT) and Best Environmental Practice (BEP) for Mitigating Three Noise Sources: Shipping, Seismic Airgun Surveys, and Pile Driving. CMS Technical Series No. 46.
[234] Bullock, R. et al. (2021). The conservation status of marine biodiversity of the Western Indian Ocean. IUCN.
[235] Stefanoudis PV, et al. (2020) Deep reef ecosystems of the Western Indian Ocean: addressing the great unknown. Ecologically or Biologically Significant Marine Areas (EBSAs). Special places in the world's oceans. Volume 3: Southern Indian Ocean.
[236] Henriksson, O. 2013. Genetic connectivity of fish in the Western Indian Ocean. Popova, E. 2019.Ecological connectivity between the areas beyond national jurisdiction and coastal waters: Safeguarding interests of coastal communities in developing countries.
[237] CBD, STAP, GEF (2012). *Marine Spatial Planning in the Context of the Convention on Biological Diversity: A study carried out in response to CBD COP 10 decision X/29.*
[238] Feasibility Assessment of an ICZM Protocol to the Nairobi Convention (2010).

Box 23. Selected NC COP decisions and Protocol related to MSP and MPAs
beyond national jurisdiction and to report thereon at the tenth meeting of the Contracting Parties
Decision CP.10/8. Area-based Planning Tools for Sustainable Blue Economy 1. To request the secretariat to finalise the preparation of a regional marine spatial planning strategy for adoption at the eleventh meeting of the Contracting Parties. 2. To urge Contracting Parties to mainstream marine spatial planning and the ecosystems-based approach into national development planning processes, including the sustainable blue economy. 3. To urge Contracting Parties to establish a network of marine protected areas, and other effective conservation measures, such as, locally managed marine areas, community fisheries management areas, considering climate refugia for threatened habitats and species.

205. The WIO MPA Outlook (2021) estimated that there are 143 MPAs (or equivalents) in the WIO region, covering a total of 555 436.68km^2, or 7% of the area of the EEZs of the nine countries included in the report.[239] Numerically, most of the MPAs are coastal. However, the few MPAs proclaimed over large areas of deep-sea habitats by France, Seychelles and South Africa contribute by far the largest proportion of the total area under protection, and make the greatest contribution to the percentage of total EEZ area protected (6.2% of the 7% protected). The MPA Outlook provides a comprehensive and detailed country-by-country description of the region's MPAs and reference should be made to the Outlook for such information. MPA country reports for 2023 are also available for Comoros, Madagascar, Mauritius, Mozambique, South Africa and Tanzania.

Table 11. WIO MPA numbers and areas by country

COUNTRY	EEZ (km²)	Existing MPAs (no.)	Existing MPAs (km²)	% EEZ protected	Proposed MPAs (no.)	Proposed MPAs (km²)	Total potential % EEZ
Comoros	160,000	1	449	0.28	3	181	0.39
French Terr.	1,009,455	5	111,427	11.04	0	-	11.04
Kenya	142,000	6	941	0.67	3	TBD	TBD
Madagascar	1,147,712	22	14,451	1.26	1	4,321	1.64
Mauritius	2,300,000	18	139	0.01	1	97	0.01
Mozambique	571,452	7	11,999	2.10	1	140	2.12
Seychelles	1,336,559	16	353,663	26.40	TBD	50,000	30.00
S. Africa (mainland)	1,072,716	41	57,943	5.40	0	-	TBD
Tanzania mainland	223,000	18	2,143	0.96	4	TBD	TBD
Tanzania Zanzibar	223,000	9	2,282	1.02	1	TBD	TBD
TOTALS	7,962,894	143	555,437	7.00	14	54,739	7.6

Source: MPA Outlook Table 2 (see p.223 for notes on the estimates).

206. Government-managed MPAs account for over 85% of all MPAs in the region. Madagascar reports over 250 Locally Managed Marine Areas (LMMAs) in 14 of its 15 regions.[240] The LMMAs are not considered to be 'formally established MPAs'. A diversity of similar community-driven area-based management measures exist in other WIO countries. An estimated 3.5% of MPAs are privately managed. MPAs which are co-managed by communities or by NGOs account for about 8% and 2% of MPAs respectively. The MPA Outlook notes a transformative shift from local community exclusion to active involvement in design and management. This reflects the growing recognition of the scale, diversity and vital contribution of communities to diverse locally adapted 'solutions' to the addressing the 'triple planetary crisis.' Legislation makes participatory processes mandatory in public decision making and implementation in a growing number of jurisdictions, including Kenya, Tanzania, Mozambique, Madagascar, and South Africa. Given the geographical spread, social diversity and multiple use of MPAs, this approach is considered to make MPA management more adaptable and effective. This trend also helps to bridge the MSP/MPA space by progressively developing institutional awareness and arrangements at local levels. The advantages and disadvantages of different models for decentralisation of decision making and engagement of communities is the subject of ongoing debate.

6.3.1 MPA Effectiveness

207. The MPA Outlook noted that many countries do not have a regular or standardised means of evaluating MPA effectiveness, and that a clear picture of MPA effectiveness at regional scale is

[239] Western Indian Ocean (WIO) Marine Protected Areas (MPA) Outlook. For selected MPA country reports see Comoros, Madagascar, Mauritius, Mozambique, South Africa and Tanzania.
[240] Locally-managed marine areas: towards a global learning network. Blue Ventures Conservation report (2012).

lacking. This has implications for conservation of biodiversity and critical habitats, for sharing lessons and understanding the performance of any regional network of MPAs. Some MPAs are known to exist on paper but may lack any effective on-the-ground management. Compliance with MPA rules, technical capacity and financing are among the most common challenges both regionally and globally.

208. Based on regional expert opinion, the MPA Outlook considered that the main external threats to MPAs (in order of importance) were climate change, poverty in adjoining communities, illegal resource extraction, and tourism. The 'internal' issues are identified in Box 24. Illustrating the scale of the challenges facing MPA management, the 'snapshot' of MPA management effectiveness at regional level provided in the 'Outlook' shows that out of 21 indicators only one (legal status) reflected best practices.[241]

Box 24. Key regional issues facing MPAs
Awareness. Knowledge and integrity of MPA boundaries and rules by external stakeholders is poor. Limited public awareness and education programmes available. Comprehensive community development and engagement programmes to enhance stakeholder and community relations are generally lacking.
Human capacity. General shortfalls in human resource capacity, effective staff development programmes largely absent, or infrequent.
Management. Inadequate infrastructure and equipment and inadequate maintenance. Outdated management plans. Weak enforcement systems resulting in large-scale illegal resource use within MPA boundaries.
Finance. Funding is generally available for staff salaries. However, there is a lack of dedicated, secure and adequate budgets that enable effective management for most MPAs. Scarcity or absence of funds means that MPA goals, objectives and operational requirements cannot be met
Science. Understanding of the biodiversity and ecology of the majority of MPAs is deficient resulting in deficient scientific advice for management
Source: MPA Outlook

209. An analysis of MPA case studies provided several insights on MPA resilience and sustainability: "*diversity is the key to resilience, both of species in ecosystems and incentives in governance systems.*" The diversity of possible incentives to be deployed are listed in Box 25. Incentives should be both strong and diverse to effectively constrain the negative impacts of human uses. Constant feedback and adjustment need to be feature of the governance regime.[242]

Box 25. Governance incentives for MPA/ MSP resilience and sustainability	
Economic incentives (10) 1. payments for ecosystem services - market-based 2. assigning property rights 3. reducing the leakage of benefits 4. promoting profitable and sustainable fisheries and tourism 5. promoting green marketing 6. promoting diversified and supplementary livelihoods 7. providing compensation 8. investing MPA income/funding in facilities for local communities 9. provision of state funding 10. provision of NGO, private sector and user fee funding **Communication** (3) 11. raising awareness supporting all three approaches 12. promoting recognition of benefits 13. promoting recognition of regulations and restrictions **Knowledge** (3) 14. promoting collective learning supporting all three approaches 15. agreeing approaches for addressing uncertainty 16. independent advice and arbitration	**Legal** (10) 17. hierarchical obligations top-down (state steer) 18. capacity for enforcement 19. penalties for deterrence 20. protection from incoming users 21. attaching conditions to use, property rights, decentralisation, etc. 22. cross-jurisdictional coordination 23. clear and consistent legal definitions 24. clarity concerning jurisdictional limitations 25. legal adjudication platforms 26. transparency, accountability and fairness **Participation** 27. rules for participation bottom-up 28. establishing facilitating collaborative platforms 29. independent arbitration panels 30. decentralising responsibilities 31. peer enforcement 32. building trust, capacity for cooperation, linkages between relevant authorities and users 33. representatives and building on local customs 34. channels to influence higher institutional levels
Jones, PJS, et al. Analysis and discussion of 28 recent marine protected area governance (MPAG) case studies: Challenges	

[241] For additional guidance see: UNESCO-IOC/EC. 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Frazão Santos, C., et al. 2021. Major challenges in developing marine spatial planning. W. Flannery *et al. 2018.* Exclusion and non-participation in marine spatial planning. Africa Indigenous Peoples and Local Communities (IPLCs), Kigali Declaration at the 1st Africa Protected reas Congress (APAC) 2022.

[242] Sala, E., Costello, C., Heal, G., Kelleher, K, Rosenberg, et al. 2013. A general business model for marine reserves.

of decentralisation in the shadow of hierarchy. Marine Policy

6.3.2 MSP at regional level

210. Most WIO countries have some form of MSP at various stages of development or implementation, whether this is for biodiversity conservation, fisheries, shipping, MPAs or for coastal development planning. Several WIO countries have developed or initiated MSP both for the coastal marine areas and for the EEZ.

211. A NC MSP Technical Working Group has been established and a regional strategy for MSP development has been prepared (Box 26).[243] The strategy outlines the principles, processes and best practices that can be applied, and identifies potential sources of support. It outlines the actions to be considered by the NC COP and identifies key challenges in MSP implementation. Stakeholder surveys suggested that MSP was largely a national function and that a regional role could prioritise guidelines and best practices. Other responses indicated that finance, human and institutional capacity, and data sharing may also benefit from a regional approach.[244] Selected examples of regional approaches to MSP are provided in the following box (Box 27).

Box 26. WIO MSP Strategy guiding principles and priorities

Principles
- participatory, inclusive, multi-stakeholder and ecosystem approach to policy formulation, planning and management and sustainable use
- recognition of transboundary connectivity and between EEZs and ABNJs
- sound evidence base for decision-making with a strong science to policy interface
- transparency and accountability throughout the MSP process
- policy coherence at multiple levels and between sectors (including with the SDGs)
- cooperation at all levels (national, regional and international)
- equitable and shared benefits

Priorities
- effective stakeholder engagement for industry and smaller interest groups
- integration or alignment of governance of marine sectors and coastal administrations and management of competing sectoral activities or conflicts
- harmonisation of blue economy regulatory instruments (e.g., oil and gas, energy, fisheries, tourism)
- improved mapping of biophysical environment and human activities
- bilateral and multilateral stock management plans as may be required
- alignment on management of Areas Beyond National Jurisdiction
- increased ocean protection, including for MPAs and EBSAs

Adapted from: A regional marine spatial planning strategy for the Western Indian Ocean (2021)

Box 27. Examples of regional approaches to MSP

Caribbean. Regional MSP progression MSP) is illustrated by Organization of the Eastern Caribbean States (OECS) with 11 members, all part of the Caribbean LME. MSP activities started with efforts to establish a common fisheries surveillance zone (1980s) and evolved to broader environmental and 'ridge to reef' approaches with the Eastern Caribbean Regional Ocean Policy (ECROP) in 2013 and integration of the SDG goals in 2019. The national ocean policies or similar instruments initiated coastal MSPs and progressed to EEZ-scale MSPs in several countries. A regional project helped align and support MSP development and establish GIS data systems. The MSP objectives evolved from targeting conservation of critical habitats and avoiding local user conflicts to a broader development role linked to coastal development planning. Human and financial capacity, scientific data, information required for planning, and legal issues are among the major constraints faced.[245]

Mediterranean. The Barcelona Convention adopted the Conceptual Framework for Implementing Marine Spatial Planning (MSP) in the Mediterranean to complement its ICZM Protocol. The framework links MSP to ICZM as a common primary tool for Mediterranean countries in planning and managing marine activities in accordance with scientific advice and an ecosystem approach.

EU. The EU Maritime Spatial Planning Framework Directive (2014/89/EU) requires EU countries to establish MSP processes to enable sustainable growth of maritime economies, sustainable use of marine resources, to apply an ecosystem-based approach and promote the coexistence of appropriate uses (Article 5). The Directive sets out 10 key principles and a range of measures for MSP (e.g., implement CBD, or IMO decisions) and requires EU member states to include all key marine sectors and activities in the MSP schemes. Member States determine how the different objectives are reflected and weighted in their maritime spatial plan or plans.

[243] Policy Brief: Western Indian Ocean Marine Spatial Planning Strategy. UNEP-NC et al. 2021. A regional Marine Spatial Planning Strategy in the Western Indian Ocean.
[244] See also, conclusions of the Marine Regions Forum (2023) on MSP.
[245] Marine spatial planning in the Eastern Caribbean: Trends and progress.

6.3.3 Transboundary MPAs and MSP in the WIO

212. Several WIO countries are engaged in processes to establish transboundary MPAs.[246] Most initiatives are bilateral, for example along the East African coast. Other areas, such as the Northern Mozambique Channel have multilateral dimension.[247] A further category of transboundary MSP/MPA is the potential establishment of Particularly Sensitive Sea Areas (PSSAs) for shipping which would require broader international engagement through the IMO.[248] The potential for the establishment of MPAs in the ABNJ is discussed separately (section 6.3.5).

213. The Great Blue Wall is a high-level WIO regional response to the triple crises of biodiversity loss, climate change, and economic decline by establishment of a network of sustainable seascapes.[249] The Wall is conceived as a regional living marine ecological corridor created by conserved and restored blue ecosystems such as mangroves, seagrass beds and coral reefs. The Northern Mozambique Channel (NoCaMo) project has made substantial progress in establishing the policy, scientific and institutional building blocks for a transboundary MSP.[250] The balance between conservation of the areas sensitive ecosystems and the extraction of the valuable oil and gas reserves makes this initiative of particular interest at both regional and global levels.

214. The Trans-Boundary Conservation Area (TBCA) between Kenya and Tanzania has been the subject of a joint MoU. A comprehensive economic valuation suggests that the annual ecosystem services generated are worth in excess of $125 million and that the value of the natural capital ranges from $1.8–3.3 billion. Other examples of transboundary initiatives are at various stages of development between South Africa and Mozambique, Mozambique and Tanzania, France and Comoros and Mauritius/Seychelles through the JMA. The scale of these initiatives suggests that there is scope for a regional approach that contributes to the design, financing, regulation and management of these areas.

6.3.4 Spatial information and the ROGS

215. The information on biodiversity and the many social and economic metrics required for the design and management of MSPs and MPAs is generally spatially defined. There is a strong argument for a regionally integration of the marine spatial data sets required for the development of robust scientific advice not only on MSP/MPAs but also for monitoring the ROGS. Such a scheme can contribute to regional reports on the state of the coasts, on biodiversity, or the blue economy and backstop investment in ocean health at regional scale. The WIO Symphony is a web tool that enables mapping of information on environmental pressures and the sensitivity of ecosystems to cumulative impacts.

216. Regional experts have suggested institutional measures to strengthen regional data and information sharing, including the establishment of a regional community of practice and an expert panel on marine biodiversity. The community would include academia, government, policymakers, industry, and traditional knowledge holders. The expert panel would require designating national representatives and positioning the process within, or aligned to, existing initiatives such as the regional processes of the CBD. The process could aim to co-design the necessary regional data sharing protocols and policies and apply best practices regarding data collection, data sharing agreements, data security, and capacity building. It would align biodiversity and taxonomic data collection and monitor data and information collection, standards, and sharing across institutions and borders. Some of these proposals have been further elaborated through the IMS and regional expertise

[246] Levin, N., et al (2018). Evaluating the potential for transboundary management of marine biodiversity in the Western Indian Ocean. Australasian Journal of Environmental Management, 25:1, 62-85.
[247] Ghermandia, A. et al. Marine ecosystem services in the Northern Mozambique Channel: A geospatial and socio-economic analysis for policy support. Ecosystem Services 35 (2019) 1–12. The key role of the Northern Mozambique Channel for Indian Ocean tropical tuna fisheries.
[248] A.982(24) Revised guidelines for the identification and designation of Particularly Sensitive Sea Areas.
[249] Moroni Declaration for Ocean and Climate Action in Africa.
[250] Project has been supported by the FFEM, SIDA, members of the Western Indian Ocean Consortium, AFD and the French Biodiversity Agency (OFB).

on MPAs is already institutionalised through the Western Indian Ocean Marine Protected Areas Management Network (WIOMPAN).[251]

217. **Investment in MSP and MPAs**. In summary, the development and implementation of MSP and an effective network of MPAs requires significant investment. Financing alone will not directly resolve many of the issues, but without additional financing, both the application of MSP and MPA effectiveness unlikely to progress in a coherent and efficient manner. Investment and support for recurrent costs can have three main sources: (i) user fees for MPAs and marine 'concessions' (e.g. for aquaculture, marinas, penalties or sanctions); (ii) government transfers in support of the social and economic benefits arising from MPAs (e.g., grants to the MPA authority, public marinas, visitor information); and (iii) 'external' payments for the contribution of MPAs and MSP to global goods (e.g., for conservation of biodiversity, carbon sinks). There are sufficient common regional issues to warrant the preparation of additional regional project(s) to support MSP and MPA effectiveness, to develop the scientific basis management and to establish effective means of monitoring the social, environmental and economic impact of both MSP and MPAs in the WIO.

6.3.5 Implementing the Biodiversity Beyond National Jurisdiction agreement

218. The Biodiversity Beyond National Jurisdiction (BBNJ) agreement is an international instrument to support the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction.[252] WIO countries cannot exercise direct jurisdiction in the ABNJ. The ISA (seabed), IMO (shipping) and the RFMOs (fisheries) have the key international mandates and authority within their spheres of competence. Other international instruments of relevance include the IWC (whaling) and the Convention on Migratory Species.

219. The BBNJ agreement sets out an international consensus on four main areas. The provisions are largely aspirational and while principles and processes have been agreed, sensitive issues such as enforcement have relatively weak provisions.

a) area-based management tools, including possible marine protected areas
b) environmental impact assessments for activities in the ABNJ when a threshold of impact is determined. The EIA is to be undertaken by the party under whose jurisdiction the activity is taking place (e.g. flag state)
c) marine genetic resources, including the fair and equitable sharing of benefits[253]
d) capacity building and the transfer of marine technology.

220. Only three WIO countries have signed the BBNJ agreement, suggesting either a low level of awareness of the treaty, that it is not a priority, or that countries are unclear regarding the implications of the treaty (e.g. changes to fisheries or biodiversity legislation). Given the low adhesion to the treaty by WIO countries, actions to raise awareness on the treaty and its obligations with a view to its signature and ratification can be regarded as a first step for the ROGS. For the WIO countries which are signatories, support for mapping the requirements and process for ratification will be of benefit. The agreement has been on the agenda of several regional events as part of the efforts to inform and engage ROGS stakeholders. These have included presentations at a Special Session of the WIOMSA Scientific Symposium (2022), a ROGS background paper on the BBNJ, presentations at a UN-DOALOS training event and preparation of a working paper on potential high seas MPAs in the WIO.

221. At a regional level the ROGS could support a joint approach to the practical aspects of BBNJ implementation, for example:

a) requesting the various organisations which have jurisdiction to provide briefs on their implementation and support plans for the WIO region (ISA, IMO, the BBNJ 'secretariat' and the RFMOs in particular)
b) convening a joint workshop with these agencies to discuss cooperation among all stakeholders

[251] Kegler, H. et al. 2022. Strengthening regional regulatory frameworks and national capacity for handling marine biodiversity data in the Western Indian Ocean.
[252] BBNJ agreement text (4 March 2023). https://www.un.org/bbnj/sites/www.un.org.bbnj/files/draft_agreement_advanced_unedited_for_posting_v1.pdf.
[253] Blasiak, R., et al. 2020. The Ocean Genome: Conservation and the Fair, Equitable and Sustainable Use of Marine Genetic Resources. Who Owns Ocean Biodiversity?

c) providing a comprehensive briefing on the outcomes for regional decision-makers
d) establishing a common WIO position with regard to the agreement for sessions of the ISA, IMO and other relevant fora.

222. There is widespread advocacy for high seas MPAs. Several 'MPAs' have been established in the ABNJ, in most cases to manage fisheries, or the impacts of fisheries on biodiversity. The ISA has also established extensive reserved areas in the Clarion-Clipperton Fracture Zone and one area in the WIO (Indian Ocean triple junction). Steps are being taken to identify priority areas at regional level and means of designation of MPAs. Stakeholders will need to consider the procedural and institutional challenges of high seas MPA rule-making and how any consensus rules can be enforced (i.e., under whose law and in which jurisdiction) as enforcement means navigating the BBNJ between the 'freedom of the high seas, rights of flag states' and the principles of conservation and sustainable use.

223. Various studies have identified WIO BBNJ 'candidate' MPAs. These include seamount chains and clusters, migratory routes for whales, and those parts of the Mascarene Bank which lie outside national jurisdiction (JMA area). The biodiversity of the Arabian Sea and Gulf of Aden have also been mentioned as requiring protection. The region can draw on examples of conservation measures applied in other regions. These include the OSPAR/ NEAFC arrangements, the discussions on the conservation of the Sargasso Sea, work on an (extended) Galapagos Swimway, the ecosystem approach of CCAMLR, and high ses fisheries 'closures' approved by the WCPFC and the PNA. Pew Trusts has suggested a science-based path to creating the first generation of high seas protected areas and IUCN has provided insights on governing areas beyond national jurisdiction.

224. Financial support for the BBNJ agreement comprises a UN trust fund to support representatives from developing states to participate in the meetings of the BBNJ agreement; a special fund to receive revenues from the marine genetic resource use, and a Global Environment Facility trust fund.

6.4 CORAL REEF CONSERVATION AND REHABILITATION

6.4.1 Benefits and projected losses

225. **Benefits of coral reefs**. Net global benefits from coral reefs are estimated at US$ 30 billion per year. The asset value of WIO coral reefs is estimated at $18 billion (2021) with a flow of benefits of over $8 billion per year, notably from tourism, fisheries and erosion protection. Conservation and rehabilitation of coral reef ecosystems (including the closely associated seagrass and mangrove habitats) is vital for the environmental, economic and social health, and wellbeing of coastal communities throughout the WIO. It is vital for tourism, for coastal protection, for sustainable fisheries and for healthy ocean function.[254] Coral reef ecosystems play a role in both mitigation and adaptation to climate change, thorough carbon capture and sequestration (in some reef systems) and coastal protection from sea-level rise and extreme weather events.[255]

226. The WIO accounts for about 6% of global coral reefs of the total global area of coral reefs (in the order of 15,000 km^2), and the region is a globally important hotspot for coral reef biodiversity About 40% of WIO coral reefs are located in MPAs, although only 2% are located in 'fully protected' MPAs.[256] These ecosystems provide livelihood opportunities and income for local communities estimated at US$ 8.4 billion annually.[257] Even though coral cover may not have been entirely lost, many coral reef ecosystems in the WIO have been substantially degraded.

[254] Ghermandi, A. et al. 2019. Marine ecosystem services in the Northern Mozambique Channel: A geospatial and socio-economic analysis for policy support. Ecosystem Services. Volume 35, February 2019, Pages 1-12.
[255] Filho, W.L. et al., 2021. The influence of ecosystems services depletion to climate change adaptation efforts in Africa. Shi, T., 2021. Coral Reefs: Potential Blue Carbon Sinks for Climate Change Mitigation.
[256] Status of Coral Reefs. Status and trends of coral reefs of the Western Indian Ocean region.
[257] *Ibid*.

227. **Loss of coral reefs**. The multiple threats to coral reef ecosystems make them particularly vulnerable.[258] Models project significant declines in shallow-water coral cover (ranging from 20-80% decline) in the WIO. The multiple stresses are attributable to rising ocean temperature, fishing, ocean acidification and other forms of pollution, and ecosystem disruption. The trends in reef degradation, project that revenues attributable to reefs will decrease, in some cases by as much as 75%, and the costs of maintaining the flow of benefits will increase. Assuming a 60% loss of Indian Ocean coral reefs (14% of total), the potential losses are in the order of $2.5 billion per year to the region.[259] The projected economic impacts are distributed among coastal protection (38%), tourism (34%), fisheries (29%) and biodiversity (5%). Cost benefit analysis of the priority actions required to reduce or mitigate anthropogenic stresses on coral reefs indicate substantial net benefits from the investments.[260]

228. Given the relatively low frequency of cyclones in the WIO (which may cause direct physical damage), coral bleaching is the major cause of loss of coral cover.[261] Rising ocean temperature is the main cause of coral bleaching. ENSO and its Indian ocean equivalent (the Indian Ocean Dipole), ocean acidification and multiple other factors also influence bleaching (i.e., monsoons, cloud cover, cyclones). Major losses of coral reefs occurred due to coral bleaching in 1997 and 2016. Some 15% of WIO coral reefs have been lost or degraded since 2000, due mainly to the increased ocean temperature and the increased intensity and frequency of the coral bleaching events.[262] These losses were partially offset by the recovery of some hard corals. The limited data and studies suggest that the net result is that there has been "little change in average coral cover at a regional scale" during in the 2005-2020. However, coral cover is but one of many indicators and the trends vary significantly by sub-region, by country and the level of stressors.

229. Despite a major increase in awareness,[263] the scale of potential losses to the WIO from the likely degradation of coral reefs does not appear to be effectively quantified and interpreted at national or local levels. For example, there is likely to be a gradual erosion of white coral sand beaches and erosion of prime seafront real estate. The projected impacts will need to be expressed in economic and social terms at a local level to raise further awareness, to underpin difficult political trade-offs, and to generate public support for investments and behavioural change.

230. The **causes** of coral reef degradation and loss can be divided in two broad categories:

a) **Global pressures**. The main global pressures are ocean warming and ocean acidification. These emissions-related stressors are 'built-in'. This means that is, even if emissions are reduced ocean temperatures and ocean acidification will continue to increase for several decades. Reduction in global emissions is a priority, but many decisions lie beyond the direct influence of WIO countries alone and actions rely on the UNFCCC processes. This means that reducing pressures from local stressors may have a more direct local impact.

b) **Local pressures** are pressures which result largely from national and regional economic activities occurring in reef areas or in the associated watersheds. These pressures are generated by destructive fishing, unsustainable tourism, chemical pollution (e.g., use of agricultural chemicals, release of untreated urban waste water and mining wastes), sedimentation (often driven by upstream deforestation) and other forms of pollution. There is loss of ecosystem integrity through reclamation of coastal land (landfills), draining of wetlands, dredging, sand mining and similar activities. Some 'local' pressures (e.g. coral diseases) may be related to loss of resilience attributable to these global pressures.

[258] Carpenter KE, et al. (2008) One third of reef-building corals face elevated extinction risk from climate change and local impacts. Science 321:560–563.
[259] Cesar, H. et al. The Economics of Worldwide Coral Reef Degradation. WRI.
[260] UN Environment, ISU, ICRI and Trucost 2018. The Coral Reef Economy: The business case for investment in the protection, preservation and enhancement of coral reef health. 36pp. Also see numerous studies on the Great Barrier Reef.
[261] Alvarez-Filip, et al. 2021. Comparative analysis of risks faced by the world's coral reefs. UNAM-The Nature Conservancy. Muthige, M.S. et al 2018. Projected changes in tropical cyclones over the South West Indian Ocean under different extents of global warming. Environ. Res. Lett. 13 065019.
[262] Predicting and Responding to Coral Bleaching in the Western Indian Ocean. Coral Restoration Consortium. Coping with the 2023 bleaching: Prepare, manage, monitor, and recover.
[263] E.g., Great Blue Wall initiative.

6.4.2 Conservation and restoration of coral reefs

231. Although the focus here is on coral reefs, stakeholders are aware that the coral reefs are part of a larger marine and socio-economic ecosystem, and that solutions have environmental, social, economic and political dimensions. Numerous studies, guidelines, and experiences suggest that actions can be organised around four themes:

a) understanding of the threats and the effect of conservation actions
b) raised public and political awareness of the threats and the social and economic impacts of loss or degradation of coral reefs
c) processes to design and implement priority actions and to monitor the impacts
d) financing the actions.

232. **Priority actions (global)**. Global actions are backstopped by a range of resolutions and declarations. These include numerous UNGA and UNEA resolutions, CBD and IUCN/WCC resolutions.[264] At the global level, WIO countries can advocate common positions in global fora (UNFCCC, UNGA and others) as indicated below. The advocacy is likely to be most effective if done through the AU, SIDS or blocks of 'coral reef countries'. The common positions can focus on:

a) reduced GHG emissions. Providing for a clear distinction between GHG emissions in general and those contributing to ocean acidification within the UNFCCC framework. This is because there is a direct causal relationship between CO_2 emissions and ocean acidification while the relationship between GHG emissions and ocean temperature rise is indirect
b) accountability for progress on CO_2 emissions reduction, as opposed to GHG (CO_2 equivalents) as agreed through UNFCCC
c) improved access to loss and damage resources to mitigate losses caused by degradation of coral reef ecosystems, including standardised approaches to estimate such losses and means to improve information on ocean warming, acidification and other climate-driven changes (such as possible changes in current systems and sea-level rise) in the WIO.

233. **Priority regional-level** (or common national level) **actions** for consideration include:

a) reduction of national GHG emissions in line with commitments under UNFCCC, including effective monitoring and reporting of progress towards 'net zero' (outside the scope of the ROGS) and conservation or restoration of blue carbon sinks (mangroves, seagrass beds, wetlands, kelp beds)
b) actions to reduce stress on coral reef ecosystems, in particular:
   (i) promoting responsible fisheries and tourism
   (ii) effective protection of coral reef areas through establishment of MPAs
   (iii) reduction of nutrient pollution and runoff, sedimentation, and chemical pollution
   (iv) monitoring the state of coral reefs and coastal water quality
   (v) consideration of the role of artificial reefs and related initiatives.

234. **Implementation** at regional level falls into two broad categories: (i) knowledge management, including scientific cooperation, awareness raising and development of common regional voice; and (ii) investment to support the actions listed in the previous paragraph.

235. Many targeted scientific cooperation and awareness activities are akready being implemented in the WIO. The role of the ROGS is to consolidate these activities into an adaptable and inclusive programme which can be sustained. This could include:[265]

a) mechanisms for provision of consensus advice to leaders on conservation, rehabilitation and sustainable use of coral reef ecosystems through the NC, AMCEN, CBD and other means[266]
b) monitoring and regular reporting on the status and trends of coral reefs ecosystems to regional leaders and fora, including assessment of the economic benefits of coral reefs and the social and economic impacts of any degradation

[264] E.g., UNGA Resolution A/RES/67/78, UNEA Resolution 2/12, Coral Reef Resolution 4/13, WCC-2020-Res-105-EN, Decision CBD COP X/29 (PDF).
[265] CORDIO Strategic Plan.
[266] E.g., application of the Kunming-Montreal Global Biodiversity Framework.

c) building greater understanding of the connectivity between reefs ecosystems, their resilience to climate change and other stressors, and the relative contribution of different anthropogenic stresses to degradation or loss of resilience
d) preparation of guidelines and advisory services and reporting on 'success stories' for actions by non-state actors, including coastal communities, local authorities, private sector initiatives and sector-specific guidelines (e.g., for tourism, fisheries, aquaculture)
e) building regional institutional ownership and long-term resourcing of the programme.

236. **Resources**. Investment is required in two distinct categories: (i) long-term support for management of any (proposed) regional programme; and (ii) capital investment at regional scale to reduce national or local pressures on coral reef ecosystems. Management of a regional coral reef conservation and rehabilitation programme could include: (i) coordination and expansion of existing and planned activities related to coral reef ecosystem function and health under a shared regional knowledge and planning platform; (ii) identification of gaps and long-term priority actions; and (iii) compiling actions into financing 'packages' at regional scale (see Blue Finance Architecture).

237. The capital investment activity would compile national financing requirements into a set of regional investment portfolios to provide sufficient scale to attract the substantial financing required, achieve economies of scale in project design and implementation and link regional objectives to nationally determined targets and a common system of monitoring and evaluation. The major capital investments pooled in regional portfolios could include:

a) management of urban waste water
b) reduction of unwanted nutrient and chemical pollution from agriculture (e.g., fertiliser, herbicides, pesticides, waste from intensive livestock) through improved practices and land/ watershed management
c) community co-management of coral reef fisheries.

238. The International Coral Reef Initiative (ICRI) is a global partnership network dedicated to preserving coral reefs and related ecosystems. It includes 45 countries which represent over 75% of the world's coral reefs.[267] The Global Fund for Coral Reefs is a blended finance instrument to mobilise action and resources to protect and restore coral reef ecosystems. Scientific advice is available from multiple sources and can inform priority actions, including on:[268]

a) reduction of nutrient and chemical pollution (sewage, agricultural runoff, industrial chemicals (see Water Quality TD)
b) reduced fishing pressure through creation of MPAs and more effective 'ecologically-balanced' fisheries management (see MPA TD)
c) monitoring invasive species and restoration of ecosystem integrity and critical habitats
d) improved scientific advice on connectivity, genetics, coral refugia including creation of a portfolio of refugia and a network of 'connected' MPAs
e) applying lessons from other 'coral nations'.

[267] WIO members include the NC, the IOC, France, Kenya, Madagascar, Seychelles, South Africa, Tanzania and CORDIO.
[268] Secretary-General report: Protection of coral reefs for sustainable livelihoods and development; Coral Reefs, Climate Change and Resilience; Designing a blueprint for coral reef survival;

6.5 CLIMATE CHANGE

6.5.1 Climate change in the ROGS

239. Although climate change generates pressures on all ROGS priorities, no Task Force Technical Dialogue on climate change took place for several reasons. The subject is technically complex with a scope and stakeholders that range well beyond the climate-oceans nexus. Many of the WIO climate actions are embedded in other ROGS priorities, for example: protection of blue carbon sinks, greening of ports and shipping, sustainable fisheries, and pollution reduction. The climate agendas of WIO countries have already been determined and may not prioritise similar actions on oceans. This means that a review of the coasts and oceans actions set out in national climate strategies may be useful starting point to identify and target the future regional actions to be developed under the ROGS. This section of the Background Paper takes a first step in such a review and suggests that accessing climate finance potentially provides a practical common coherent approach to ROGS actions and leadership.

6.5.2 Global policy framework

240. All WIO countries are party to the UNFCCC, the international legal framework agreement on climate change. The UNFCCC provides the framework of reference for the ROGS. The UNFCCC has established or facilitated both mandatory and voluntary instruments. These include GHG emissions reduction and inventory reporting, carbon finance, and climate finance directed to mitigation and adaptation (see Box 28 for definitions). UNFCCC has also created a range of partnerships on oceans (Box 29).

Box 28. Climate change terminology

Adaptation: The process of adjustment to actual or expected climate and its effects. Adaptation seeks to moderate or avoid harm or exploit beneficial opportunities.

Adaptation gap: The difference between actually implemented adaptation and a societally set goal.

Mitigation. A human intervention to reduce the sources or enhance the sinks of greenhouse gases

Net-zero. a state in which the greenhouse gases going into the atmosphere are balanced by removal out of the atmosphere

Resilience: The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance to maintain their essential function, identity and structure.

Risk: The potential for consequences where something of value is at stake and where the outcome is uncertain ,recognizing the diversity of values. Risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards.

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability elements include sensitivity or susceptibility to harm and the lack of capacity to cope and adapt

Loss and damage. See below

Source: Adapted from IPCC[269]

Box 29. UNFCCC oceans initiatives

The UNFCCC secretariat works with many international initiatives on oceans and climate change, including:

Because the Ocean, the initiative encouraging progress on the incorporation of the ocean in the climate change policy debate

Blue Carbon Initiative, a coordinated, global program focused on mitigating climate change through the conservation and restoration of coastal and marine ecosystems

Friends of Ocean Action a unique informal group of over 70 ocean leaders who are fast-tracking solutions to the most pressing challenges facing the ocean

Global Ocean Forum, an international, independent, non-profit organization whose mission is to promote good governance of the ocean, healthy marine ecosystems, and sustainable development

High Level Panel for a Sustainable Ocean Economy, the Ocean Panel is committed to putting sustainability at the heart of ocean management to benefit people, nature and the economy

Ocean and Climate Platform, works toward furthering understanding of ocean-climate-biodiversity interactions and integration of the ocean in climate negotiations.

241. In 2023, the UNFCCC also reached agreement on additional funding directed at loss and damage (see below) caused by climate change. The UNFCCC supports an Oceans, Coastal Areas and Ecosystems consultation process to further advance the oceans/ climate agenda. This process has generated a substantial archive of case studies, policy analyses and awareness-raising materials. The Marrakech Partnership Ocean and Coastal Zones Climate Action Pathway provides a vision and suite of ocean and coastal zone actions needed to limit global warming to 1.5°C by 2050. UNFCCC's

[269] Fankhauser, S., *et al.* The meaning of net zero and how to get it right. *Nat. Clim. Chang.* **12**, 15–21 (2022).

Nairobi Work Programme Knowledge to Action Hub provides a range of summary briefs on oceans, coasts and climate change.[270]

242. **Mitigation and adaptation**. Neither term is defined in the main UNFCCC legal text. Under Article 4, developed countries are committed to limiting anthropogenic sources of greenhouse gas (GHG) and protecting and enhancing its greenhouse gas sinks and reservoirs. Such commitments for developing countries remain optional. Developed countries are obliged to assist developing countries in meeting costs of adaptation to adverse effects of climate change and assisting developing countries in moving towards 'clean technologies' and 'net-zero'. The basic commitments are further elaborated in UNFCCC COP outcomes including those of Marrakech, Paris, and the UAE. The most recent COP (UAE, 2023) outcome referred to a phasing out of fossil fuels, a swift, just and equitable transition, underpinned by deep emissions cuts and scaled-up finance (see section on climate finance).

243. The oceans and climate agenda is supported by numerous declarations such as the Lisbon Declaration. The group of small island countries have led many of the declarations and initiatives. The 'original' Samoa Pathway has been progressively amplified and updated though further declarations (Mauritius and Barbados), the Bridgetown Initiative on finance and additional statements and declarations in 2023.[271] Through the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC), the International Panel on Climate Change (IPCC) provides the scientific basis for the ROGS actions on climate change. The SROCC assesses the observed changes and impacts; the projected changes and risks and associated levels of confidence in the projections; and the responses to ocean and cryosphere change. The Global Climate Action (GCA) work programme under the UNFCCC coordinates engagement with UN agencies and non-party stakeholders and ocean expert groups. The UNFCCC Ocean and Climate Change Dialogue provides an entry point for stakeholders to develop and prioritise ocean-climate actions, particularly those actions which contribute to both mitigation and adaptation.[272]

244. **Responsibilities of states for climate change**. In 2020, the Commission of Small Island States on Climate Change and International Law requested the International Tribunal for the Law of the Sea (ITLOS) for an Advisory Opinion on whether State Parties to UNCLOS have specific obligations regarding the prevention, reduction, and control of marine environmental pollution related to climate change.[273] Numerous states and stakeholders have made written submissions to ITLOS on the question.[274] ITLOS emitted its opinion on 24 May 2024 (Box 30).

Box 30. ITLOS on state obligations under UNCLOS for climate change

Questions

"What are the specific obligations of State Parties to the United Nations Convention on the Law of the Sea (the "UNCLOS"), including under Part XII:

(a) to prevent, reduce and control pollution of the marine environment in relation to the deleterious effects that result or are likely to result from climate change, including through ocean warming and sea level rise, and ocean acidification, which are caused by anthropogenic greenhouse gas emissions into the atmosphere?

(b) to protect and preserve the marine environment in relation to climate change"

ITLOS answers

States Parties to the Convention have specific obligations to take all necessary measures to prevent, reduce and control marine pollution from anthropogenic GHG emissions and to endeavour to harmonize their policies in this connection.

Measures should be determined objectively, considering, *inter alia*, the best available science, international rules and standards, UNFCCC agreements, and instruments and timeline to limit temperature increase to 1.5°C.

The measures may vary in accordance with the means and capabilities of States

Source: ITLOS. Commentary on the Advisory Opinion (May 2024).

[270] UNFCCC. Adaptation of the Ocean, Coastal Areas and Ecosystems. Scoping Paper on Closing Knowledge Gaps and Advancing Action.

[271] 2023 AOSIS Leaders Declaration; Statement by the Alliance of Small Island States (AOSIS) on the Urgent Need for Global Climate Action at the 78th UNGA, September 28, 2023.

[272] (NGO consortium) Options for strengthening action on the ocean and coasts under the UNFCCC.

[273] Kelleher, K. 2018. A 'Paris for the Oceans'. Can International Law prevent, reduce or control Ocean Acidification and Marine Plastic Pollution? School of Law, UCC. September 2018; M A Tigre and K Silverman-Roati (eds.), ITLOS Advisory Opinion on Climate Change: Summary of Briefs and Statements Submitted to the Tribunal (Sabin Center for Climate Change Law, Columbia Law School, 2023).

[274] African Union submission to ITLOS.

6.5.3 Regional climate change policies

245. **Africa.** The African Union Climate Change and Resilient Development Strategy and Action Plan (2022-2032) sets out the policies and plans at continental level.[275] The African Strategy builds on numerous global declarations, strategies and international agreements, notably those backed by the UNFCCC. Several make specific reference to oceans and climate change and emphasise the vulnerability of coastal and island communities to impacts and damage likely to be caused and emphasise several key messages:

a) the urgent need to reduce GHG emissions, to move toward net zero and to support efforts to generate and provide access to renewable energy
b) the special circumstances facing island nations, low-lying coastal communities and communities exposed to risks of cyclones
c) the need to urgently increase access to and effective and timely use of climate finance for both mitigation and adaptation.

246. The African Leaders Nairobi Declaration and Climate Change and Call to Action (2023) requires the African Union Commission to develop an implementation framework and roadmap for this Declaration and to make Climate Change an AU theme for the Year 2025 or 2026. Specifically, the Declaration commits African countries to:

a) "*Integrate climate, biodiversity and ocean agendas into national development plans and processes to increase resilience of local communities and national economies;*
b) Promote regenerative blue economy and support implementation of the Moroni Declaration for Ocean and Climate Action in Africa, and the Great Blue Wall Initiative, whilst recognising the circumstances of Africa's Island States"

247. **National and REC policies**. All WIO countries have prepared national climate change policies or plans and report their NCDs to the UNFCCC. The RECs have also prepared climate action plans or strategies. Some strategies address key structural issues. Typically, the marine and ocean issues in the national and regional action plans are separated thematically or by sector (e.g. food security, fisheries) and the actions are relatively generic (e.g., improve knowledge, or access to finance). Some action plans are relatively weak on the means of implementation, for example, on how a particular action is to be financed, on estimates of the costs involved, or on the estimated social costs and benefits.[276]

a) the SADC Climate Change Strategy and Action Plan (2015) advocates accreditation of the SADC Secretariat as a regional implementing entity for funds, such as the Green Climate Fund (GCF), the Global Environment Facility (GEF) and the Adaptation Fund (ADF) and calls for easing of conditionalities in accessing such funds. Consideration is also given to the possible establishment of a regional emissions trading system and enhanced regional capacity to mobilise climate finance.
b) driven by concerns over drought, IGAD has established a Climate Prediction & Applications Centre.
c) the objective of the COMESA Strategy on Climate Change is to bring about the COMESA Vision by building the resilience of the region to the impacts of climate change though: (i) competent institutions, (ii) support to Member States, and (iii) enhanced access to finance and technology.
d) the EAC Climate Change Policy Framework comprises a policy, a master plan and a strategy which are linked to the EAC Protocol on Environment and Natural Resources Management

[275] European Parliamentary Research Service Briefing. The African Union's first climate strategy and EU-Africa climate cooperation. PE 738.201 – November 2022.
[276] Karani, P., Failler, P., & Gilau, A. M. (2023). Framework for Mainstreaming Climate Change into African Blue Economy Strategies to Enhance Adaptation, Mitigation, and Resilience in Sustainable Development. American Journal of Climate Change, 12, 376-404.

e) the IOC coordinates a project on disaster relief response and the regional ADF/GCF-financed Hydromet project which supports a network of weather stations to provide early warning of cyclones and other extreme weather events.[277]

6.5.4 Impacts of climate change

248. **Global status and trends**. Recent IPCC reports emphasis the accelerating threats and the increasing and compounding effects of climate change.[278] The findings imply that the WIO may need to prepare for global temperature rise of 2°C, or more, and that adaptation needs to take place more rapidly to offset the increasingly negative impacts.[279] Projection of the scale and nature of the impact is characterised by uncertainty attributable to the complexity of the interactions and the weakness of the available information on oceanographic trends and their implications.[280] Many of the impacts are already occurring. Vulnerable coastal communities are disproportionately affected. Climate change adaptation and disaster risk management are gradually becoming indistinguishable for some communities. Affected communities may already be unable to adapt as households have lost their productive assets or livelihoods. This is likely to erode the fabric of communities, increase internal migration, and stress the more robust parts of the economy.[281]

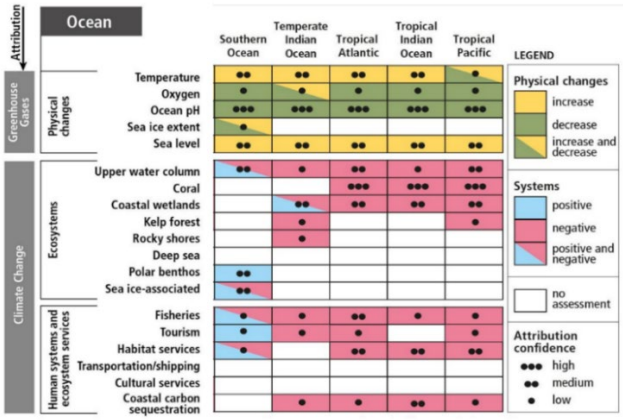


Figure 24. IPCC observed regional hazards and impacts in tropical and Indian oceans

249. Analyses suggest that climate risks are compounded by multiple interacting drivers or stresses that generate complex cascading risks. However, many assessments (e.g. by central banks) focus on 'linear' causes and effects, rather than compounding risks as economies change behaviours. There are likely to be change in savings, investments, credit, liquidity, and insurance in response to the impacts and perceived threats. This means that the scale, nature and cascading effects of risk are likely to be significantly underestimated, leading to even greater risks.[282]

250. **WIO impacts**. As sea surface temperatures rise alongside ocean acidification, rising sea levels and coastal erosion, WIO's coastal ecosystems, estuaries, beaches, coral reefs and marine biodiversity and the fisheries and coastal tourism sectors are at risk. Ports and transport infrastructure are particularly exposed to flooding and extreme weather, as are critical tourism assets and settlements situated close to the coast. There is a high likelihood that over 50% of coral reefs will disappear by 2100 resulting in losses of white sand beaches and prime coastal tourism real estate through erosion (see separate section on coral reefs). Sea level rise is highly likely to affect coastal cities and low-lying land that may be under cultivation through inundation or salt-water intrusion.[283] The impact of sea level rise is likely to be compounded as cyclones, storm surges and erratic rainfall become more pronounced. Sea level rise in combination with extreme weather events is likely to intensify flooding as a high proportion of coastal land, including key tourism areas, cities, ports and infrastructure is in

[277] South West Indian Ocean Catastrophe Risk Assessment and Financing Initiative.
[278] IPCC Special Report on Ocean and Cryosphere in a Changing Climate (SROCC)
[279] IPCC. Climate Change 2022: Impacts, Adaptation and Vulnerability, IPCC Sixth Assessment Report
[280] E.g., see: On the role of the Agulhas system in ocean circulation and climate. Nature 472(7344):429–436; On the Decadal and Multidecadal Variability of the Agulhas Current.
[281] Report on the Impact of Climate Change on Migration.
[282] Ranger, N., et al. 2023. The Green Scorpion: the Macro-Criticality of Nature for Finance – Foundations for scenario-based analysis of complex and cascading physical nature-related risks. NGFS Occasional Paper; BIS, 2021, Climate-related risk drivers and their transmission channels.
[283] Salt-tolerant crops (Bangladesh).

low-lying areas. Rising ocean temperatures, ocean acidification and possible change in upwelling patterns will alter the distribution of marine species, disrupt ecosystem function and is likely to reduce the productivity of many commercial species and shellfish aquaculture.[284] Assessment of the compounding effects is challenging.

251. **Vulnerability**. WIO coastal communities and coastal infrastructure will be on the 'front line' of climate change. The ND-GAIN Country Index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. Of particular concern are the relatively low WIO scores on the social readiness component of the index (Table 12).[285] The AOSIS has called for a more appropriate vulnerability index. The IMF maintains a Climate Change Dashboard which makes key climate related indicators available by country.

Table 12. Climate Change Vulnerability/ Readiness index

Country	Score (V+R)	Rank	Social readiness
Comoros	38.1	157	0.19
Kenya	39.6	150	0.20
Madagascar	35.3	172	0.21
Mauritius	57	48	0.36
Mozambique	38.5	154	0.18
Seychelles	50.8	80	0.29
Somalia	33.8	178	na
South Africa	48.3	95	0.21
Tanzania	40	145	0.24
France	67.5	16	0.67

252. **Coastal cities and sea-level-rise** (SLR). Several WIO coastal cities are known to be particularly vulnerable to SLR with a projected rise of 3.6-3.9 mm/year. These include Beira and Quelimane (Mozambique), Dar es Salaam, Bagamoyo and Stone Town (Zanzibar), Lamu (Kenya) and others. SLR in the SWIO is relatively high.[286] The potential losses attributable to SLR are in the order of several billion dollars for a city such as Dar es Salaam while the costs of 'hard' protective infrastructure are in the order of hundreds of millions of dollars. Recent analyses on adaptation of coastal cities to SLR stress the importance of pooled local knowledge to direct adaptation decisions, the need for integrated governance at city-level, or at the level of the defined vulnerable areas and their hydrology, and the need for increased funding to support the adaptation measures and local planning capacity.[287]

253. **Ocean acidification**. Ocean acidification (OA) has varied and uncertain impacts. It may be advantageous to some species but detrimental to calcifers (species with carbonate shells, such as bivalves, shrimp, corals and some zooplankton). Potential changes in the abundance or diversity of zooplankton may have far reaching consequences in pelagic ecosystems as the links between primary productivity (phytoplankton) and zooplankton is the base of many trophic pathways and a key component of the ocean carbon pump, notably for carbon sequestration in the open ocean and on the continental shelves.[288] Ocean Acidification Africa is a pan-African network established to coordinate and promote ocean acidification awareness and research in Africa. It is part of the Global Ocean Acidification Observing Network.

6.5.5 Mitigation: emissions and blue carbon

254. Mitigation involves the reduction of GHG emissions by moving towards net zero through increased use of renewable energy, stewardship of carbon sinks, or by carbon capture and storge. In the WIO, the main mitigations actions include:

[284] Ward R.D. et al. 2016. Impacts of climate change on mangrove ecosystems: A region by region overview. Ecosystem Health and Sustainability. 2016;2(4):e01211. Climate change-driven cooling can kill marine megafauna at their distributional limits.
[285] The score of social readiness captures the social factors related to adaptation actions. Indicators include social inequality, ICT infrastructure, education and innovation.
[286] Huang, L., et al. (2024). Rapid sea level rise in the tropical Southwest Indian Ocean in the recent two decades. Geophysical Research Letters, 51.
[287] Ocean & Climate Platform. (2023). Adapting Coastal Cities and Territories to Sea Level Rise in West Africa: Challenges and Leading Practices. 60 pp. See also: Eilander, D., et al. 2023. Modeling compound flood risk and risk reduction using a globally applicable framework: a pilot in the Sofala province of Mozambique.
[288] Kelleher, K. et al. 2015. Bridging the Gap Between Ocean Acidification Impacts and Economic Valuation: Regional Impacts of Ocean Acidification on Fisheries and Aquaculture. IUCN, Gland; Nicol et al. Climate Impacts on Yellowfin Tuna. Frontiers in Marine Science. www.frontiersin.org 10 April 2022| Volume 9 Article 816772.

a) the development of ocean renewable energy from wind, tidal or thermal sources and removal of fossil fuel subsidies for shipping and for fisheries
b) reducing emissions from shipping through implementation of IMO protocols and use of renewable energy in ports
c) reducing emissions from fisheries by moving towards more energy efficient harvest and post-harvest methods and rebuilding fish stocks
d) protection of ocean (blue) carbon sinks and possible carbon capture and storage (CCS).

255. **Shipping**. In 2022, international shipping accounted for about 3% of global GHG emissions and 10% of global transport emissions, but this is projected to increase with growing demand (a 50% increase since 2000). The parties to the International Maritime Organization (IMO) have agreed on a 20% reduction by 2030 and a 70% reduction by 2040. The IMO's GHG strategy includes a mix of technology, regulation, behavioural change and collaboration along the shipping value chains (Box 31). There are standardised methods for assessment of the carbon footprint of shipping.[289] The Poseidon Principles are a global framework for assessing and disclosing the climate alignment of financial institutions' shipping portfolios based on four pillars: assessment, accountability, enforcement and transparency. Reducing shipping emissions also helps reduce air pollution in and around ports, many of which are urban.

Box 31. Initiatives to lower the GHG emissions in shipping

Technology
- renewable energy to power oceangoing vessels including sails and solar
- fuels - switch from traditional marine fuels to cleaner alternatives, such as LNG and hydrogen
- development of more energy-efficient vessels including design, hull coatings and more efficient engines
- provide renewable shore power at ports

Behaviour
- reduce the speed of cargo ships compared to reduce of fuel consumption
- optimize ship routes, speeds, and operations.
- consolidating and optimizing cargo loads for increased efficiency

Policy
- measures to facilitate the transition toward eco-friendly practices, including pricing carbon emissions and establishing carbon offset schemes
- training of shipping professionals in sustainable practices
- enforce IMO initiated programs, such as the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII) to enhance vessel efficiency
- creation of Emission Control Areas (ECAs),
- strengthen industry and government partnerships collaboration and cooperation.

256. **Fisheries**. Capture fisheries have a significant carbon footprint, but depending on the fishing gear used it may be lower than that of livestock production.[290] There are several means of reducing the emissions and footprint. Removal of fuel subsidies has already been the subject of a lengthy WTO process and agreement. Switching from 'high energy' gears, such as bottom trawls, to passive gears, such as traps, can reduce the carbon footprint of fishing. However, matching the fishing capacity with the economically sustainable level of catch is a key action. This can increase the economic, and environmental efficiency of the fisheries activities, reduce the carbon footprint, help redeploy surplus capital, make fisheries more resilient to climate change, and reduce and reinforce sustainable behaviours. This means rebuilding of fish stocks and almost invariably initiating a reduction in fishing effort and fishing capacity. Fishery reforms which reduce the numbers of vessels or fishers tend to be a politically charged process often requiring social and economic interventions which extend beyond the immediate stakeholders and the fisheries sector.[291] Recognising the impact of climate change on fisheries, in 2022, the IOTC adopted a legally binding resolution on climate change. The resolution was proposed by Maldives, Seychelles and South Africa and obliges the Commission to consider the impacts of climate change in its management decisions.[292]

[289] Carbon Chain Shipping Methodology (commercial product).
[290] In the EU, Bottom trawling generates over 3kg per kg of fish produced. Passive gears generate about 0.5kg of carbon per kg of fish produced. The footprint depends largely on the type of gear and the health of the targeted fish stock.
[291] Ferrer, E.M. et al., 2022. Overfishing Increases the Carbon Footprint of Seafood Production from Small-Scale Fisheries. Marine Fisheries, Aquaculture and Living Resources, Volume 9 – 2022.
[292] Md Saiful Karim. Indian Ocean Tuna Commission Climate Change Resolution: A quiet interaction of ocean and climate change legal regimes**.** Marine Policy Volume 148, February 2023, 105434.

257. **Ocean energy**. In Sub-Saharan Africa renewable and cleaner energy contributed less than 2% of supply, including hydro (1%) and wind and solar (0.6%).[293] Several WIO countries have locations with potential for tidal power generation, particularly where the tidal range is greater than 3 meters. These include sites in Kenya, Tanzania, Mozambique and Madagascar. Ocean Thermal Energy Conversion (OTEC) initiatives have been explored in Mauritius (for cooling) and La Réunion.[294] WIO ocean renewable energy potential is relatively good but is highly site specific and often seasonal for wind and wave power. While the tidal range is modest, use of tidal energy may be feasible in island channels and large estuaries.[295] Discussion of emerging technologies for 'clean hydrogen' produced from seawater is beyond the scope of this Background Document. Clean hydrogen is considered an essential part of the pathway to net zero, but it is unclear how the hydrogen economy will evolve and the environmental impacts that may result. The EU hydrogen strategy illustrates the complex financing, technical and regulatory issues involved and the potential of the technology to deliver clean energy at regional scale.

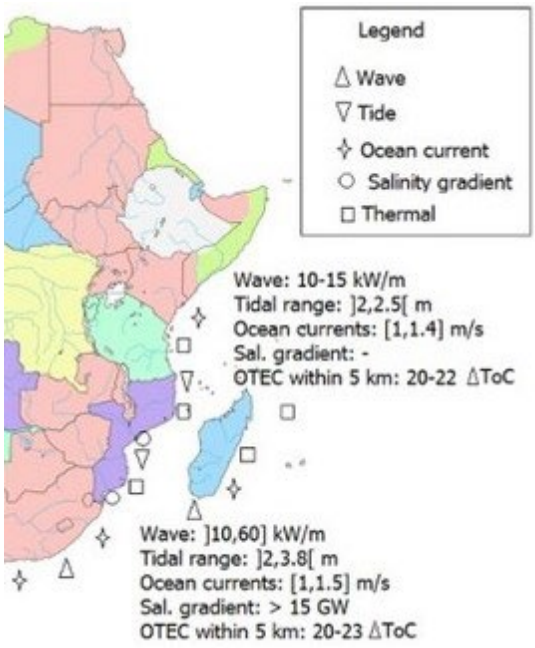


Figure 25. Ocean energy potential in the WIO

258. **Tourism**. Tourism is responsible for roughly 8% of the world's carbon emissions and total emissions are growing with the growth of tourism.[296] Aviation (about 2.5% of global emissions) accounts for a major part of this footprint and international aviation, which falls outside of national carbon accounting, accounts for around 1.3% of global CO_2 emissions. Various codes of sustainable tourism are being developed and applied. The corporate (large hotels) segment generally has a higher environmental footprint than more 'artisanal' or guest house type tourism.[297] However the corporate sector also has the resources to invest in sustainable tourism certification while SMEs may not have that capacity.[298] Quantification of the carbon and environmental footprints of tourism and the related climate risks is relatively poor, partly because of the multiple components the tourism sector, the complex coastal geographies and diverse demands for blue tourism – from cruises to diving and from cultural events to whale watching. The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) provides an example of an approved standards and verification schemes for carbon credits used to offset emissions from aviation. CORSIA-verified projects have a substantial premium. Tourism has an important role in bridging mitigation and adaptation by supporting the conservation of blue carbon sinks, by advancing low-carbon tourism models, and by contributing to adaptation and resilience in coastal communities and to healthy ecosystem function.

259. Blue carbon. The ocean carbon sink is about six times the size of the land or terrestrial sink and annually absorbs about the same quantity of carbon as the land (Figure 26 and Figure 27).[299] Although the ocean is the world's largest carbon sink, understanding of blue carbon sequestration on the continental shelves and the open ocean is still evolving: the role of healthier ocean ecosystems,

[293] Sitoe, A. F. et al. The ocean as a source of renewable energy in sub-Saharan Africa: sources, potential, sustainability and challenges. International Journal of Sustainable Energy. Volume 42,1 2023.
[294] https://www.mol.co.jp/en/pr/2024/24005.html; https://www.powermag.com/otec-a-long-stalled-baseload-ocean-power-technology-is-seeing-a-swell/
[295] Assessing the potential of offshore renewable energy in Africa December 19, 2021
[296] Lenzen, M., et al. The carbon footprint of global tourism. Nature Clim Change 8, 522–528 (2018).
[297] Tourism and Climate Change Stocktake 2023; Puig, R., et al. 2017. Inventory analysis and carbon footprint of coastland-hotel services: a Spanish case study. Science of the Total Environment, 595, 244–254.
[298] Khazai, B. 2022. The Imperative for Advancing Climate Risk Assessment in Tourism. Tourism Panel on Climate Change.
[299] Blue Carbon. Challenges and opportunities to mitigate the climate and biodiversity crises.

increased biomass of fish, shelled molluscs, calcareous algae, and marine mammals.[300] The ocean absorbs about 30% of global annual CO_2 emissions, but the ocean's capacity to absorb CO_2 shows considerable variation by year and by ocean region.[301] Rising ocean acidification threatens this vital function and some scientists are concerned that the ocean sink may be weakening.[302]

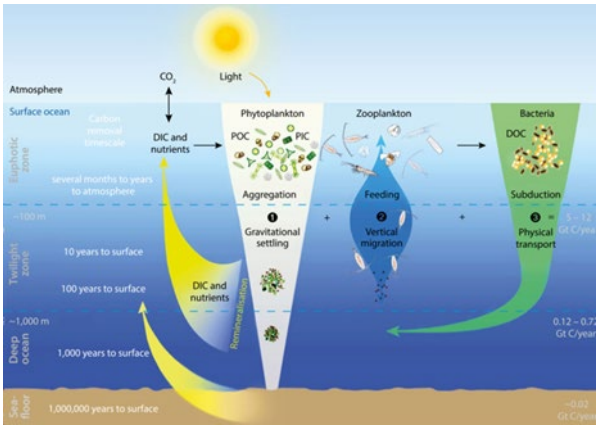


Figure 26. Timescales and the ocean carbon sink
Source: Gattuso, adapted from Iversen 2023.

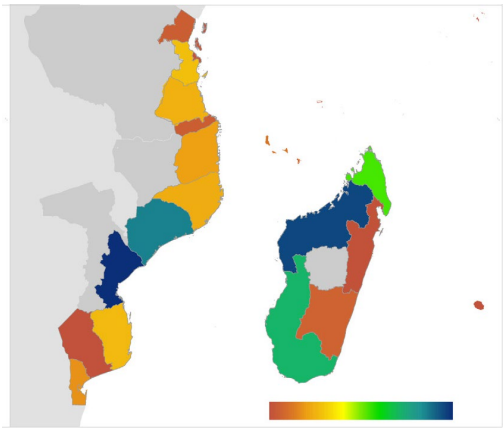


Figure 27. Relative scale of coastal blue carbon resources in the WIO.
Source: Ghermandia et al. 2014.

260. There is growing global and regional interest in blue carbon both for climate change mitigation and adaptation, for implementation of commitments under the UNFCCC and potential access to carbon markets.[303] The current focus is on coastal blue carbon stocks, as coastal ecosystems such as mangroves, tidal marshes and seagrass meadows sequester and store more carbon per unit area than terrestrial forests. Preliminary estimates of the WIO coastal blue carbon stocks and sequestration rates for the various blue carbon habitats (mangrove, seagrass, wetlands and kelp beds) are available.[304] There is an evolving debate on the role of coral reefs in carbon sequestration and, as indicated above, the understanding of carbon sequestration in open ocean systems is evolving.

261. **Coral reefs and carbon sinks**. There is an unresolved debate as to whether coral reefs are carbon sources or sinks. Studies suggest that the answers are complex, possibly site and season dependent. Some studies indicate that coral reefs represent a carbon sink of almost 70 to 90 Megatons of carbon per year.[305] While coral respiration results in release of CO_2 to the ocean and potentially to the atmosphere, corals provide a substrate for calcareous algae and the coral skeletons themselves are a significant carbonate sink. In addition, the role of coral reefs contributing indirectly to other sinks, such as mangrove and seagrass sinks, through nutrient recycling and other means cannot be ignored.

262. **Blue carbon finance**. Corporate and state demand for high-quality blue carbon credits has been growing under the UNFCCC, under its Kyoto Protocol and in the voluntary and corporate markets. Blue carbon credits can contribute to the costs of restoration and conservation of ecosystems rich in blue carbon and backstop the safeguards to support climate justice. Global blue carbon credits

[300] IUCN, 2014. The Significance and Management of Natural Carbon Stores in the Open Ocean.
[301] Feely, R. A , et al. (2021). Global ocean carbon cycle. Bull. Amer. Meteor. Soc., 102 (8), S185–S189; Gruber, N., et al. Trends and variability in the ocean carbon sink. Nat Rev Earth Environ **4**, 119–134 (2023). Gruber et al. 2019. The oceanic sink for anthropogenic CO_2 from 1994 to 2007. Science 363, 1193–1199 (2019).
[302] Müller, J. et al. (2023). Decadal trends in the oceanic storage of anthropogenic carbon from 1994 to 2014. AGU Advances, 4, e2023AV000875.
[303] The Blue Carbon Handbook: Blue carbon as a nature-based solution for climate action and sustainable development'. IUCN. Climate change mitigation activities in coastal ecosystems Recommendations for the UNFCCC processes.
[304] SeyCATT/ JMF. Literature Review: Blue Carbon research in the Tropical Western Indian Ocean; Chanda, A. 2022. Blue Carbon Dynamics of the Indian Ocean. In The Present State of the Art. Springer.
[305] Frankignoulle, M., & Gattuso, J.-P. (1993). Air-Sea CO2 Exchange in Coastal Ecosystems. Tambutté S., et al. (2011). Coral biomineralization: From the gene to the environment. McGowan, H. et al. 2022. Coral Reef Coupling to the Atmospheric Boundary Layer Through Exchanges of Heat, Moisture, and Momentum: Case Studies from Tropical and Desert Fringing Coral Reefs. Gattuso, J.-P. et al. (1999). Measurement of community metabolism and significance in the coral reef CO2 source-sink debate. *Proceedings of the National Academy of Sciences of the United States of America*, *96*(23), 1301713022. Allemand, D. (2019). Les coraux et le changement climatique. Océan et Climat – Fiches scientifiques. Blue carbon MPA Kenya.

are estimated to potentially be worth more than US$10 billion annually.[306] However the metrics (e.g., baselines, attribution of carbon to conservation actions) are still evolving, and transparent and verified accounting for blue carbon is still at an early stage. In general, 'nature-based projects, projects with environmental and social co-benefits "beyond carbon" attract a significant price premium in the voluntary carbon markets and projects associated with the SDGs attract a price premium of 86%.[307]

263. The Seychelles' Blue Carbon Roadmap aims to capture the benefits from blue carbon through improved metrics on sequestration, engagement of local communities, enabling access to carbon markets, and providing a framework for governance of these assets. In the WIO, barriers to access blue carbon finance include, (i) limited capacity for assessment, reporting, and verification to ensure quality standards, (ii) investment risks, which are partly attributable to (iii) a challenging legal framework and investment climate. The risks and the high preparation and transaction costs could potentially be offset through a regional project pipeline to achieve economies of scale and regional coherence in the governance and blue carbon accounting framework.

264. **Marine carbon dioxide removal**. The WIO dialogue on blue carbon focuses on mangroves, seagrass beds and kelp forests. However, this is part of larger suite of biological, chemical and engineering approaches to marine carbon removal. Most of these technologies are in an early stage of research, testing, or proof of concept. Several major research agencies are exploring the assessment of risks, the co-benefits, and science needed to build regulatory frameworks for testing and scaling these technologies.[308] Key technical challenges include development of means to monitor, report, and verify (MRV) the amount of additional carbon sequestered and assess the environmental effects of the technologies.[309] It may be premature for WIO countries to take a position on many of these ocean innovations, but raised awareness of the following activities is warranted:

a) electrochemical CO_2 removal
b) deepsea storage which may use depleted oil and gas reservoirs
c) ocean alkalinity enhancement
d) microalgae and macroalgae cultivation and sequestration
e) artificial upwelling and downwelling.

6.5.6 Adaptation

265. The effects of climate change are already evident worldwide, with climate induced natural disasters estimated to have caused global economic losses of $275 billion in 2022. IPCC notes that there are physical, environmental and institutional limits to adaptation. An example of a physical limit is scale of hard infrastructure required to prevent sea level rise submerging low lying islands. An example of an environmental limit is the inability of some corals to recover from bleaching. Institutional limits include the inability of political systems to manage the social transitions required. Figure 28 provides examples of adaptation by identifying the hazards, reducing vulnerability and exposure to risks. Over 40% of global risks remain uninsured.

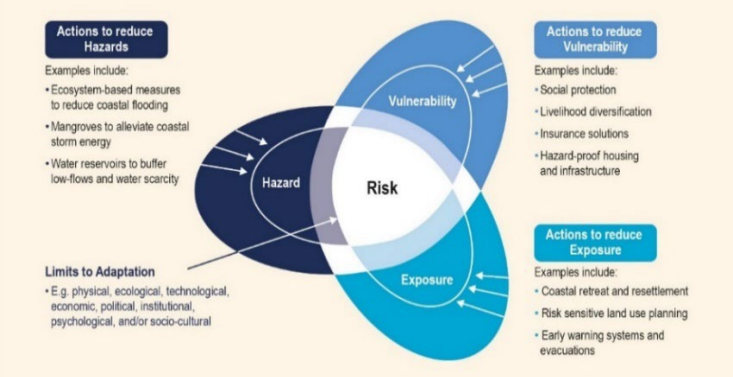


Figure 28. Adaptation. Options to reduce climate change risks.
Source: IPCC

266. There are numerous thematic and sector adaptation activities. Several key features stand out:

a) investments need to be tailored to local circumstances in accordance with national climate change strategies

[306] IPCC 2013. Supplement to the 2006 Guidelines for National Greenhouse Gas Inventories: Wetlands.
[307] Ecosystem Marketplace. Paying for Quality. State of the Voluntary Carbon Markets 2023. Insights Report November 28.
[308] A Comprehensive Program to Prove or Disprove Marine Carbon Dioxide Removal Technologies by 2030.
[309] Marine Carbon Dioxide Removal: Potential Ways to Harness the Ocean to Mitigate Climate Change

b) awareness of the climate change trends is relatively low among many vulnerable and disadvantaged coastal communities and climate-driven natural disasters may be mistakenly attributed to other causes
c) following climate-driven natural disasters, disadvantaged communities have lost their capital and means of livelihood and have reduced or no capacity for adaptation
d) 'no regrets' investments are an important entry point, that is giving priority for investments in sustainable development that generate both mitigation and adaptation benefits
e) the need for private sector investment in adaptation and the importance of international public finance and debt reduction.[310] Medium or long-term support may be required where community behavioural change is required (i.e., over several political cycles).

6.5.7 Climate finance

267. **ROGS Blue Finance Architecture**. Climate finance is a key part of the 'Blue Finance Architecture' which is proposed to support ROGS implementation (see section 8.3). A detailed background paper is available on financing the ROGS. As indicated previously, climate finance is fundamental to mitigation, adaptation and sustainable development. The Global Climate Finance Framework endorsed at COP28 sets out an ambitious collective visions to accelerate inclusive local, regional and global low-carbon, climate resilient and nature-positive growth. With some major exceptions (shipping, fisheries, tourism), the ROGS climate finance is more likely to focus on financing adaptation, or activities that contribute to both mitigation and adaptation. There is a substantial shortfall in private climate finance. In 2021, developed countries mobilised over $75 billion in international public climate finance (including export credits), while private sector finance totalled $14 billion and was mainly directed at green energy and middle income countries.[311]

Box 32. Climate finance components and attribution shares

The OECD identifies four different components of climate finance transfers

- bilateral public climate finance provided by donor countries' development finance agencies, typically in the form of grants and concessional loans
- multilateral public climate finance provided by MDBs, IFIs/climate funds using paid-in capital and funds raised from capital markets. These funds are often directed towards larger-scale climate change mitigation and adaptation projects
- export credits notably used to acquire clean energy technologies
- private finance mobilised by bilateral and multilateral public climate finance, for example, by leveraging though risk mitigation guarantees and insurance.

In addition, developing countries may mobilise internal finance and "South-South" cooperation and generate domestic private finance.

Source: OECD, 2023. Scaling Up the Mobilisation of Private Finance for Climate Action in Developing Countries.

268. **Financing mitigation**. Financing 'blue' mitigation falls into several categories which have largely been addressed in other sections of the background document: (i) financing conservation and expansion of marine and costal carbon sinks (blue carbon), through investments in MPAs, carbon credits and ecosystem health; (ii) investments in offshore renewable energy, including the required MSP, incentives, the hard infrastructure, and the regulatory framework; (iii) reduction of emissions from shipping, fisheries, ports and other segments of the blue economy (e.g. tourism); and other forms of marine carbon capture.

Financing adaptation. UNEP estimates the annual cost of climate adaptation for developing countries at $315-565 billion by 2050. There is a significant gap between the estimated costs of meeting a given adaptation target and the amount of finance available for adaptation – the adaptation finance gap. The estimated gap for marine and coastal resource adaptation financing for SSA is over $4 billion (2020-2030) (excluding tourism and infrastructure).[312]

[310] E.g., National Treasury and Planning. 2021. The Landscape of Climate Finance in Kenya On the road to implementing Kenya's NDC.
[311] OECD, 2023. Scaling Up the Mobilisation of Private Finance for Climate Action in Developing Countries.
[312] Adaptation Finance Gap Update 2023. The value provides an order of magnitude and should be treated with caution as there are methodological issues in separating financial flows by sector or theme.

269. Studies indicate that, on average, the benefits of climate change adaptation interventions outweigh costs by a ratio of between 2:1 and 10:1.[313] In 2023, the existing climate finance instruments were supplemented by the 'new' IMF-hosted Resilience and Sustainability Facility. Climate finance is undergoing rapid change including through proposed reforms to the global development finance architecture.[314] The World Bank provides about two thirds of all multilateral adaptation finance to low- and middle-income countries.[315] The African Development Bank (AfDB), the GEF, FFEM, AFD and the EU are all WIO partners with commitments to financing climate action in various forms. Finance directed to mitigation and adaptation do not address loss and damage attributable to climate change and an additional mechanism has been established to bridge this gap (Box 33).

270. The State of Finance for Nature 2023 advances strong arguments for investment in 'nature-based-solutions' (NbS) to climate change, such as the protection restoration or improvement of marine and coastal ecosystems to meet physical, environmental and social goals. However, the estimated financial flows fall 50-66% short of the projected requirements. For example, the estimated global financing requirement for seagrass restoration and protection to 2050 exceeds $840 million. To put this in perspective, global subsidies to fisheries which have potentially negative impacts are in the order of $15 billion per year. NbS bridge the climate, biodiversity and conservation agendas and offer a holistic approach. Marine NbS finance flows are about 9% of total land and sea NbS finance (globally about $14 billion excluding carbon finance). About 66% is public finance, which includes financing of marine research and fisheries management Annual private finance for marine NbS is estimated at $2.6 billion, dominated by investment in sustainable seafood supply chains and contributions by philanthropies and impact investors.

Box 33. Climate Change Loss and Damage

A 2023 analysis found that, between 2000 and 2019, the world suffered at least $2.8 trillion in loss and damage from climate change. Loss and damage has two broad categories:

- Economic loss and damage which refers to negative impacts where the costs are quantifiable, such as damage to infrastructure or reduced crop yields.
- Non-economic loss and damage refers to negative impacts that are not easily traded in markets, and typically harder to measure in monetary terms, such as loss of culture, displacement and way of life. These tends to be more irreparable and irreversible.

Loss and damage is a subject closely related to the concept of climate justice and equity because the world's most climate-vulnerable countries are often the lowest emitters of greenhouse gases.

UNFCCC COP19 (2013) formally recognised 'loss and damage' and established the Warsaw International Mechanism for Loss and Damage. COP27 (2022) established a Loss and Damage Fund, to provide financial assistance to climate-vulnerable countries. The Fund was operationalised at COP28 in November 2023.

Source: UNEP.

[313] Swiss Re, 2023. We need to talk about climate adaptation.
[314] E.g., New Global Financing Pact. OECD, 2023. Scaling Up Adaptation Finance in Developing Countries: Challenges and Opportunities for International Providers.
[315] World Bank. Climate Change Action Plan (2021-2025).

7 KNOWLEDGE MANAGEMENT AND CAPACITY BUILDING CLUSTER

271. This cross-cutting cluster is organised under five closely related priorities which support the other clusters:

a) **knowledge management** and the institutional arrangements for science to inform governance at the regional level
b) technology transfer
c) **capacity development.** regional approaches to human and institutional capacity development for ROGS implementation in coming decades
d) **communication** of scientific advice and governance approaches
e) **monitoring.** information requirements and means of monitoring the ROGS.

272. These closely related priorities are intertwined on numerous levels and there are no hard lines between them as they may overlap and complement each other. Capacity development generates the human resource and institutional support for all the other activities. 'Communication' provides the rationale and understanding at public and political levels and the means for stakeholder engagement. 'Monitoring' relies on effective knowledge management to provide the feedback loops to assess, adjust and coordinate the various ROGS initiatives. Although this cluster is presented as a 'stand-alone' set of activities, in practice, many of the actions are embedded in initiatives managed through other clusters. Presenting knowledge management and capacity building as a separate cluster illustrates the synergies and potential for cooperation across the other clusters.

273. The ROGS Technical Dialogue on Knowledge Management and Capacity Building (March, 2024) supported the content of the draft ROGS on this cluster with the clear understanding that considerable further dialogues on substantive issues and arrangements would be required to gradually build an effective and well-resourced knowledge management and capacity building architecture for the coming decades. The TD did not focus on the priority technical questions that science needs to answer, but on the human, institutional, and knowledge architecture required for future ocean governance.[316] The challenge for the ROGS was seen as developing a sustainable regional coordination mechanism for:

a) effective management of ocean science, or a regional institutional framework to deliver consensus ocean science to decision-makers
b) ocean technology development and transfer
c) effective organisation of human and institutional capacity building and
d) communication of consensus ocean science (monitoring is a function that cuts across these mechanisms).

7.1 KNOWLEDGE MANAGEMENT

7.1.1 Science to governance actions

274. **Global**. Science informs ocean diplomacy and underpins many regional cooperation regimes. Countries have generally committed to science-based decision-making. This places a burden on science to provide 'answers', although the resources made available to science are often insufficient and policy decision may be draw on values as much as scientific 'fact'. The fisheries RFMOs have established institutions (scientific committees) and processes to generate advice for fisheries management. The Intergovernmental Oceanographic Commission (IOC), the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Science-Policy Platform for Biodiversity and

[316] The background document addresses some of the substantive questions (priority science questions). Galletti, F., et al. (2024), Background Document for the Technical Dialogue on Knowledge Management and Capacity Building in Support of the Regional Ocean Governance Strategy.

Ecosystem Services (IPBES) and the International Council for the Exploration of the Sea (ICES) are other examples of how science informs ocean governance.

275. UNCLOS sets out state obligations on cooperation in marine scientific research (Art 242) including through bilateral and multilateral agreements, through exchange of scientific information (Art. 244), and facilitation of research vessels. The objective of the UN Decade of Ocean Science for Sustainable Development (2021-2030) ('the Ocean Decade') is to foster ocean science to reverse the decline of the state of the oceans and to catalyse new opportunities for sustainable development based on oceans. The vision of the Ocean Decade is "*the science we need for the ocean we want*". The IOC has also prepared a (draft) strategy for ocean planning (to 2030).[317] An African Conference on Priority Setting and Partnership Development for the Ocean Decade developed the Ocean Decade Africa Roadmap which provides a framework for ocean science planning. The Roadmap was based on a Regional Gap Analysis (2021) and multistakeholder workshops (2022) (see table)

Box 34. Ocean Decade Conference 2024 While Papers

A set of informative White Papers were prepared in advance of the 2024 Ocean Decade Conference
Vision 2030 Outcomes Report, Vision 2030 White Papers:
Challenge 1: Understand and beat marine pollution
Challenge 2: Protect and restore ecosystems and biodiversity
Challenge 3: Sustainably feed the global population
Challenge 4: Develop a sustainable and equitable ocean economy
Challenge 5: Unlock ocean-based solutions to climate change
Challenge 6: Increase community resilience to ocean hazards
Challenge 7: Expand the Global Ocean Observing System
Challenge 8: Create a digital representation of the ocean
Challenge 9: Skills, knowledge and technology for all
Challenge 10: Change humanity's relationship with the ocean
provides analyses and recommendations on Knowledge and Capacity Building.

Box 35. Ocean Decade challenges, outcomes, and Ocean Decade Africa Roadmap

Ocean Decade challenges	The ocean we want	Africa Roadmap priorities
– Understand and beat marine pollution – Protect and restore ecosystems and biodiversity – Sustainably feed the global population – develop a sustainable and equitable ocean economy – unlock ocean-based climate change solutions – Increase coastal community resilience – Expand the global ocean observing system – Create a digital representation of the ocean – Skills, knowledge and technology for all – Change human relationship with the ocean	– a clean ocean – a healthy and resilient ocean – a productive ocean – a predicted ocean – a safe ocean – an accessible ocean – an inspiring and engaging ocean	– sustainable ocean management in Africa – ocean and human health in Africa – unlocking the blue carbon potential – fisheries. Including IUU fisheries – strengthening multi-hazard early warning systems and community resilience – ocean observations and forecasting systems – digital twin for Africa – establishing an African ocean knowledge hub – strengthening capacities and skills of African early career ocean professionals – regional ocean literacy programme for Africa

Source: UNESCO-IOC (2022). Ocean Decade Africa Roadmap.

276. **WIO science to governance**. At the WIO level, a series of science to governance dialogues have been coordinated by WIOMSA. WIOMSA also coordinates a regional Scientific Symposium and is home to the Western Indian Ocean Journal of Marine Science. Preparation of draft NC-COP decisions are filtered through the NC Science to Governance Platform. NC Decision CP8/12: Establishment of a Platform for Science to Policy Dialogue provides the mandate for establishment of the Forum of the Heads of National Academic and Research Institutions (FARI). NC Decision CP.9/12.2 'Science-policy dialogue' requested the secretariat to "*review and expand the structure and scope of the FARI to include planning authorities and other relevant sectors*." There are numerous NC working groups and task forces which contribute to the WIO 'science to governance' process and a wide range of other science-based initiatives inform ocean governance in the region e.g., the RFMOs and SWIOFC, and projects or programmes managed by the region's marine science and oceanographic institutes. Partnerships on research cruises and remote sensing contribute valuable baseline information and mapping of the WIO. NGOs and philanthropic foundations contribute studies and capacity building, for example, on marine plastic pollution, sponsorship of higher degrees and awareness campaigns. WIOMSA has outlined the challenges facing regional ocean science.[318]

277. **Management of ocean science**. There have been transformative advances in WIO ocean science in recent decades. This has been achieved by networks such as WIOMSA, national ocean

[317] IOC-wide Strategy on Sustainable Ocean Planning and Management for the period 2024–2030.
[318] WIOMSA Policy Brief: Bridging the gap between science, management and decision-making.

institutions and academia, often with the support of key international partners such as the GEF, Sida, IOC/UNESCO and others. On one hand the fragmentation and diversity of projects, programmes and initiatives provide for a diversity of scientific viewpoints and significant advances in knowledge in multiple target areas. On the other hand, the fragmentation may dissipate scarce human, institutional and financial resources and the coordination of scientific outputs to generate policy advice at regional level often requires additional syntheses and dialogues. In addition, the transaction costs in managing multiple streams of scientific activities requires the time and effort of scarce science managers. Scientific institutions may also be competing for funding.

278. The question of how best to manage or govern ocean science at the WIO level has not been widely discussed.[319] Several sub-questions arise:

a) which science can be organised most effectively at a regional level and which science is essentially national in character?
b) what would be the purpose of a regional science agenda – access to finance, more efficient use of resources, avoiding duplication, sharing information, identifying regional centres of excellence, or 'distributing' the science agenda and its financing?
c) assuming there is a case to be made for a regional science agenda, or a priority set of thematic or sector scientific activities, how can the agenda be managed, how can regional funding allocated, and what form of peer review mechanism might be established?
d) how can regional consensus science be formally produced?
e) who are the stakeholders – countries, national marine science institutions, policy makers?

279. The ROGS aims to initiate the required dialogues on these questions based on the assumption that science for future regional ocean governance is likely to need a more formal structure than the current diversity of projects and working groups. The ROGS suggests that the existing NC science to policy arrangements could provide the foundation for a more pro-active science management process. The Science to Policy Platform could form one of the pillars of the WIO ROGS Technical Platform (see ROGS institutional arrangements). This platform could extend its the technical scope to address all relevant ROGS matters where scientific or technical advice is required. Ideally a formal regional oceans science management process could have the following characteristics

a) country representation on key technical committees or appointment of scientists by countries
b) an established review process for all science which has policy implications
c) a regional science finance facility and long-term resourcing and financing plan through engagement with development partners and regional institutions
d) transparent and balanced prioritisation and allocation of available funds
e) inclusion of physical/ biological/ social sciences and technology
f) clear guidance on information and data ownership and exchange
g) provision for managing core regional data sets
h) hosting by regional institutions.

280. **Regional assessments**. Monitoring of the social, economic and environmental status of the WIO is essential for tracking sustainability, informing regional policies, and adjusting ROGS activities. Monitoring has generally been done through regional reports such as the State of the Coasts of the MPA Outlook. Ideally the information used to prepare such reports will be digitalised and shared, including through GIS platforms such as WIO Symphony. Similarly, the national and regional reporting will ideally be aligned with global initiatives and common regional indicators.[320]

281. Historical trends have generally been negative: declines in mangrove and seagrass habitats, degradation of coral reefs, loss of marine and coastal biodiversity and declines in endangered species.[321] For example, Kenya and Tanzania lost about 18% of mangroves habitats over the last several decades and Mozambique lost about 27%. The losses are directly attributable to use human actions, including use of mangrove timber for firewood or for house construction, clearance for

[319] Transferring Complex Scientific Knowledge to Useable Products for Society: The Role of the Global Integrated Ocean Assessment and Challenges in the Effective Delivery of Ocean Knowledge.
[320] E.g., UN Environment/MAP (2017). Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria; and Common indicators. Third World Ocean Assessment (WOA III)
[321] Halpern, B., et al. (2015). Spatial and temporal changes in cumulative human impacts on the world's ocean.

construction of salt or shrimp production units, pollution, landfill and changes in the environmental flows of rivers.[322]

282. **Ocean accounts**. Ocean wealth and benefits indicators are currently being compiled from ocean accounts for several WIO countries (Figure 29). The ROGS recognises that a tension exists between assessing oceans in terms of wealth (capital) or output (value added) rather than taking a more holistic view of a living ocean. However, ocean knowledge expressed in terms of the values of its component parts are required for decisions, for investment in sustainability and to drive behavioural changes. Additional information on advances in the preparation of the WIO ocean accounts at national and regional levels are provided in the Technical Dialogue report and related initiatives.[323]

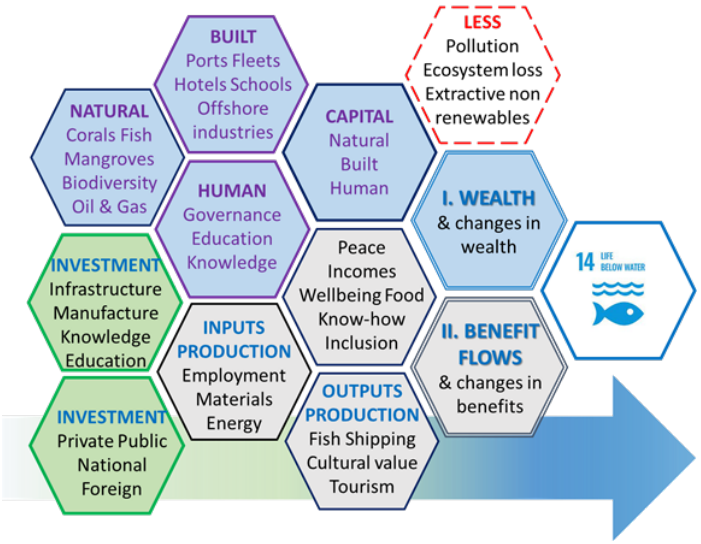


Figure 29. Sustainable oceans maintain or increase wealth and the flow of benefits

7.1.2 Information Management Strategy

283. Development of the WIO Information Management Strategy (IMS) is a closely related but separate item on the NC-COP agenda. The IMS will support the information requirements of the ROGS.[324] Some general lessons on creating and managing databases can be derived from examining existing databases. There should be a clear need for management of the data.[325] The focus should be on the data rather than the design of its management. The focus should be on existing data and on ascertaining the quality or credibility of the data and on strengthening national institutions.[326] At the regional scale, the data fields need to be available for numerous countries so that use of the most detailed database available regionally is likely to be unwieldy. Users should preferably not be required to register for use of the databases. Link to other databases rather than trying to duplicate the information.[327] For example, the Symphony GIS portal provides an opportunity to organise WIO information spatially. ESCAP provides an example of the use of hubs and has established a regional data governance framework with 5 pillars that define the regional roles:[328]

a) vision and policy intent
b) data management, policies, rules and institutions
c) role of data custodians and data stewards
d) data sharing, data accessibility and data integration
e) data sharing risks and mitigation.

[322] Bosire, 2015.
[323] ROGS Technical Dialogue on Ocean Accounts. Global Ocean Accounts Partnership (GOAP). Africa Natural Capital Accounting Community of Practice (NCA-CoP). HLP Blue Paper.
[324] ROGS Technical Dialogue on Information Management Strategy.
[325] See, e.g., UNEP, 2015. Data and the Western Indian Ocean.
[326] Overview of oceanographic data and research for improved ocean governance in the Western Indian Ocean Region.
[327] E.g., WIO Symphony, ODINAFRICA.
[328] ESCAP (2024). Data Governance: Practices in Asia and the Pacific

7.2 TECHNOLOGY TRANSFER

284. The need for accelerated technology transfer (TT) to advance the SDGs is globally recognised. SDG Target 14.a refers to "*increase scientific knowledge, develop research capacity and transfer marine technology*." The indicator is the "proportion of total research budget allocated to research in the field of marine technology" (14.a.1), which may be difficult to determine for WIO countries. SDG 9 seeks to build resilient infrastructure, promote sustainable industrialisation, and foster innovation. SDG 9 refers to promotion of "*inclusive and sustainable industrialization and innovation*" and tends to couple technology with infrastructure, such as telecommunications and energy, and calls for a favourable business climate. SDG 17 focuses on strengthening the means of implementation and revitalizing the global partnership for sustainable development. Targets 17.6-17.8 are devoted to technology.

285. Technology generally comes at a cost which is often embedded in product prices, service contracts, licensing or joint venture agreements. It rests on pillars of intellectual property rights, human skills and capacity, and an enabling structural, financial, and legal environment for business and science, technology and innovation (STI). TT cuts across the blue economy, environmental protection, maritime security, science and intellectual property rights. TT plays a vital role in sustainable oceans - for development of renewable energy, to build a circular plastics economy, for remote sensing in the oceans, for aquaculture innovation, or electronic financial transfers.

286. Significant efforts have already been made in the WIO to develop scientific knowledge and research capacity. Transfer of marine technology has not been the subject of a comprehensive structured regional effort, possibly because of the fragmented sectoral targets, the wide range of skills involved, the need to engage the business community, and because regional technical experts may work in industry rather than in 'education'. As an indication of the technology gap, Africa accounts for only 2% of world research output, 1.3% of research findings and 0.1% of patents.

287. The ROGS proposes several specific actions to develop a framework for technology transfer and innovation to meet the requirements of the ROGS:

a) studies to identify the most important blue TT requirements by sector and by technology. Recommend priority areas for TT. Where possible, identify the recurrent costs of the major imported technologies of relevance to the ROGS
b) prepare a synthesis of existing policies, schemes and initiatives, including a review of corporate TT obligations and practices related to critical imported blue technologies, and the TT obligations of major investors in the ocean economy (e.g., offshore oil and gas, port development and management, corporate tourism, offshore renewable energy, remote sensing, and other relevant technologies)
c) prepare a catalogue existing institutions, networks and regional centres of excellence which can support blue TT, and a catalogue of available TT resourcing opportunities
d) identify potential targets for flagship actions where priorities for TT may be aligned with available regional institutional capacity, and identify key gaps and potential solutions
e) convene a series of regional dialogues to set out a roadmap of critical actions for further high-level consideration, including possibly creating an interim network of regional TT institutions, partnerships and centres of excellence to drive this process.

7.2.1 Policy

288. The AU Agenda 2063 recognizes science, technology and innovation (STI) as key enablers for achieving regional and that sustainability, competitiveness, and economic transitions require investment in STI. The AU Science, Technology and Innovation Strategy (2024) builds on the African Science and Technology Consolidated Plan of Action (2005) and provides an institutional framework for STI at the continental level. The SADC Protocol on Science Technology and Innovation (2008) is an example of the an approach at the REC level. It identifies areas and modalities for regional cooperation and established institutional arrangements for the REC.

289. The pillars of the AU STI polies are to revamp STI infrastructure and enhance technical and professional competencies. It plans to take measures to curb the brain drain and build the critical mass of human capital required through an improved enabling environment, through a strong science

culture and by improved rules on intellectual property. International collaboration and shared innovation and entrepreneurship are seen as essential (Box 36).

Box 36. Proposed AU institutional architecture for Science, Technology and Innovation
The African Scientific Research and Innovation Council (ASRIC) is a platform for the development of bankable programmes
The African Observatory of Science Technology and Innovation: AOSTI is a specialized Technical Office of the African Union mandated to serve as the continental repository for STI statistics and a source of policy analysis and capacity building of Member States.
The Pan-African University: PAU is the organ of the AUC for advanced graduate education and postgraduate research. Its five institutes (each of which will support at least ten Centres) were established in response to the demand for STI on the continent
The Pan African Intellectual Property Organisation: PAIPO is in the process of being established
Regional and International Research Institutions are planned to have a regional or international mandate to undertake applied research are encouraged to align their priorities to the strategy. They include but not limited to: FARA, CAMES, AAS, AAU, OAPI, ARIPO and will provide technical support to the implementation of the strategy.
Private Sector: The private sector will work closely with Flagship programmes/ targets
Sources: AU, 2019. Institutional Architecture for implementation of STISA-2024 Science, Technology and Innovation Strategy 2024.

290. IORA has an action plan on STI and has established an IORA-Regional Centre for Science and Technology Transfer and a Working Group on Science, Technology, and Innovation. An MoU on STI between the IORA Secretariat and the Centre for Science and Technology of the Non-Aligned and Other Developing Countries Centre was concluded in 2019.

291. The Global Innovation Index (2023) ranks countries in terms of innovation (patents, copyrights). Mauritius (#57) and South Africa (#60) rank highest among WIO countries. At country level, South Africa has a White Paper on Science, Technology and Innovation (2019).[329] South Africa plans to focus on inclusivity, transformation and linkages, and enhancing the innovation culture in society and government. Improvements in the innovation enabling environment, in policy coherence, in programming and budget coordination are foreseen. Greater engagement of SMEs at the planning and funding stages are envisaged and open data, open science and open innovation approaches will be supported.

7.2.2 Intellectual property

292. The WTO Trade Related Intellectual Property Rights Agreement (TRIPS Agreement) protects intellectual property and provides the global framework and enforcement mechanism for payment of charges for licenses, patents, copyrights and brand names. The WIO region has a high dependency on imported technology and intellectual property (IP). The estimated annual cost of these imports for WIO countries (all sectors) is in the order of $1.5 billion. Only South Africa is ranked in the global top 20 exporters of IP. Ideally, the region needs a clearer understanding of the costs of these blue IP imports and identification of opportunities to generate 'home-grown' technologies which can substitute the imports. Another approach is to ensure TT is embedded in concessions, foreign business investment arrangements and the human resource development plans of those multinationals or enterprises operating in the region that use strategic technologies. Similarly, and without constraining the investment climate, work permits for foreign technologists can be linked to training of national or WIO counterparts. Frequently, the cooperation arrangements between business and STI do not have specific prior arrangements on IP and TT and theft of IP is known to be a constraint to cooperation on TT between institutes and between businesses.[330]

293. AfCFTA has prepared a draft protocol on intellectual property rights (2023) that aims to foster African trade, promote science, industrialisation, services, investment, technology transfer, and regional value chains through a harmonized system of intellectual property (IP) protection. AfCFTA advocates a common African negotiating positions on intellectual property rights. It should be noted that the genetics dimension of the BBNJ treaty involves shared intellectual property rights.

294. The World Intellectual Property Organization (WIPO) has collaborated with the Southern African Research & Innovation Management Association (SARIMA), South Africa's NIPMO and

[329] See also: Kahn, M. 2008. Africa's plan of action for science and technology and indicators: South African experience.
[330] WIPO. Case studies on cooperation and exchange between R&D institutions in developed and developing countries.

others on TT. WIPO has discussed an IP 'levy' to assist developing countries and the (WTO) African Group has identified a range of issues for consideration in relation to the TRIPS - TT, IP, climate change mitigation and adaptation, trade, and electronic commerce. The Africa Group has emphasised the need for reform of the TRIPS Agreement to enable accelerated TT in critical areas such as renewable energy, adaptation to climate change and human health. The idea of a waiver of the TRIPS Agreement for climate change related technologies has also been discussed.[331]

7.2.3 Circular economy

295. In 2023 the island states of Africa and the Indian Ocean adopted a Declaration for the Ocean for the development of the Circular Economy. Mauritius published a roadmap and action plan for a circular economy, which set a target to increase its recycling rate of plastic packaging from 3% to 50% by 2033. The IOC has undertaken several studies on the circular economy and associated intellectual property including on issues such as the 'right to repair' and extended producer responsibility. Cap Business has explored the economics of plastic recycling in the WIO island economies.

7.2.4 Resources

296. The IOC-UNESCO (2005) Criteria and Guidelines on the Transfer of Marine Technology builds on UNCLOS Part. XIV Development and Transfer of Marine Technology. Part XIV refers to establishment of regional centres (Art. 276) and their functions (Art. 277). The IOC Criteria and Guidelines provide a catalogue of TT actions for which IOC may assist in securing resources. A wide range of studies on TT make largely similar recommendations:[332]

a) develop TT/ IP parks and incubators, blue innovation clusters, networks, and platforms at national and regional levels. The development of blue technology parks will ideally be associated with special economic zones (SEZ) and universities, technical training institutions and key blue economy activities
b) identify the main opportunities for cost-effective TT and design schemes to progressively address these challenges.[333] Provide seed funding for selected 'solutions'
c) use technology fairs, conferences and 'technical solutions competitions' to develop leadership and skills
d) enhance STI institutional capacity and effectiveness of STI/ business interactions, including through implementing technology standards and certification schemes, applying lessons learned and developing best practices[334]
e) strengthen IP regulatory regimes to improve the TT investment climate and to protect national innovation
f) give preference to products with open source or voluntary licencing arrangements and consider similar measures for public procurement. Contracting conditions would ideally indicate the TT path, link to policy instruments for supporting the path and specify the mechanisms for meeting the TT targets
g) consider a 'matchmaking service' portfolio of business and STI activities to connect marine knowledge institutions with blue business
h) consider the institutional and physical infrastructure required to support novel future technologies. These could include blue economy emissions reduction schemes, linking offshore renewable energy to the electricity grid, disposal of end-of-life plastic boats, coral mariculture for reef rehabilitation, or the blue digital economy

[331] Africa Group. Policy space for industrial development. UNECA. Mechanisms to promote development and dissemination of clean and environmentally sound technologies in Africa
[332] UNCTAD Policy Manual (2017), Innovation, policy and development. African Union Report (2019) Contextualising STISA 2024: Africa's STI implementation report 2014–2019. Fakim A (2017) Science, technology and innovation crucial to Africa's sustainable future. Tech Transfer in the WTO— What's in It for Africa? And for the Rest of the World?
[333] UNFCCC. Capacity building for technology transfer in the African context: priorities and strategies
criteria.
[334] Technology Transfer for Green Growth in Africa. African Development Report 2012.

i) mobilise resources and partnerships for priority TT challenges such as offshore renewable energy, vessel monitoring for small-scale fisheries, sustainable product certification, waste management (e.g., online regional market for plastic waste) and pilot innovations to move to commercial use at scale.

297. **Regional TT clearinghouse mechanism**. The IOC Guidelines suggest the establishment of a regional TT clearinghouse mechanism, or a similar portal hosted by an appropriate regional organisation. The mechanism would facilitate access to information on the key regional actors, partnerships, projects and sources of support, the TT institutes, national focal points and private sector demand. National and regional plans, IP and TT rules and practices can also be made more accessible.

298. **Examples from other regions**. Blue STI investment in OECD countries is concentrated in several segments.[335] These are autonomous systems, robotics and marine sensors; wave, tidal and offshore wind power; fisheries and aquaculture; and biotechnology. Several areas are considered underinvested or could benefit from targeted support. These include core governance requirements, such as ocean monitoring, privates sector access to research facilities, and related cooperative programmes. An assessment of the status of blue TT, the scale and focus of investment and gap analysis can provide the basis for a specific a blue economy technology transfer programme, including in emerging areas such as AI and ocean robotics. Many countries have a marine technology flagship programme which engages the private sector, civil society, funding agencies and public policy (legal, fiscal) support, and that structures sector or thematic networks and innovation hubs. These schemes target national priorities such as essential technologies (e.g. marine telecommunications, offshore renewable energy), imported technologies which can be 'substituted' (e.g. mass tourism payment schemes) and technologies adapted to local requirements (e.g. aquaculture seeds, feeds, disease monitoring).

299. MaREI provides an example of a national marine STI centre that groups some 50 public, private and academic organisations focused on ocean energy, climate and the blue economy. It has 13 institutional partners, more than 75 industry partners and STI collaborators across 36 countries. About 40% of its former staff are employed in industry.

300. The EU's Circular Economy Action Plan provides insights into the role of STI. It envisages digital technologies components and materials for products, a governance architecture to facilitate services such as product passports, resource and consumer mapping. It is developing a knowledge and capacity scheme to coordinate circular economy innovation collaboration between STI organisations, universities and businesses, including SMEs. It acknowledges that a reformed intellectual property regime is required for the digital age and the green transition, as enabling factor for the circular economy and for rapid adoption of successful technologies. Similar collaboration and sharing innovations and technologies at the regional level is also advocated for development of a circular blue economy in the Mediterranean.

301. **Moving forward**. In summary, a clearer understanding of the status and challenges for blue TT at regional level can form the basis for mapping regional cooperation. This understanding may require:

a) studies on key TT challenges and requirements by ROGS cluster, by sector, and by technology
b) review the TT policies, practices, technologies, and technical services including the import costs of technology, technology licenses and related intellectual property
c) a catalogue regional centres of excellence, networks and schemes which can support blue TT
d) identification of potential flagship TT targets
e) a clearing house or knowledge exchange platform
f) regional dialogues to establish a critical actions or roadmap
g) establishment of an interim network of regional TT institutions and partnerships with support for innovation and TT
h) engagement with potential partners such as IOC-UNESCO, AU/ ASRIC, UNIDO, UNECA, business associations, the REC/ STI nodes, IORA.

[335] OECD, 2018. Rethinking Innovation for a Sustainable Ocean Economy.

7.3 CAPACITY BUILDING

302. Capacity building is a recognised cross-cutting priority at all levels and in all clusters and sectors. The needs range from classrooms to the media and news outlets, from community level to informed parliamentarians. The task of the ROGS is to support national efforts and identify and support ongoing and future regional initiatives on capacity building. The actions identified in the ROGS are seen as a starting point:

a) identify major gaps in human and institutional capacity for ROGS implementation
b) identify the existing institutional, financial and structural capacity of the region (i.e. training institutions and schemes) to meet the requirements of the ROGS
c) prepare the case for investment in human capacity and institutional development
d) propose means of bridging key gaps
e) redirect existing or pipeline resources and consider the obligations of investors
f) improve coordination among existing institutions, including for staff exchanges and equivalence of qualifications
g) target research and innovation including by designating centres of excellence
h) support existing networks and initiatives by communities (women, youth, business) and professional associations

303. A wide range of target for capacity building have been proposed. These include:

a) a network of ocean-climate education experts and an ocean education information integration platform
b) Blue Schools Network (building off success of the All-Atlantic and European Blue Schools Networks). Note that in Mauritius, secondary school students prefer the business and economics stream over science subjects, with biology being the least preferred subject.[336]
c) a focus on cultural connections with the ocean
d) a social media 'coasts and oceans' platform with links to relevant apps and 'chat rooms' on ROGS priorities
e) specific training on blue business, ocean technology, financing, circular economy, innovation and many other subject areas
f) maintenance of shared or common data sets and portals to access core information on ocean science, the ocean economy and ocean governance.

7.3.1 Selected resources for capacity development

304. The ROGS exercise began with an online oceans training course for potential Task Force members.[337] The TF participated in several collective leadership training exercises and a UNDOALOS workshop on the Law of the Sea and the World Ocean Assessment.

305. The various UN agencies provide ongoing support for capacity building in their specialised areas. At global level, IOC-UNESCO sets out a vision for capacity development and sharing during the Ocean Decade (2024). The Ocean Decade's Capacity Development Facility was established to build connections between experts, particularly for strengthening support to SIDS, LDCs, and early career ocean professionals.[338] The Ocean Teacher Global Academy provides a comprehensive internet-based training platform that supports classroom training, blended training, and online (distance) learning for Africa and Adjacent Island States (IOCAFRICA). Several institutions provide oceans or marine massive open online courses (MOOCs), including some in local languages. The Western Pacific Region has developed a Regional Network of Training and Research Centers on Marine Science with designated centres of excellence. A similar network could be considered for the WIO.

306. At regional level, the Indian Ocean Rim Academic Group (1997) was established to serve as a means of academic cooperation between IORA's academic institutions. The Consortium for the As

[336] Roopchund, R. (2023). Assessing the Current State of Science, Technology, and Innovation in Mauritius for Improving Economic Growth and Development.
[337] Coordinated by IOI (WIOGI) for which the materials remain available
[338] E.g., it offers the Ocean Governance Capacity Building Training Program – E-Learning Course

previously noted, the Conservation of the Coastal and Marine Ecosystems in the Western Indian Ocean region (WIO-C) provides a framework for NGOs working in the WIO region to harmonize and advance efforts to advance the NC work programme and related activities.[339] It provides a mechanism for NGOs to anchor their programmes in the Nairobi Convention and other intergovernmental processes. WIOMSA has provided a living backbone for regional marine science and has fostered an extensive suite of capacity building materials through the MASMA project and though services to the NC.[340] WIOMSA also backstops networks for women in science and young professionals.

7.4 COMMUNICATIONS

307. The ROGS presents a complex of inter-related actions in domains and sectors. Communication between the segments (such as ROGS clusters and priorities) is a key foundation for ROGS implementation as a means of generating a shared understanding of challenges and opportunities for cooperation.[341] Communication is part of change management, discovering consensus pathways and taking account of diverse views, approaches, and solutions. Strategic communication has the power to change perceptions, attitudes, and behaviours and it is a proven path to addressing barriers and motivations. Some communication focuses on specific campaigns or policy issues, but broader ongoing public information dissemination can generate impetus and create a fertile ground for more nuanced policy messaging.[342]

308. The ROGS has attempted to use existing organisations, forums and processes to drive this communication by inclusion of a ROGS element in existing agendas, by engaging with ongoing processes, or providing background information to ongoing processes. These have included various NC events and webpages, the NC Clearing House Mechanism and capacity building of TF members on communication and collective leadership. A survey done in the Seychelles on public awareness on ocean governance identified several gaps in perception. It recommended a focused communication strategy with emphasis on increased education, awareness and information, on the value of ocean governance, and engagement across ministries. It recommended the use of TV, where affordable, and targeted use of social media and radio. A Comoros study on perceptions of erosion also highlights the role of effective communications.[343] Despite major advances in recent decades, the WIO region still faces ocean awareness challenges. For example, the scale of corporate and household behavioural change required for sustainable oceans may not be well understood. The cost implications and financing requirements for sustainable oceans may not be fully appreciated. Transparency on revenues from offshore extractive industries can be improved. The need for consensus and continuity across political cycles and across political divides can be more clearly articulated.

309. **ROGS actions**. The ROGS proposes actions to foster a shared and well-informed, science-based national and regional vision for sustainable oceans as an essential supporting activity for effective ROGS implementation. This is required to generate public support for the policies and investments required, to inform trade-offs between objectives, and respond to the changing requirements of well-informed stakeholders. The following proposed actions would be guided by the NC Secretariat:

a) further development and alignment of the existing communications infrastructure, including that of the NC, WIOMSA and the regional oceans networks, databases, and portals

[339] WIO-C includes: International Union for Conservation of Nature (IUCN), BirdLife International, World Wide Fund for Nature (WWF), Wildlife Conservation Society (WCS), East Africa Wildlife Society (EAWLS), Coastal Oceans Research and Development in the Indian Ocean (CORDIO), Wetlands International, Blue Ventures, RARE, The Nature Conservancy (TNC), Flora & Fauna International (FFI), Conservation International (CI) and the Western Indian Ocean Marine Science Association (WIOMSA).
[340] For example: WIOMSA. The Use of Research Outputs by Management Authorities: Assessment of Current Practices and Identification of Capacity Building Needs. WIOMSA Policy Brief: Bridging the gap between science, management and decision-making
[341] McKinley, E. et al. (2023). The evolution of ocean literacy: A new framework for the United Nations Ocean Decade and beyond. Stoll-Kleemann, S. (2019). Feasible options for behavior change toward more effective ocean literacy: A systematic review.
[342] An EU example: Setting the course for a sustainable blue planet - Joint Communication on the EU's International Ocean Governance agenda (2022).
[343] Coastal erosion in the Comoros: How are perceptions and risks of maladaptation linked?

b) improved public transparency, possibly including establishment of an online publicly accessible ROGS portal, the possible establishment of an ocean awareness community of practice, and training of journalists and other media commentators
c) regular independent reviews of the ROGS that include stakeholder and civil society inputs
d) the effective engagement of 'core ocean communities' through regular regional Stakeholder Forums that include coastal communities, women and youth associations, and the business community. The proposed forums would pay particular attention to SMEs, community enterprises and their representative organisations. Actionable outcomes of the Forums would be considered through the appropriate policy processes, including through the NC-COP agendas (see section 8.2.4)
e) the region may also consider the preparation of a 'white paper' on the advantages and/ or disadvantages of national adhesion to the Aarhus Convention by WIO countries in order to strengthen the role and rights of citizens in environmental decision-making.

7.5 MONITORING THE ROGS

310. Monitoring the ROGS means monitoring the state of the WIO, the changes that occur and, if possible, the attribution of impacts and outcomes to specific drivers, interventions, or investments. However, changes in many higher level indicators are the result of the compounding effects of multiple interventions or pressures and may be readily attributed to particular causes. Outputs of the monitoring process inform the adaptive management of the proposed ROGS implementation arrangements (section 8). Numerous monitoring processes already contribute to these efforts: the state of the coasts reports, the MPA outlook, blue economy studies, fisheries stock assessments and sector satellite accounts. The task of the ROGS is to consolidate and communicate the aggregate results of these assessments to decision-makers, to the public and coastal communities in such a way that the conclusions can inform ROGS implementation in a timely manner.

311. **Ocean accounts**. The ROGS Task Force has contributed to an IMS workshop on ocean accounts, which is proposed as the primary framework for consolidating the diverse indicators and metrics. The ocean accounts framework provides a structured methodology which can be used and replicated at country and regional levels.[344] Examples of regional ocean accounts dashboards include those under development by ESCAP and the EU Ocean Climate Portal. The challenges in developing the ocean accounts in the Western Indian Ocean region include the integration of fragmented data types, metrics and spatial information held by different data custodians. The different information managers often use different sector specific tools or software and employ specialised human resources. With the assistance of the Global Ocean Accounts Partnership, the African Community of Practice on ocean accounting is making steady progress at national and regional level by preparing environmental accounts and national satellite accounts for blue economy or ocean sectors.

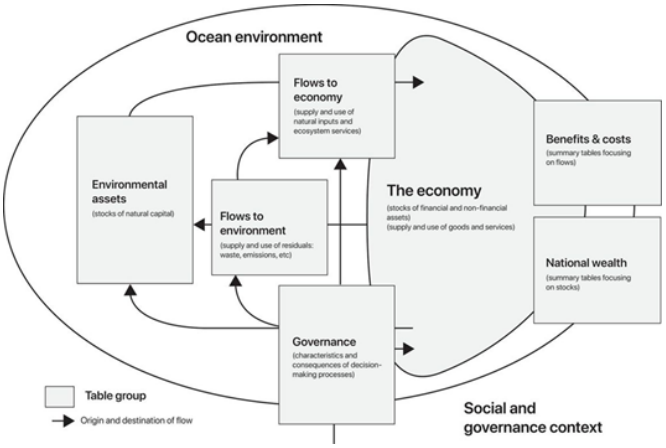


Figure 30. Ocean accounts framework
Source: GOAP

312. The implementing arrangements for the ROGS will ideally enable the results of the monitoring to be effectively communicated to the public and to decision makers. This means that the social, economic and environmental ocean monitoring and national and regional ocean governance will benefit from tracking and feedback on their effectiveness. Beyond its contribution to GDP and a

[344] GOAP. Technical Guidance on Ocean Accounting. A Position Paper for Ocean Accounting in Africa.

healthy environment, the ROGS monitoring and evaluation process will ideally inform on how regional cooperation contributes to livelihoods and to income distribution, to climate change resilience, or to a circular ocean economy. The monitoring feedback will need to contribute to a broad understanding of how policy changes affect the ocean economy, and how changes in the ocean affect the economy, coastal cities, and coastal communities. However, the impacts of investment in STI and many other ocean initiatives are non-linear and difficult to attribute. In this regard, science is perhaps a victim of its own success. Decision makers are committed to science-based decisions and await scientific evidence or 'proof' that a policy will be effective, while scientific advice is provided in terms of probabilities and uncertainties (risk assessment) which are less satisfactory at political levels.

7.5.1 Monitoring governance

313. UNDP defines governance as "*the system of values, policies and institutions by which a society manages its economic, political and social affairs through interactions within and among the state, civil society and private sector*". The World Bank defines governance as the manner in which power is exercised in the management of a country's economic and social resources for development purposes. The Africa Governance Report 2021 highlights three distinct governance policy areas. (i) 'sustainers', or policies that form the core of ocean governance and represent the minimum requirements for functional governance; (ii) 'compass pointers' or policies that state foundational ideals and the vision that underpins shared values, instruments and the rule of law; and (iii) pivot point policies that drive issues where action can change the trajectory of WIO futures.

314. Examples of generic governance indicators are illustrated in Table 13. The SDG index could be disaggregated to reflect SD 14 targets. All countries score above 60/100 on the Ocean Health Index. All except one country score above 50/100 on the SDGs Index. Many countries struggle to find the most efficient national ocean governance architecture. Some, such as Mozambique, have created an 'oceans ministry (MIMAIP) which directs, coordinates, plans and ensures the implementation of ocean policies, strategies and activities. Others prefer a high-level interministerial coordinating committee, often placed under the president's or vice-president's office to facilitate rapid resolution of inter-ministerial conflicts of interest

Table 13. Indicators of Governance, Business climate, SDGs and Ocean Health

WIO countries	Mo Ibrahim score & trend		Doing business 2023	SDG Index	OHI
Comoros	42.5	-4.9	47.9	52	70
France	NA	NA	76.8	82	74
Kenya	58.7	3.1	73.2	61	69
Madagascar	44.2	3.0	47.7	50	63
Mauritius	74.9	-2.2	81.5	68	66
Mozambique	48.6	-0.8	55	53	65
Seychelles	73.4	9.3	61.7	NA	85
Somalia	23.2	5.3	20	48	67
South Africa	67.7	0.9	67	64	62
Tanzania	53.4	0.6	54.5	57	69

Sources: Mo Ibrahim; Doing Business; SDGs; Ocean Health.

315. At a regional scale, the African Integration Report 2021 suggests several targets which could also be used as indicators (modified to reflect oceans). For trade, the existence of a free trade zone and common external tariff (e.g. for fish, plastics and plastic fishing gear, waste plastics), and the scale and trends in intra-regional marine imports and exports. For environment, the existence of a regional pollution monitoring plan, a common carbon tax regime, or joint regional geospatial data management.

7.5.2 Global ocean indicator framework

316. Under the LME paradigm, the notion of governance includes the formal and informal arrangements, institutions, and behaviours that shape how resources and ecosystems are utilized, how challenges are managed, what behaviour is permissible, and what rules affect how the goods and services within an ecosystem are distributed and used. Ecosystem based management is the dominant framework in current practice and has a strong emphasis on spatial planning.[345]

[345] Governance as a framework to theorise and evaluate marine planning. Other approaches include Modes of Governance, Good Governance, Multi-level Governance, and Relational Governance

317. The SDG 14 indicators are largely generic. Several are difficult to track and the relevant data is not available for many WIO countries (Table 14). In the case of the Western Pacific, the ESCAP countries undertook a process similar to the ROGS development. ESCAP selected four priorities for regional ocean cooperation: data and statistics, maritime shipping, fisheries, and marine pollution.[346] Countries found that, at regional scale, scientific data was available for only tw of the ten SDG 14 targets. The ESCAP countries are using the System of Environmental Economic Accounting and the accompanying Experimental Ecosystem Accounting to support policies and to systematise key information.

Table 14. Relevance of SDG 14 indicators in the WIO

SDG 14 Indicators (keywords)	comments	possible proxies
14.1. eutrophication, plastics	water quality and MPP data deficient or lack of time series	% hotspot reporting, % collection of urban waste
14.2. MPAs using ecosystem approach	applied in principle	MPA effectiveness, sustainability
14.3. pH	data improving	none
14.4. fish stock status	SWIOFC & IOTC data available	none
14.5. MPA area	available	none
14.6. IUU	inherently difficult to assess	% co-management
14.7. sustainable fisheries (%GDP)	implies increase in fish production or value/ depends on other sector GDPs	net economic returns to point of landing (or value chain)
14.8. marine % research $	does not capture technology transfer	national implementation of NC decisions
14.9. SSF access rights	Rights vary by country, difficult to standardise	FiTI (transparency)
14.10. UNCLOS implementation	very broad	selected indicators from the WOA2, OHI, or implementation of NC protocols

318. The Coastal Governance Index (2015) is a composite indicator set, with 43 sub-indicators in six categories used to construct overall rankings of national level governance performance. The 'foundational categories' are (i) policy and institutional capacity (weight 23.1%) and (ii) business environment for coastal activities (7.7%). The 'asset categories' are: (iii) water quality (15.4%), (iv) minerals, energy, and shipping (15.4%), (v) land (15.4%), and (vi) living resources (23.1%). The Governance Baseline tool can be distinguished from other approaches to evaluation by its emphasis on 'adaptive learning' for a wide group of stakeholders involved in its implementation.

319. A range of guidelines and analyses offer insights into the governance of MPAs through case studies, analysis of economic social and legal incentives[347]. A Seychelles study illustrates MPA governance issues which are common throughout the region.[348] The marine park authorities face difficulties in managing the combined impacts of tourism and fisheries. Under pressure from conservation advocates, scarce human resources are often overburdened by new MPA development.

320. WIO countries produce a wide range of studies and data which can inform the ROGS monitoring process. Many of the WIO's sector or thematic sources of information have been noted in the reviews of each cluster. Ideally, these will be reviewed systematically and aggregated under the ocean accounts framework. Information exists at regional scale on the state of many fish stocks, on MPAs, mangroves, coral reefs, coasts, shipping, biodiversity and emissions. Country level information is available on plastic pollution and solid waste management (or lack thereof). Blue sector satellite accounts provide economic information for some countries (notably for fisheries). Spatial information is being compiled in Symphony.

321. Coverage of water quality, chemical pollution, microplastic contamination and ocean awareness is limited, and the time series data needed to establish trends and causal links are deficient. Information on investments, capital and flows and distribution of benefit from the ocean economy are weak. The Ocean Disclosure Initiative focuses on the marine environmental pressures exerted by each industry to raise industry awareness of its impacts or marine environmental footprint. The initiative hopes to drive corporate disclosure on industry impacts on oceans.

[346] Changing sails : accelerating regional actions for sustainable oceans in Asia and the Pacific.(text) and presentation.
[347] UN Environment (2019): Enabling Effective and Equitable Marine Protected Areas – guidance on combining governance approaches. Case Study Compendium. Introduction: an empirical framework for deconstructing the realities of governing marine protected areas.
[348] Resolving conservation and development tensions in a small island state: A governance analysis of Curieuse Marine National Park, Seychelles.

7.5.3 Building ROGS 'ecosystem' dynamics

322. The ecosystem approach to ocean governance is a widely accepted approach, but its application is complex and challenging. The complexity of the physical dimensions (e.g. trophic cascades, ocean currents) is widely appreciated. However, the human, institutional and political dynamics is arguable more complex and guidance on the design of adaptable and sustainable ocean governance structures is still evolving.[349]

323. Monitoring, evaluation, and progressive adjustment of the ROGS is part of the ROGS implementation arrangements discussed below. It is a key component of adaptive planning and management, which is an integral part of the ecosystem approach. Some of the technical requirements of the structural arrangements for sustainable implementation mechanisms are briefly outlined (see Box 37 (next section)).

[349] Challenges in Implementing the Ecosystem Approach: Lessons Learned. Also see analysis of adaptive law.

8 ROGS IMPLEMENTATION ARRANGEMENTS

324. This section first reviews the existing WIO ocean governance arrangements and selected guidelines on ocean governance. The proposed ROGS implementation arrangements are then described. A separate section describes the proposed arrangements for financing the ROGS. Finally, the proposed arrangements for monitoring and adjustment of the ROGS are set out (see also previous section on monitoring 7.5).

325. The challenge facing the ROGS is illustrated in Figure 31. It is to design and progressively implement a functional and efficient regional ocean cooperation ecosystem. The arrangements will ideally include mechanisms for adjusting and adapting to meet new challenges, a changing ocean and changing human behaviours. Implementation arrangements will need to build on existing foundations, strengthen institutional collaboration, and engage business and community stakeholders. The mechanisms will need to embrace and preserve the rich diversity of existing institutions, approaches, and conceptual pathways to sustainable oceans while avoiding unnecessary duplication of effort.

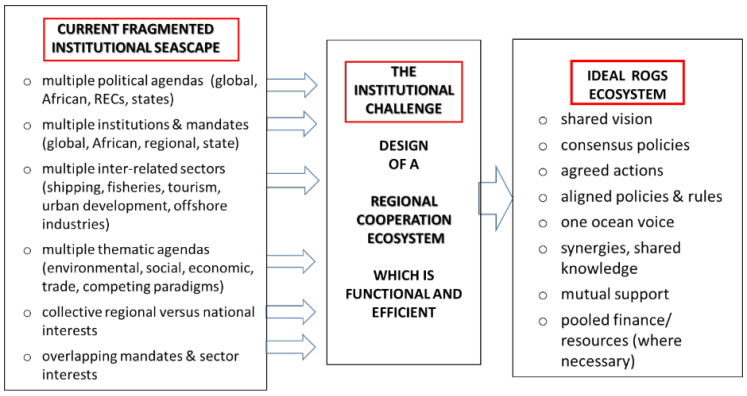


Figure 31. The ROGS institutional challenge

326. a ROGS institutional mechanism is required for

a) policy alignment on all ocean issues
b) consensus technical advice on all ocean issues (science 2 policy)
c) synergies at all levels and between sectors and activities
d) facilitating long-term blue financing
e) avoiding project-driven agendas and financing gaps
f) common metrics across all sectors and initiatives, e.g., on ocean and coastal health, community wellbeing, economic viability, equity, pressures, resilience, and blue wealth (natural capital, infrastructure, human and institutional 'capital').

8.1 STATUS AND TRENDS IN WIO REGIONAL OCEAN GOVERNANCE

8.1.1 Regional governance gap analysis

327. Regional discussions identified several gaps in WIO regional ocean governance:[350]

a) fragmentation of initiative and action plans
b) poor implementation of the regional political and economic agenda on sustainable oceans
c) weak regional institutional arrangements and financing of maritime security
d) unresolved maritime boundaries
e) inadequate responses to destructive or illegal fishing practices
f) insufficient action to address the challenges of climate change
g) inadequate regional funding and a high reliance on external resources
h) in some countries, the oceans agenda is guided by short-term political goals, or by availability of external resources, rather than by long-term sustainability or the collective regional interest.

[350] UNEP (2020). African Ocean Governance Strategy: Scoping Study and Gap Analysis.

328. **Fragmented institutional 'seascape'**. There are:

a) multiple political agendas (global, African, RECs, national)
b) multiple environmental, social, economic thematic agendas and competing paradigms (e.g., climate justice, net zero, MSP, circular economy, biodiversity)
c) multiple inter-related sectors (shipping, fisheries, tourism, urban development, offshore industries)
d) multiple institutions and mandates (global, African, regional, country-level)
e) national interests may not always align with the collective regional interest
f) overlapping mandates and sector interests which require problematic trade-offs.

329. The diverse agendas, sectors, and regional institutions can benefit from strengthened relationships. These include memoranda of understanding, data exchange agreements, joint programmes, reciprocal observer status at their respective meetings, and other forms of communication that generate understanding and mutual support and avoid unnecessary competition for agendas and financing. Stakeholders agree that strengthened, or more structured arrangements between existing regional institutions would be beneficial.

330. The ROGS has been prepared through the NC on behalf of the AU/AMCEN. Several of the regional priorities may not be adequately addressed within the essentially environmental NC framework, so the institutional arrangements extend beyond the core NC framework. For example, maritime security, shipping, response to natural disasters, or development of ocean technologies are beyond the normative role of the NC. To implement the ROGS, the region will need to consider if the existing institutional arrangements are fit for purposes and what structural changes or improvements might be considered. The NC-COP has a clear mandate as the prime decision-making body for ocean governance particularly in relation to essentially environmental matters. The secretariat is supported by several regional networks, working groups, task forces. While these arrangements are broadly representative and have performed well, some are not formally constituted or empowered to formally represent national positions. These arrangements include:

a) **networks**: the Forum for Academic and Research Institutes (FARI), the Consortium for Conservation of Coastal and Marine Ecosystems in the Western Indian Ocean (WIO-C), Western Indian Ocean Marine Protected Areas Management Network (WIOMPAN), Mangrove Network
b) **working groups**: on legal and technical matters, marine spatial planning, and marine litter
c) **task forces**: on coral reefs, marine turtles, critical habitats, water quality, river flows, and ocean governance and
d) **cooperation agreements**, e.g. with SWIOFC, the IOC, WIOMSA and others.

8.1.2 National ocean governance initiatives

331. At national level, countries face a common challenge in determining the most effective national arrangements for ocean governance to deploy scarce human resources, blend competing agendas and roadmaps, and ensure inter-agency cooperation rather than competition. National ocean governance initiatives take several forms, such as policies, action plans, strategies, establishment of dedicated ocean agencies or coordination mechanisms. Some initiatives are embedded in or integrated with national development plans or programmes. This section reviews some of the highlights of these initiatives but is not intended to be a comprehensive review of national policies or strategies. Selected indicators of national ocean governance have been illustrated in section 7.5.1. Additional metrics can also be compiled, e.g., on ratification of relevant international conventions, ocean-related public expenditures, blue jobs, or ocean literacy.

332. The initiatives share many, if not all, of the global principles described in section 2.5 and generally refer to African or REC policies, protocols, or declarations. The initiatives generally interpret these global and regional policies and principles to meet the specific national needs. Most of the initiatives have been created through participatory processes and set out a vision or targets for sustainable use of the oceans and coasts with an emphasis on development of the blue economy and sustainable use of natural resources.

333. Most of the substantive components of the national initiatives (such as on fisheries, marine tourism, marine transport) are captured by the regional priorities identified through the participatory process guided by the ROGS Task Force. In general, the various cluster objectives and targets are broadly similar at national level, for example, environmentally, economically and socially sustainable development of fisheries/ tourism/ offshore energy/ other blue economy sectors for shared national benefit, international and regional cooperation for mutual interest, human and institutional capacity development. Targets may be specific and linked to national commitments, e.g.: establishment of km^2 of MPAs, implementation of port state measures, bans on selected plastics, or specific governance initiatives.

Table 15. Selected national ocean governance initiatives by WIO countries

Country	Selected ocean governance initiatives (notes)
Comoros[351]	Moroni Declaration, Blue Wall Initiative, Coelacanth conservation, ratified AfCFTA
France (Reunion/ Iles Eparses)	Implementation of EU Marine Strategy Framework Directive and other legislation[352]
Madagascar	MASE regional information centre, revised BE strategy (AfDB)
Mauritius	ECS JMA agreement w/ Seychelles. Oceans Economy Roadmap with the aim of doubling the contribution of the ocean economy to GDP by 2025. A new Ministry for Ocean Economy, Marine Resources, Fisheries, and Shipping.
Mozambique	Northern Mozambique Channel Initiative, a partnership between Comoros, Madagascar, Mozambique, and Tanzania. Established a 'ministry for oceans'
Kenya	National Oceans and Fisheries Policy (2008); hosted blue economy conf.; LAPSET corridor
Seychelles	Blue bond and SeyCATT; joint ECS and JMA agreement
Somalia	EEZ established. Blue Economy Assessment, Taxonomy, and Investment Framework
South Africa	Operation Phakisa [353]
Tanzania	Oil and gas, transboundary MPAs; Zanzibar - MSP scoping, 2023

8.1.3 Ocean governance guidelines and resources

334. Many of the guidelines have already been noted and an inventory of the proposed actions, orientations and critical steps is beyond the scope this Background Paper. These include:[354]

a) act now as a step towards a long-term vision
b) establish adaptive and inclusive governance approaches and recognise and accommodate provisions for power dynamics and political change
c) policy coherence and integration need to uphold human rights and social justice and the maintenance and restoration of biological diversity
d) use robust and simple metrics for monitoring
e) ensure business engagement, enable diverse incentives, and adopt sustainable and inclusive technologies
f) leverage regional and international mechanisms[355]
g) climate adaptation and resilience should complement and contribute to a decarbonized, clean energy economy.

335. **Fragmentation, sustainability, and resilience**. The ROGS repeatedly refers to fragmentation as a problem and the efficiency gains from integration, coherence, streamlining, harmonisation, or alignment. However, resilience, which is a critical factor in the sustainability of institutional mechanisms, is enhanced by a measure of diversity which generates alternative visions, pathways or solutions (Box 37).

[351] Freed S., et al. (2018). Status Report: Marine ecosystems, fisheries and socio-economic context of Anjouan, Comoros. Blue Ventures Conservation Report.
[352] EU (2008). Marine Strategy Framework Directive. AFD (2023) Indian Ocean 2019-2023 Regional Strategy.
[353] https://www.operationphakisa.gov.za/operations/oel/pages/default.aspx
[354] Adapted from: Lombard, A.T., et al. Principles for transformative ocean governance.
[355] E.g., the Plan of Action for a Model Mediterranean Sea (PAMEx) Technical Secretariat.

Box 37. Building resilience for sustainable ocean governance arrangements

1. Maintain diversity and redundancy: the more diverse, the more resilient; overlap in functions of species and institutions contributes to resilience

2. Manage connectivity: ensure connectivity is part of planning and coordination and communications

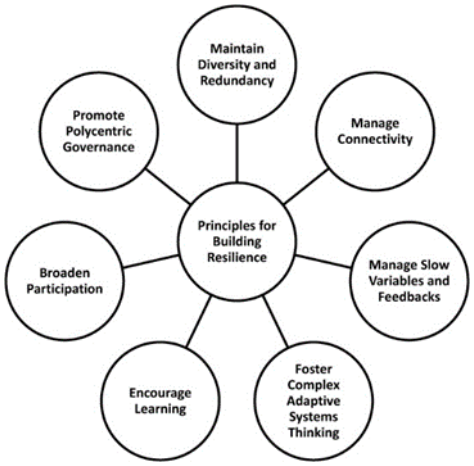
3. Manage slow variables and feedbacks: integrated monitoring and management strengthen ability to detect and respond to shifts in variables that can be sudden yet hard to reverse

4. Foster complex adaptive systems thinking: dynamic, adaptive and integrated approaches required to address systemic issues in context of increasing uncertainty and unpredictability

5. Encourage shared learning: recognition that the socio-ecological systems upon which we depend are dynamic and changing; constant learning and re-evaluation of existing knowledge is therefore essential

6. Broaden participation: ensure participation of a range of stakeholders and interested actors to build trust, relationships and shared understanding and diversity of views and potential solutions

7. Promote polycentric governance systems: collaboration across institutions enhances learning and ability to swiftly deal with change and disturbance. Adaptive law provides for mechanisms that facilitate new understandings of ecosystem dynamics (including environmental reforms) to be more readily adopted in policies and regulations.[356]



Sources: Adapted from Biggs et al.; SS Yadav and KM Gjerde[357]

8.2 PROPOSED INSTITUTIONAL ARRANGEMENTS

336. The proposed institutional arrangements for implementing the ROGS are set out in the ROGS. They are repeated here for convenience (Figure 32). In summary these are the:

a) **Ocean Policy Platform**. A high-level Ocean Policy Platform provides advice to the countries, the NC, the RECs and other regional cooperation agencies. It comprises representatives of countries, the RECs, and IOC/COI as may be determined. The Ocean Policy Platform is advised by the Technical and Finance Platforms

b) **Blue Finance Platform**. The Blue Finance Platform will facilitate financing the implementation of the ROGS and report to the Ocean Policy Platform through a permanent process of regular dialogues. In addition to country and REC representatives it will include representatives of the key sources of finance for ROGS implementation. The Blue Finance Platform is described in detail in the section on 'Financing the ROGS'

c) **Technical Platform**. The Technical Platform is the primary source of technical advice for the Ocean Policy Platform. The Technical Platform will consolidate the work of:
   (i) *Four Cluster Platforms*, established to provide advice to the Technical and Finance Platforms
   (ii) *Community Forums*. Community Forums to be conducted at regular intervals to ensure 'grass roots' stakeholder participation, to develop broad-based consensus and communicate policies and plans as required.

337. The ROGS institutional framework aims at a ensuring a functional and efficient regional cooperation ecosystem that builds a shared vision, consensus policies, agreed actions and decision-making 'rules'. Ideally, the ROGS will underpin a single regional ocean 'voice' on ocean issues that is based on clear communications, regional synergies, and shared knowledge. It will generate mutual support and, if mandated, potentially access pooled finance/ resources through regional projects that address common challenges.

[356] Resilience and Adaptive Capacity of Aquatic Environmental Law in the EU: An Evaluation and Comparison of the WFD, MSFD, and MSPD.
[357] Biggs, R. et al. (2015). Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems. Berkes, F. et al. (2003). Navigating social-ecological systems: Building resilience for complexity and change.

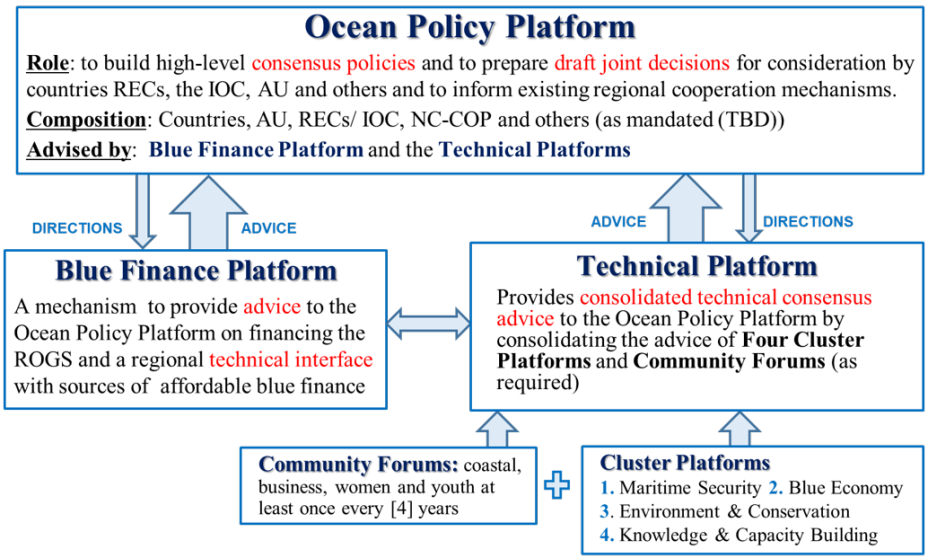


Figure 32. Proposed ROGS Institutional Arrangements

338. The following proposals are provided as a basis for further extended discussions convened to implement the ROGS. The platforms will be progressively established by drawing on, adapting, or strengthening the existing regional working groups, task forces, networks, and other established institutional arrangements, such as MOUs between regional organisations. The composition, structure and function of the platforms are proposed below. Collectively, the platforms will be established to:

a) support effective regional ocean cooperation and implementation of the ROGS
b) establish technical consensus, shared policy positions and joint decisions
c) develop a long-term vision on regional ocean governance institutional arrangements
d) facilitate financing at national and regional levels
e) monitor ROGS progress and impacts and adjust the ROGS to an evolving WIO.

8.2.1 Ocean Policy Platform

339. **Composition.** The Ocean Policy Platform will comprise high-level country representatives, representatives of the RECs, the IOC/COI, and the AU. The Ocean Policy Platform is advised by the Blue Finance Platform, the Technical Platform and the Nairobi Convention Focal Points.

340. **Role**. Its role is advisory. It will consider and recommend on key ROGS policies and programmes by balancing social, economic, and environmental priorities. It will review the progress of the ROGS and advise on adjustments to the ROGS activities to meet any changes in national or regional priorities, or to address emerging constraints and challenges. The 'consensus outcomes' of the Ocean Policy Platform will take the form of high-level regional recommendations which reflect both technical and political consensus. The 'consensus outcomes' will be transmitted to the WIO countries, to the RECs and the IOC/COI, to the AU, the Bureau of the Nairobi Convention and to other regional intergovernmental organisations in accordance with their mandates. The established intergovernmental organisations (IGOs) will consider and decide upon the consensus outcomes as may be required by their mandates and agendas. It is expected that the various regional IGOs will already have contributed to the consensus outcomes through the various technical platforms.

341. **Hosting**. It is proposed that following discussions on terms of reference, an Interim Ocean Policy Platform will be established and hosted by the NC. Subject to the recommendations of the Interim Platform and associated financing and institutional arrangements, the Ocean Policy Platform may be hosted by the UNECA, or by another regional organisation. The chair would revolve among the WIO coastal countries or chair coastal countries of the RECs.

8.2.2 Technical Platform

342. **Composition.** The Technical Platform will comprise high-level ocean experts nominated by WIO countries, by the RECs and by the IOC, and the chairs of the four Cluster Platforms. The chair of the Technical Platform will be from the country which will be the current chair of the NC Bureau. Subject to the approval of the nominated experts, the Technical Platform may include other ocean experts, representatives of other regional organisations, or observers (e.g., retired chairs of regional institutions, business leaders). The Platform will aim to have a balanced stakeholder composition reflecting the social, economic, and environmental scope of the ROGS.

343. **Role**. The Technical Platform will provide consensus technical and scientific advice to the Policy Platform and to the Blue Finance Platform, as required. It will:

a) consolidate and align the work of the four Cluster Platforms and provide collective science-based consensus advice to policy makers on the environmental, social and economic status and trends of the WIO
b) provide a formal 'science to governance' interface and potentially be the institutional base for a formally mandated regional 'ocean scientific council' as may be decided
c) include provisions for adequate private sector and civil society voice, both directly and by backstopping the Community Forums (see below)
d) advise on actions and investments to advance healthy oceans, the wellbeing of the coastal and dependent populations, and the region's ocean economies
e) advise on the technical aspects of ROGS instruments, such as ocean accounts and the IMS.

8.2.3 Four cluster platforms

344. **Composition**. The structure, composition and hosting of the proposed cluster platforms will be progressively determined and developed based on extensive regional discussions. The four Cluster Platforms will build on existing arrangements, such as the Nairobi Convention Working Groups, Task Forces, networks, and other advisory bodies as determined. They will include representatives of the Community Engagement Forums. Each cluster platform will aim to have a balanced composition reflecting the social, economic, and environmental scope of each cluster and include representatives of the other cluster platforms.

345. **Role**. Each Cluster Platform will manage cluster stakeholder consultations to develop and provide consensus advice to the Technical and Blue Finance Platforms, establish and manage regional working groups and task forces as may be required, review assessments of the state of the WIO and the implementation of the ROGS, and liaise and coordinate with other cluster platforms.

346. **Hosting**. Hosting of the platforms will be subject to regional dialogues and financing arrangement. Interim Cluster Platforms will be established by the agreed host organisations, based on terms of reference agreed by the Technical Platform and prepared by the host agencies in consultation with cluster stakeholders, as identified by the host organisation. The following arrangements are proposed as a basis for discussions:

a) Maritime Security Platform to be hosted under the WIO Maritime Security Architecture (MSA) and through the Ministerial Conference on Maritime Security and Safety in the WIO, with close engagement of the Contact Group on Illicit Maritime Activities (CG) and/or other appropriate institution as may be determined by the WIO countries
b) Blue Economy Platform to be hosted by the IOC/COI, possibly with sector-level breakout groups as may be required (e.g., on tourism, offshore energy, shipping)
c) Environment and Natural Resources Platform hosted by the NC Secretariat
d) Knowledge Management and Capacity Building hosted by WIOMSA.

8.2.4 Community Engagement Forums

347. **Composition**. The Forums are a mechanism to enhance 'grassroots' stakeholder engagement in the implementation of the ROGS. Subject to resource availability and higher-level decisions, the Ocean Policy Platform may establish such Community Engagement Forums as may be required. Each forum would convene at least once every four years (e.g., in advance of an NC COP) and have up to

100 representatives of community associations with provisions to ensure inclusivity and voice for disadvantaged groups (e.g., waste pickers, remote islands, fisher crews). The following Community Engagement Forums are envisaged: Coastal Communities Forum, 'Blue' Business Community Forum with particular attention to SMEs, 'Blue' Youth Community Forum; and 'Blue' Women Community Forum.

348. **Role**. The role of each forum is to review and comment on the ROGS implementation and its effectiveness at community level, to suggest any changes or improvements required and raise issues of particular concern to the community. The core purpose of the forums is to ensure the voice of the communities is framed as practical action proposals and advice and effectively communicated to the Ocean Policy Platform, to the NC COP and to higher-level decision makers.

349. **Hosting**. The Forums are 'subsidiary bodies' of the cluster platforms and 'report' through the cluster platforms. The forums will be structured and managed by the relevant communities through their associations. Resourcing is envisaged to be both from the ROGS implementation arrangements and by the community associations and their partners.

8.3 FINANCING THE ROGS

350. The ROGS Task Force has identified 'access to affordable blue finance' as a critical constraint to implementation of all ocean and blue economy priorities. This section sets out the rationale for the proposed financing arrangements. It examines the demand for and supply of affordable finance, the structural character of the financing gap and the state of blue finance in the region. The following section presents the proposed Blue Finance Architecture (detailed in section 8.4.1). The objective of the proposed Blue Finance Architecture (BFA) is to facilitate access to affordable blue finance through cooperative regional initiatives, and to meet the national financing required to implement the ROGS. Briefly, the Blue Finance Architecture has four complementary elements:

a) the Blue Finance Platform, a mechanism for ongoing engagement with key sources of finance
b) the Regional Blue Portfolio which presents an aggregated regional 'demand' for blue finance
c) a blue taxonomy to categorise and guide sustainable investments and to bridge between the blue portfolio and the ocean accounts
d) ocean accounts to provide a common framework for the monitoring and adjustment of the ROGS and to track the investments and their impacts.

8.3.1 Rationale for the Blue Finance Architecture

351. The demand for affordable blue finance is not met largely because of the structural disconnect between the supply of blue and green finance and national capacity to secure and disburse the finance. The Blue Finance Architecture (BFA) addresses the problem of how to bridge this supply/ demand gap for affordable blue finance. It is based on three perceptions:

a) **high demand**. there is a high public and private sector demand for affordable capital to finance WIO 'blue' investments
b) **large supply**. there is a large supply of capital seeking sustainable 'blue' investments which have a verifiable and sustainable impact
c) **structural gap and fragmentation**. the financial architecture needed to bridge the supply and demand gap is fragmented and deficient and it can be made significantly more effective and efficient through a regional approach.

352. **The structural financing gap**. The gap is attributable to numerous structural factors:[358]

a) the supply of 'eligible' projects or investments is deficient, partly because the national enabling environment is weak, because the assessment of impacts, risks, or returns is

[358] Also see: The Bridgetown Initiative which addresses financial reform issues, the COP27 speech by the Barbados PM, and the New Global Finance Pact.

challenging, and because of the diverse and onerous requirements of a fragmented and complex multilateral and bilateral financing architecture

b) continued 'business as usual. Eligibility for funding is generally determined case by case, or project by project in relation to the various mandates or criteria of the financing agencies. These criteria are generally grounded in SDGs, in the related sustainability principles, or in global commitments (e.g., on climate change or biodiversity). However, the interpretation, focus, or application of the criteria differs by source of finance or fund. Certain analyses even suggest that some financial agencies may be primarily concerned with meeting their internal requirements rather than tuning the design to the national requirements[359]
c) national 'investors' or projects face a complex array of financing windows, procedures, timescales and conditionalities and have limited capacity to assess the diverse options, or to blend the different types of finance[360]
d) financing agencies also face difficulties in assessing project eligibility, particularly if baseline information is lacking (e.g., health impacts of burning plastic on waste landfills, impact of marine litter on tourism, leakage of offshore revenues, incomes of small-scale fishers). Despite commitments to the contrary, cooperation among funding agencies is often deficient
e) co-financing arrangements are generally on a case-by case basis and may require shared eligibility criteria and conditionalities and negotiation of project-specific agreements between the financing agencies
f) the financial architecture required to bring a group of investments to the scale needed to access major sources of finance is often lacking
g) at a 'macro' level, core constraints include high national debt burdens; reluctance to enter debt reduction schemes, which could result in reduced credit ratings and higher interest payments; and in some cases, poor coherence between public finance budgets, planning, and financial management.

8.3.2 Demand for investment

353. There is a high WIO demand for finance for all priorities and clusters. Projects or proposals are often not 'bankable' partly because intangible benefits/ global goods (e.g. ocean health, ecosystem services) are not accounted in estimates of benefits or return on investments. Projects lack scale, so financing costs higher and the project-by-project financing generates high transaction costs (preparation, EIAs, monitoring, different procurement systems, auditing, reporting). The demand for WIO blue investment and financing falls into three broad categories:

a) recurrent finance to maintain ocean health and support for coordination among regional institutions, such as the support for the ROGS platforms outlined above and for regional networks and connectivity
b) capital and technical support for public investment (e.g. for waste management, monitoring of the marine environment) and government transfers to support temporary (recurrent) costs of transitions to sustainable practices (e.g., transition from extractive use to payments for ecosystem services and support for nature-based solutions)
c) capital for private investment, for example, for development of sustainable fish products, tourism, establishment of a circular economy, or transition to net-zero in the ocean economy.

8.3.3 Supply of capital

354. There is a large pool of blue and green capital seeking viable investment opportunities in sustainable practices, in transition pathways to sustainability, and to finance national and corporate commitments to the SDGs and high-level oceans targets. This capital is managed by global funds, by impact investors, international financial institutions, pension funds, insurance companies, philanthropic foundations, and many others.[361] Investors typically need a large stream of similar

[359] The Hard Challenge of Aid Coordination. Why don't donor countries coordinate their aid? A case study of European donors in Morocco.
[360] OECD, 2022. Multilateral Development Finance 2022.
[361] Examples include the Climate Funds, World Bank, International Finance Corporation, the GEF and FFEM and many others, e.g. see the partners in ProAzul

investments in order to generate economies of scale, to modulate risks, to track performance and impacts, to negotiate co-finance, and to generate implementing capacity at scale in both the public and private sectors.[362]

Box 38. Major categories of recurrent support and capital investment in WIO oceans

The scale of capital and recurrent financing has not been estimated. Anecdotal information and the scale and targets of various development support initiatives and projects indicate that both capital and recurrent financing is less than adequate, particularly in the following areas:

(A) recurrent cost financing

- enforcement of environmental regulations and maritime security
- coastal zone planning and management, including marine spatial planning and their implementation
- waste management and prevention and control of pollution (including monitoring of pollution, prevention of plastic pollution and pollution by chemicals (nutrients, pesticides, mining wastes))
- addressing the loss of coral reefs
- sustainable fisheries and support for disadvantaged coastal communities
- human and institutional capacity development
- climate change resilience and poverty reduction in coastal communities
- science to governance interface and building scientific baselines

B) Capital investments have been made largely by the private sector or thought public-private-partnerships (PPPs). Many larger public investments have been financed through support from international financing institutions (e.g. waste water management, port infrastructure). The main capital investments include:

- offshore extractive industries, including oil and gas exploration
- port/ green port development largely linked to development of transport corridors and transport hubs
- waste-water treatment
- innovative debt conversion (Seychelles) linked to MPAs and blue economy initiatives
- hotels and tourist development (marinas, golf courses, villages, cruise ships)
- SMEs in various blue sectors
- fish processing, some fleet development (mostly pelagic fisheries), aquaculture
- renewable offshore energy (very limited)

Table 16. Indicative scale of capital investment required

Blue investment (illustrative)	Investment in	Cost	Regional demand
Solid waste management	Collection and sorting systems, managed landfills, incinerators and, composting facilities (energy recovery)	Very High	High – regionally, less than 40% of solid waste is collected - $ hundreds million
Urban waste water management	Sewage schemes – piping and sewage treatment plants, water testing laboratories	Very high	$ hundreds million
Circular economy	Reuse and recycling of wastes e.g. manufacture of plastic bricks, pet bottles	Very high	$ tens of millions+
Nutrient pollution reduction	Farmer awareness / other complex actions	Low	Gt. Barrier Reef ($hundreds of millions)
Green ports	Wharfs, landfill, roads, renewable energy, port waste management	High	Usually public/ private finance linked to concessions
Blue tourism	New design hotels, renewable energy, community engagement, medium/ small scale cruise vessels	High - low	Mostly private sector and associated local communities/ MPAs
Offshore industries	Shore bases, roads, vessels	V. high	Private and public

Table 17. Selected sources blue capital

Own resources[363]	Grant finance	Loan finance	Risk capital/ impact investment
Private capital Government budgets, local authority budgets Corporate profits Equity injections Debt for nature Capitalisation of concessions and licenses	Bilateral development partners The GEF, FFEM, Climate funds In-kind partnerships Ocean philanthropies and NGOs	International Financial Institutions - World Bank, AfDB, European Investment Bank, National development funds Commercial banks Debt swaps[364]	Commercial banks Contributions to specialised investment funds by insurance corporations, pension funds, from corporate profits and other sources Issue of blue bonds, Accelerator funds Consortium of African Funds for the Environment (CAFÉ)

[362] E.g., the Mauritius Sewage Plan offered a series of investment over 20-years. However, many agencies are reluctant to consider a similar timescale because of financing (and political) uncertainties.
[363] IMF. 2023. The Long Squeeze: Funding Development in an Age of Austerity. Regional Economic Outlook: Sub-Saharan Africa.
[364] IMF, 2023. Africa: Some Principles and Trade-Offs in Debt Restructuring.

355. In 2021, the estimated development assistance (ODA) directed at SDG 14 was just over $2 billion, equivalent to less than 1% of global ODA (= 0.68%). In 2021, ODA for SDG14 in Africa was less than $500 million, equivalent to 3% of the total ODA received by Africa. The value of private sector blue investment has not been estimated but may be tens of billions of dollars if offshore hydrocarbon investment is included.

356. The capital can be in several forms, e.g., equity, credit, technology transfer. The capital costs vary widely with the scale of the investments and the scale of the regional blue capital requirement is unclear. In aggregate, the demand for capital and associated technical and investment support is likely to be in the order of billions of (US) dollars in the medium term. Demand may be larger if some climate change adaptation investments such as 'hard' erosion protection is necessary, or rebuilding after natural disasters is required.[365]

357. Philanthropic funding for marine conservation more than doubled from an over $0.4 billion in 2010 to $1.0 billion in 2022 because of expanded commitments from traditional funders and the entrance of new actors.[366] Science, fisheries and aquaculture, protected areas and habitat protection dominate the ocean conservation funding. The ocean-climate nexus is the most rapidly expanding area of blue investment, e.g., offshore renewable energy, decarbonizing shipping, blue carbon and support for coastal resilience and adaptation to climate change. SDG14 expenditures account for only 0.7% of the estimated global expenditures directed at the SDGs (Table 18).[367]

358. An OECD analysis of climate finance suggest significant disparities between Paris financing commitments and targeted outcomes and that uncertainties and risks increase as financing agencies move from global scenarios to specific investments at country level.[368] WIO countries can benefit from development of sector-specific climate investment scenarios which can reduce uncertainties and complement investments with regulatory or other responses.[369] Basically, it is easier to agree on policies and priorities than on implementation practices.[370] However, it is in the implementation that coordination gains are potentially the greatest, since these differences are what generates the unnecessary transaction costs and administrative burdens for both the funding agencies and the recipients.

Table 18. Expenditures on selected SDGs as % of global total

SDG	SDG description	%
14	**Life Below Water**	**0.7%**
6	Clean Water and Sanitation	4.5%
13	Climate Action	3.8%
17	Partnerships for the Goals	2.5%
16	Peace and Justice (e.g., maritime security/ anti-piracy)	9.0%

8.3.4 Exploring the financing gap

359. **Business as usual.** In the 'business as usual' and project-by-project approach, most investments are individually financed and assessed. This incurs costs in establishing baselines, estimating risks, calculating the financial returns, the economic viability, and the social and environmental benefits. A project-by-project approach implies high transaction costs and engagement of scarce national experts. Many projects go unfunded or deferred because of these high transaction costs, preparation delay, the financing challenges, or changing political agendas. A case-by-case approach also means that intangible benefits, or benefits which are not readily estimated (e.g., reduced carbon emissions, health benefits, or protection of biodiversity) may not be fully reflected in the feasibility assessment. Large investments, such as in green ports or solid waste management, are complex, requiring long-term social, economic and environmental returns on investments. These projects involve protracted negotiations on the contributions by different stakeholders or contributors, for example, resource users, parastatals, municipal authorities. To enable the financing to proceed, finaciers may require long-term contracts with private sector service suppliers (for example, port

[365] E.g., Beira World Bank flood protection $120 million.
[366] Lewis, F., et al. 2023. Funding Trends 2023: Tracking the State of Global Ocean Funding. Our Shared Seas. 2023.
[367] UNSDG data portal.
[368] OECD Env. WP No. 223 Climate change mitigation scenarios for financial sector target setting and alignment assessment: A stocktake and analysis of their Paris consistency, practicality, and assumptions.
[369] Ranger, N., et al. (2023). The Green Scorpion: the Macro-Criticality of Nature for Finance – Foundations for scenario-based analysis of complex and cascading physical nature-related risks.
[370] Aid Coordination and Aid Effectiveness.

management companies, landfill operators, hotel concessionaires). The projects are contingent on environmental assessments, local planning permits and numerous other arrangements. In the 'business as usual' scenario blue finance encounters several constraints:

a) a shortage of investment-ready proposals. Planning for future investments is constrained by political factors, financing horizons, budget uncertainties and national debt
b) limited dialogue between impact investors, development partners, and international financial institutions on how to leverage their contributions at scale in specific sectors
c) inadequate baseline data to assess risks or to set realistic quantifiable targets. This makes the social and environmental impacts difficult to track and to include in key performance indicators[371]
d) weak alignment of financial partners processes, which often require different indicators, metrics, safeguards, and reporting, particularly in emerging areas (blue carbon metrics, payment for ecosystem services, imputed costs of lost ecosystem function)
e) success stories are not necessarily shared or replicated
f) uncertainty and political risk make assessment of financial performance and expected returns challenging.

360. **Targets and criteria**. The targets for concessional finance (e.g., a focus on a particular SDG) are largely determined by the sources of finance and heavily influenced by the policies and agendas of the financing agency.[372] Most financing instruments have their own criteria for investment, procedures to access the funds, financing timescales, and conditions for use of the funds. Each instrument creates specific financing 'windows', criteria, timescales, impact indicators, and an array of processes to account for and justify the disbursements. The 'suppliers' of concessional finance seek verifiable, sustainable green/blue investments. However, the institutional infrastructure for outcome verification and impact assessment are often deficient at national level, and as a result many projects create their own M&E process. The efforts to create and track project-specific indicators may be costly or may even undermine more comprehensive national monitoring schemes. Many unfunded blue projects, investment proposals or initiatives may be unable to meet the criteria required to access the available concessional finance.

361. **Fragmentation**.[373] As noted above, the various suppliers of finance each have their own targets, processes, eligibility criteria, terms and conditions for support and associated guidelines, templates, financing windows, key performance indicators, and monitoring and evaluation procedures. Different funding agencies are mandated to target different activities. Each project may have a dedicated preparation process, specific social and environmental assessments, safeguards, Projects may have different management units, and different procurement, accounting and auditing procedures, different financing agreements and requirements for counterpart contributions, and specify different monitoring and evaluation requirements and timescales. This fragmentation constraint has long been recognised and there have been many attempts to address the issue.

362. **Effectiveness**. The Paris Declaration on Aid Effectiveness addresses many of the issues associated with this fragmentation.[374] Despite numerous efforts, the alignment of development assistance criteria and processes among the sources of finance remains weak and progress in implementing the Paris Declaration has itself been fragmented. As already noted, development assistance policies may be aligned, but implementation remains fragmented.[375] While the scale of development assistance has increased remarkably over the last 20 years, the number of bilateral and multilateral agencies has also increased from 191 to 502. In 2019, recipient governments implemented only one out of every four transactions and less than one out of every two dollars' worth of

[371] OECD, 2019. Social impact investment: the impact imperative for sustainable development; OECD, 2015. Social Impact Investment: Building the Evidence Base.
[372] EP. Financing for Africa – The EU budget and beyond.
[373] OECD (2009), "How Fragmented Is Aid?", in Development Co-operation Report 2009.
[374] Paris Declaration on Aid Effectiveness: Ownership, Harmonisation, Alignment, Results and Mutual Accountability. OECD, 2008.
[375] For analyss see: Aid Coordination and Aid Effectiveness. Coordination, Development and Governance of Senegal Small-Scale Fisheries. Donor proliferation and donor coordination in Indonesia: the case of governance reform. Donor coordination and the uses of aid.

commitments.[376] The administrative charges associated with implementing agencies (e.g. a UN institution's charge or overhead for administration of a project) is in the order of 12-15% of the project value. Pooled financing has become a recognised mechanism for harmonising financing. The UN Multi-Partner Trust Fund (MTFPO) has managed over $10 billion in pooled funding, through 148 funds supporting activities in over 110 countries with 98 sponsors.[377] However, there are no 'blue' trust funds targeting to capital investment at regional scale.[378]

363. **Scale and pipeline**. Managers of major funds and financing agencies typically prefer a stream of similar investments to generate economies of scale. Scale can help streamline internal processes, refine the financing model, modulate risks, facilitate tracking of performance and impacts, Scale helps to negotiate co-finance and generates capacity in both the public and the private sectors that service financial products.[379] Many small island economies and developing economies are unable to provide this scale or enabling environment while the fragmentation undermines the available capacity.

8.3.5 Existing WIO blue finance

364. Many of the contributions of the Parties to the NC are in arrears. The NC trust fund has limited resources and there is a high dependence on externally financed projects and programmes with finite timescales. Financing for core activities such as monitoring the state of the WIO and advancing the implementation of the NC protocols also rely heavily on project finance.[380] Development assistance accounted for between 2% and 19% of GNI in 2022 and between 8% and 60% of national public expenditure in five WIO countries in 2021.[381]

365. Key support for the NC work programme at the regional scale is provided by the Global Environment Facility (SAPPHIRE and WIOSAP projects and a further project at the concept stage), the European Union (ACP-MEAs project), the Governments of Sweden (ocean governance project), France and others (NoCaMo project), and Norway, the German Federal Ministry for Economic Cooperation and Development (BMZ) (WIOGI), as well as several partner organizations working at national level and through regional networks and NGOs (e.g., through WIO-C). The regional components are frequently supported by national partnerships, pilot projects, case studies, capacity building initiatives, and similar activities.

366. There are numerous other sources of public and private finance for maritime security, the blue economy, fisheries, tourism, offshore oil and gas, green ports and for waste management and actions to address marine pollution. However, there is no clear picture of the current financing for oceans and the financing requirements to achieve SDG14 and related WIO ocean economy targets. This lack of overview and the fragmentation tends to constrain potential financing synergies in the region. Across the WIO, investments have many common features that can be treated as a 'shared' challenge:

a) project-by-project financing with long preparation processes and approvals required for EIAs, social safeguards, fiduciary and procurement systems
b) weak enabling environment (e.g. weak sector regulation, supporting infrastructure, rule of law)
c) complex financing design for large projects (e.g. green ports, waste water management, climate resilience)
d) high level of indebtedness making concessional or grant financing critical to leveraging other forms of affordable finance[382]
e) need to monitor and report environmental, social, economic impacts project-by-project

[376] World Bank. 2022. Understanding Trends in Proliferation and Fragmentation for Aid Effectiveness.
[377] E.g. UN SDG Multi-Partner Trust Fund, Guidance Note for UN Country Teams UN Country-level Pooled Funds, Team Europe Initiatives. Despite these initiatives, 71% of global official financial flows went to discrete development projects, 9% went to budget support and only 1% to pooled funding, while 12% is related to transaction costs (see WB, 2022 (above)).
[378] However, see UNDOALOS. PROBLUE (World Bank) finances technical assistance rather than capital investment.
[379] E.g., the Mauritius Sewage Plan offered a series of investment over 20-years. However, many agencies are reluctant to consider a similar timescale because of financing (and political) uncertainties.
[380] Analysis of Options for Strengthening the Operational Functioning of the Nairobi Convention Secretariat (2018).
[381] Net ODA received (% of central government expense) OECD DAC data. Data for several countries not available. Values exclude IBRD countries.
[382] Benzaken, D. et al. From concept to practice: financing sustainable blue economy in Small Island Developing States, lessons learnt from the Seychelles experience.

f) issues in integration with other projects and initiatives and overburdened national expertise
g) need to link investments with higher level targets (e.g., SDG14, net-zero) to access funds.

Box 39. Finance terminology
Sustainable finance is focused essentially on the sustainability of the investments **Green finance** is any finance directed at a positive environmental outcome **Development finance** is provided on concessional terms and conditions (e.g. low interest) to enable access, reduce risk and finance activities with low or no direct economic return **Climate finance** is directed exclusively at climate change mitigation or adaptation. Mitigation targets global emissions at local level while adaptation targets essentially local activities. Several climate funds have been established under UNFCCC resolutions **Public-Private-Partnerships** (PPPs) are contracts between public and private entities which may or may not have a financing component **Blended finance** is a structural approach that combines catalytic private capital with public or other (local) private finance for development purposes generally directed at the SDGs and may aim to de-risk private investment or offset risks or low returns. **Impact investment** is financing that requires both financial returns and a development impact. Impact investment seeks to optimise risk, return and impact to benefit people and the planet. **Financial intermediaries** are national or international agencies that serve to distribute or manage the large funds such as those for climate mitigation **Accredited agencies** are the financial intermediaries or other entities which are approved to manage the funds (e.g. they meet the financial management standards required by the fund) **Debt swaps**. Renegotiating national dept to use the 'savings' to build sustainability (e.g., Debt-for-Climate Swaps)

8.3.6 Selected blue finance and innovative financing resources

367. **Reform of development finance**. In late 2023, the Multilateral Development Banks (MDB) Group recognised the need for reforms and closer collaboration in five critical areas: scaling up financing capacity, joint action on climate, enhanced country-level collaboration, strengthened co-financing, including by harmonizing requirements, and catalysing private sector engagement.[383] MDB financing is expected to be scaled up by $300-400 billion over the next decade and extend innovative financial instruments, develop national capital markets, and increase the use of IMF's Special Drawing Rights (SDRs). Development of a common approach to measuring climate results (adaptation and mitigation), progress towards a new collective goal on climate finance, and further support for early-warning systems for natural disasters are expected. A new Collaborative Co-Financing Portal will accelerate co-financing of public-sector projects and the Global Emerging Markets Risk Database will facilitate assessment of private sector investment risks and opportunities. The African island states have established the African Island States Climate Commission (AISCC) to source climate change funding. The IOC/COI is the interim coordinator and works with the Global Climate Change Alliance (GCCA+) project, a flagship EU initiative to help the most vulnerable countries cope with the effects of climate change. There are also moves to align key performance indicators on nature and biodiversity across financial institutions.

368. **The blue funds**. Several national blue funds avoid some of the above constraints by creating mechanisms to respond to local blue finance demand. These include SeyCATT, BIOFUND and PROAZUL and other blue funds in various stages of development. A series of SWIOFish projects (World Bank) have also replicated sustainable fisheries investments in several WIO countries under a single window fast tracking process. The global value of blue bonds is relatively low but growing. Seychelles, Belize, Barbados have negotiated blue bonds. In 2023, Gabon negotiated a $436 million debt-for-nature swap to fund marine conservation. Ecuador has negotiated a $1.6 billion debt for nature swap for conservation of the Galapagos.

369. The Seychelles Blue Bond was issued in 2018.[384] The blue bond was closely linked to the World Bank, SWIOFish3 project and the World Bank (IBRD) provided a guarantee of $5 million. The bond has a value of $15 million with a maturity of 10 years and an interest rate of 6.5%. The repayments are due in in 2026, 2027 and 2028. The scheme established a Blue Grants Fund ($3 million) and a Blue Investment Fund ($12 million) as complementary instruments which provide

[383] Strengthening Multilateral Development Banks: The Triple Agenda Report of the G20 Independent Experts Group.
[384] By private placement to US-based impact investors, Calvert Impact Capital, Nuveen and Prudential. The placement agent is Standard Chartered Bank and the trustee is the Bank of New York.

financing for the transition to sustainable marine and ocean-related activities. The Blue Grants Fund is managed by the Seychelles Conservation and Climate Adaptation Trust (SeyCCAT). The Development Bank of Seychelles (DBS) administers loans from the Blue Investment Fund.

370. In 2023, Gabon became the second African nation to issue a blue bond. In the case of Gabon, the 'debt-for-nature swap' resulted in refinancing $500m of its public debt and unlocking some $163m for marine conservation. The Ecuador/ Galapaos scheme involves the world's largest blue bond (Box 40). Ghana is among the beneficiaries of a new 'plastic bond' (Box 41) which includes a specific ocean-bound plastic target. The Ocean Risk and Resilience Action Alliance is targeting innovative oceans projects at scale and includes some WIO projects. The Marine Regions Forum also noted the ROGS conclusions and key messages on finance.

Box 40. Ecuador's Galapagos debt for nature swap

Key transaction components

- Ecuador converted $1.6 billion in commercial debt into an $656 million loan with a $323 million conservation finance commitment over 18 years to created dedicated and permanent endowment for conservation of the Galápagos
- Ecuador collaborated with the Pew Bertarelli Ocean Legacy Project, Oceans Finance Co., and Aqua Blue Investments.
- Credit Suisse issued the $656 million marine conservation-linked Galápagos Marine Bond, which was used to finance the new $656 million loan. U.S. International Development Finance Corp. and Inter-American Development Bank provided political risk insurance and loan guarantees.
- Ecuador converts $1.6 billion debt into an $656 million loan financed by a marine conservation-linked bond and a long-term conservation funding commitment for about $1 billion in debt savings from write-offs and reduced borrowing costs

Key conservation impacts

- The Galápagos Life Fund (trust) was established to oversee allocation of conservation funding. The fund has a board of directors composed of 5 government and 6 NGO representing fishing, tourism, and academic communities.
- The funding can be used to strengthen management, monitoring, and enforcement in the marine reserves. It can support research to achieve sustainable fisheries, climate resilience, and a sustainable blue economy.
- Electronic monitoring device requirements have been established for industrial purse-seine and longline fishing vessels.
- There will be onboard fishing observer and restrictions on the use of fish aggregating devices for industrial fishing vessels.

Conservation finance

- It will provide more than $12 million (on average) in annual conservation funding in perpetuity starting in September 2023.
- Payments and investments will capitalize the endowment growing to an estimated $227 million by 2040.
- More than $450 million is provided (including assets and spending) for conservation financing over the next 20 years.

Source: Pew.

Box 41. Innovative instruments: World Bank Plastic Waste Reduction-Linked Bond

As part of the World Bank Sustainable Development Bond Framework a $100 million 'plastics bond' has been issued for Ghana and Indonesia. (See Outcome bonds).

The bond guarantees a fixed rate return of 1.75% (minimum) and has an S&P AAA rating based on range of risk reduction measures. Additional returns are linked to linked to potential carbon reduction credits (VCUs) (see below). The bond is channelled through Citi and Plastic Collective, a private limited company Verra Plastic.

The return for investors is linked to the issuance and monetization of Plastic Waste Recycling Credits, Plastic Waste Collection Credits (collectively known as Plastic Credits), and Verified Carbon Units ("VCUs") from two plastic waste collection and recycling projects in Ghana and Indonesia

The OBP Certification Program is designed to encourage the removal of Ocean Bound Plastic (waste plastic) from the environment by adding value through effective waste plastic collection and disposal before it reaches the ocean. The certification program has two subprograms, each of which can be combined with the Social+ OBP Component:

- OBP Credits are a type of plastic credits focused on removing from nature low value* Ocean Bound Plastic. Each OBP Credit is equivalent to 1Kg of low value OBP that has been removed from the environment and adequately treated by a certified organization.
- OBP Credits are only issued by a certified project (to this standard: OBP-NEU-STD). Each credit corresponds to the effective removal and treatment of OBP by the project and verified by the certification body. The OBP Certification Program does not allow forecasted or estimated plastic credits. OBP Credit issuance and retirement are tracked in the public registry held by Zero Plastic Oceans.

In the OBP certification program Non-Commercially Recyclable OBP is plastic waste that cannot be sold for recycling profitably and is never collected. Purchasing the OBP Credits means :

- financing a project that removes from nature plastic waste that would not be collected without the plastic credit purchase so that a measurable environmental benefit is generated
- supporting the incomes and welfare of waste pickers (by collecting more types of plastic waste, they collect and sell more volume) and obtain better working conditions (as the certified project must respect ethical and social criteria).

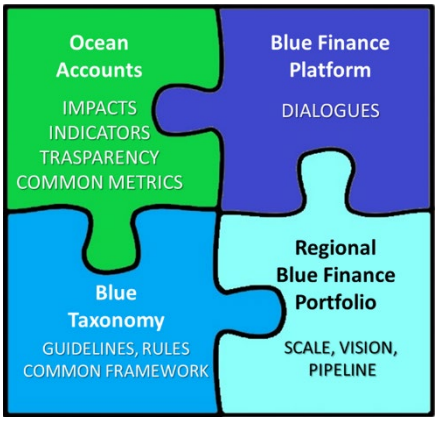
371. **Climate finance.** Climate finance is arguably the largest block of concessional finance available and has been briefly discussed in section 6.5.7. However, contributions to the climate funds have been below expectations and disbursements may require engagement of financial intermediaries.

The large number of climate related trust funds indicates the scale of fragmentation and its attendant complexity. For example, the MDBs manage over 100 climate-related trust funds.[385] Africa has contributed less than 4% of global emissions, but it is bearing the brunt of climate change. Climate change is estimated cost Africa an estimated $7–15 billion annually, a value which is expected to rise to $50 billion by 2040. The inadequacy of climate finance, the cost of undelivered climate finance, and the neglected carbon market in Africa are now receiving more attention.[386]

8.4 BLUE FINANCE ARCHITECTURE

372. The WIO blue finance architecture aims to bridge the financing gap and proposes initiating or further developing several complementary actions:

a) the **Blue Finance Platform** is a convener of a permanent dialogue on WIO blue finance between countries, sources of finance, RECs and business leaders
b) the **Regional Blue Portfolio** creates a (virtual) pipeline of investment giving vision, scale, leverage, synergies – it is NOT envisaged as a 'fund'
c) the existing **Blue Taxonomy** is further developed and applied to guide the investments to meet SDGs, net zero, and other high-level regional targets and used as a framework to structure and characterize sustainable blue investments
d) **Regional Ocean Accounts** to be used to provide common metrics to monitor and evaluate impacts across all investments.



8.4.1 Blue Finance Platform

373. **Purpose**. The proposed Blue Finance Platform (BFP) will manage a permanent stakeholder dialogue on financing the ROGS to facilitate access to finance at scale. The Platform will engage countries with the key sources of blue finance to build a joint affordable financing framework. The Platform is not a fund. The Platform provides collective advice and analyses to the Ocean Policy Platform and the Blue Finance Platform stakeholders. The goal of the dialogues is to build a consensus financing architecture that reduces transition costs, expedites project, or programme preparation and supports efficient implementation. The architecture envisages a menu of flexible templates for the most common national investments, standardises assessment and performance tracking criteria and metrics, and tailors best available practices to the collective requirements of countries, municipalities, sectors and the region.

374. **Stakeholders**. The proposed stakeholders/ participants in the open-ended BFP dialogue are:

a) **countries**, the RECs and the IOC/COI
b) **finance**, global sources of affordable finance. These include the bilateral development partners, the international financial institutions, such as the World Bank, AfDB, EIB, IFC, GEF and FFEM, the climate funds, debt restructuring organisations, ocean philanthropies and the insurance industry
c) **private sector**. the national and regional business organisations, industry, including SMEs
d) **facilitators** with implementing/ facilitating capability. These may include: UNECA and UNEP-FI, national blue funds (e.g., SeyCATT, ProAzul, BIOFUND and others), national development banks, impact and accelerator funds, and NGOs engaged in ocean finance.

375. **Activities**. the Platform will require secured funding and expertise and an appropriate regional institutional 'home' for its activities to:

[385] GIZ, 2020. Climate Change-related Trust Funds at the Multilateral Development Banks
[386] The Africa Climate Change Fund supports capacity building of countries and national and regional stakeholders for climate change, climate finance and green growth

a) organise and manage an ongoing stakeholder dialogue between WIO stakeholders and financial partners
b) structure the (virtual) regional blue investment portfolio into packages that enable blended and affordable finance (see below)
c) organise the portfolio within the blue taxonomy and advise on complementary fiscal or regulatory measures required to meet sustainability criteria for investments
d) align or match potential funding sources with prospective investments and assess the performance and practical application of innovative financing instruments (e.g., debt for nature, blue bonds, blue carbon credits)
e) prepare a long-term regional blue financing indicative programme to guide policy makers and technical aspects of design and implementation at scale
f) link the potential investments to ROGS outcomes and impacts through the ocean accounts framework and the blue taxonomy. This will require the establishment of common metrics across sectors and investments and financial partners. These may include SDG indicators, net zero targets, ocean health indicators, blue employment, blue Gini ratios, Doing Business indicators and others sector-specific indicators as may be determined
g) identify and address critical financing gaps. These may include, e.g., microfinance in remote disadvantaged/ communities, removing fisheries overcapacity, MPA recurrent costs, waste management in informal coastal settlements and rural areas, and circular economy start-ups.

376. **Leadership**. Further regional discussions are required to identify the leadership, hosting organisation, and resources. The potential hosts could include the Economic Commission for Africa, an arrangement between the Nairobi Convention and the UNEP Financing Initiative, and the Indian Ocean Commission, which manages several regional oceans projects that cover all WIO countries. The Africa-Europe Partnership has suggested an initiative similar to the Blue Finance Architecture and there have been other independent calls for initiatives similar to the proposed BFA.[387] The Africa-Europe Strategy Group on Ocean Governance, with the support of the EC, has already established a multistakeholder dialogue platform hosted by the Africa-Europe Foundation.

8.4.2 Regional Blue Portfolio

377. As set out in the draft ROGS, the demand for blue investments will be 'bundled' or aggregated across the WIO countries (particularly for the smaller economies), or across sub-national entities/ municipalities in larger economies (e.g., for investments in municipal solid waste management for coastal cities). The blue portfolio will create a virtual pipeline of investment that reflects the aggregate financing requirements of the national blue investment plans. The pipeline will be structured as a 'portfolio' of prospective investments in sustainability and organised by sector (e.g., green ports) or by theme (e.g., climate adaptation, biodiversity). Major institutional investors can invest in the portfolio rather than individual projects in order to spread risk and leverage partnerships. The blue portfolio approach provides several benefits:

a) **scale**. it creates the scale of prospective investment which is more attractive to major investors
b) link to **commitments**. Through the blue taxonomy, it links the investments to global objectives (SDGs, Paris commitments) for which there is already funding available
c) **leverage and blending**. The scale enables the different providers (grant, loan, equity) to design instruments to blend and leverage different sources of finance, to co-finance projects, or to support an entire portfolio segment
d) **transaction costs**. It creates synergies and reduces transaction costs, while the diversity of projects in the portfolio offsets risks and enables transfer of lessons
e) **planning**. It enables planning of a medium/long-term series of investments within a common framework which can further reduce transaction costs and replicate best practices
f) **common metrics**. Common metrics can be used to assess investment viability, to track performance, to share reporting, to reduce transaction costs, to learn lessons and collectively establish a range of solutions, experiences and approaches

[387] Ocean Governance and Blue Economy: An Emerging Agenda for The Africa-Europe Partnership.

g) **continuity**. It facilitates the continuity and sustainability of national and regional initiatives which may be undermined by stop/ start project finance. The lessons learned can inform subsequent investment and address cross-cutting structural and capacity issues at scale.

8.4.3 Blue taxonomy

378. The blue taxonomy can be envisaged as a bridge between the ocean accounts and the investment portfolio. It is a framework to structure, characterise and guide sustainable blue investments. The taxonomy provides a generic and systematic means of appraisal or orientation of blue investments in relation to the SDG14, the ROGS, or national goals, while the ocean accounts provide a framework for tracking the associated indicators at national and regional level. The blue taxonomy applies a common set of investment criteria, common impact indicators and metrics, and common social and environmental safeguards across investment categories.

379. The ROGS proposes to apply the Blue Taxonomy which has been developed under a UNEP partnership as a framework to guide blue investments towards sustainability. The blue taxonomy will be deployed in consultation with the key sources of finance to align the criteria and approach with those of the financial partners. The blue taxonomy will be used to categorise the regional blue portfolio with emphasis on those (proposed) blue investments which have potential for financing at regional scale. This is expected to:

a) help drive alignment and cooperation among sources of finance and reduce fragmentation in implementation
b) provides a common framework to access concessional or affordable sources of finance at the scale required
c) drive blending of financing instruments and facilitate links between investment and impact assessment through harmonised investment criteria and indicators.

380. By linking the blue taxonomy to the ocean and environmental accounts, the taxonomy helps to capture and account for intangible benefits or co-benefits of investments, such as marine ecosystem health and function (e.g., erosion protection, or social capital).[388]

381. Specifically, the ROGS blue taxonomy will draw on the Blue Finance Principles and a range of guidance notes. Basic sector guidance is already provided through the UNEP Finance Initiative on seafood, shipping, ports, coastal and marine tourism, marine renewable energy, coastal resilience, and on waste management. A recommended exclusions list identifies investments that undermine ocean sustainability and the IFC provides guidelines on blue bonds.[389] It is recognised that the existing blue taxonomy framework will need substantial development to provide greater sector-by-sector definition and tuning to the blue investment portfolio. However, the tool can be effectively deployed by the ROGS, particularly if the financial partners take pro-active steps to align the implementation of their country and sector programmes with the principles and processes established through the blue taxonomy. It is envisaged that this alignment would take place progressively over several funding cycles.

Box 42. Sustainable Blue Finance Guidelines

As part of the Sustainable Blue Economy Finance Principles a number of basic blue taxonomy guidelines have been developed on:

- deep-sea mining
- offshore oil & gas
- dredging & marine aggregate extraction
- ocean pollution and coastal resilience
- sustainable ocean recovery
- plastic pollution
- protecting world heritage
- combatting IUU fishing
- exclusions (what not to finance)

382. A consensus blue taxonomy helps avoid fragmented financing and provides clarity on sustainability for both businesses and investors. Ideally the taxonomy accommodates both the aspirations of WIO countries and internationally agreed goals (such as the SDGs and Net Zero). Taxonomies are rapidly evolving and to date have been mainly directed at providing structure, criteria and metrics for climate-related finance and 'green' investments. However, the principles and approaches have direct application to blue investment. This is illustrated by the Sustainable Blue

[388] See, e.g. Solid Waste Tariff Setting Guidelines for Local Authorities, DFFE, South Africa. Pacific Islands factsheet on human rights and plastics. UNEP & Marine & Env. Law Institute, Plastics Toolbox: Business, Human Rights, and the Environment.
[389] IFC, 2022. Guidelines Blue Finance Guidance for financing the Blue Economy, building on the Green Bond Principles and the Green Loan Principles.

Economy Finance Principles which provide a guiding framework for banks, insurers and investors to finance a sustainable blue economy.[390]

383. Application of the blue taxonomy has several implications. Funding agencies may be expected to align their investment criteria, processes, guidelines and monitoring and evaluation requirements within the blue taxonomy and use a common set of indicators and metrics. National agencies charged with tracking key indicators would need to provide more timely and verifiable information in a transparent manner. The blue taxonomy complements the ocean accounts (see below) as part of a broader mechanism to guide investment to sustainable activities, to track their impacts and to adjust targets, actions and implementation modalities.

384. **EU taxonomy**. In 2020, the EU adopted a taxonomy regulation (in force 2022) which focused largely on climate change. This was followed by measures focused on sustainable use of water and marine resources, the circular economy, pollution prevention, and biodiversity and ecosystems. The Taxonomy Regulation provides a functional 'definition' of a sustainable economic activity based on two overarching criteria. A sustainable activity must: (i) contribute to at least one of six environmental objectives listed in the Taxonomy; and (ii) do no significant harm to any of the other objectives, while respecting basic human rights and labour standards.[391] The taxonomy initiative is linked to creation of EU Green Bond Standards and extension of the EU ecolabel framework to financial products.[392] Both the ASEAN and EU experiences suggest that the taxonomy can be built progressively by sector or by theme to enable testing of the schemes before embarking on wider application. The EU taxonomy includes a specific activity to facilitate transition of polluting activities.[393]

385. Recognising the differences in national capacities and sustainability baselines, a WIO blue taxonomy can identify transition pathways from better to best practices by drawing on experiences in applying green taxonomies in the EU and ASEAN. The EU and ASEAN taxonomies focus largely on climate (net zero), biodiversity, or nature-based solutions rather than on sustainable oceans, but their experiences can inform the proposed WIO blue taxonomy.

Box 43. The role of a blue taxonomy

A blue taxonomy is a classification system which establishes clear definitions of what are environmentally sustainable economic activities in the blue economy. The objective of the blue taxonomy is to:

- to help direct investments to priorities and facilitate financing for sustainable investments
- help investors and companies to make informed decisions on the sustainability of investments
- establish transparent assessment and reporting criteria and standards
- facilitate transition of polluting sectors (e.g. energy, plastics, agriculture) and adapt to technological advances
- group or replicate investment initiatives to provide economies of scale or reduce transaction and reporting costs
- create security for investors, including institutional investors (such as pension funds)
- help companies to become more climate-friendly and protect private investors from greenwashing
- mitigate market fragmentation

Example: The EU directs its green taxonomy towards:

- climate change mitigation and adaptation and the sustainable use and protection of water and marine resources
- pollution prevention and control and the transition to a circular economy
- the protection and restoration of biodiversity and ecosystems

the EU investments must:

- make a substantial contribution to at least one EU environmental objective
- do no significant harm to any of the other five EU environmental objectives
- comply with minimum safeguards and comply with the technical screening criteria.

Sources: Compiled from: https://www.climatebonds.net/standard/taxonomy; https://ec.europa.eu/sustainable-finance-taxonomy/ and other sources.

386. **ASEAN taxonomy**. The ASEAN Taxonomy for Sustainable Finance has been developed to serve as a common building block that enables the different jurisdictions to harmonise sustainability

[390] Sustainable Blue Finance Principles. See also, e.g. IFC, 2023. Biodiversity Finance Reference Guide and similar frameworks on other sustainable thematic or sector finance.
[391] EU taxonomy for sustainable activities.
[392] EU Taxonomy Regulation, EU Green Bond Standard.
[393] EU Taxonomy Regulation 'Substantial contribution to pollution prevention and control' (Art. 14) and 'Transition to a circular economy' (Art 13), Ch.2. Art 3 (criteria) and Art 20 'Platform on Sustainable Finance'.

criteria across economic activities and financial instruments.[394] The Taxonomy uses the International Standard Industrial Classification to group economic activities, which enables consistency with the international system of environmental accounts (see Ocean Accounts below).[395] The taxonomy enables qualitative and quantitative assessments of activities and provides transparent metrics to benchmark eligible green activities and investments. The targets include climate change, healthy ecosystems and transition to circular economy. The ASEAN green taxonomy allows for transition pathways to address hotspots, e.g., eliminate landfill burning of plastic waste, or closure of coastal landfill sites while aiming to move to plastic reuse/ recycling in subsequent phases. As in the EU taxonomy, a key criterion is to "do no significant harm".

8.4.4 Ocean accounts

387. Ocean accounts can be seen as a standardised and independent means of reporting on the ROGS, on the impact of investments and related interventions, and as the primary framework for monitoring the ROGS. Ideally, the substantive content of the ocean accounts will progressively align with the blue taxonomy and the investment portfolio. As described in section 7.5, ocean accounts provide a standardised means of measuring the ocean environmental, social and economic status and trends. The ocean accounts assess the flow of benefits and the value of ocean natural capital (such as fish stocks), the produced capital (such as ports) and reflect the state of ocean governance (intangible capital).[396] The ocean accounts are compiled at national level but can also be compiled at regional level from the national accounts.

388. The ocean accounts can include both qualitative and quantitative information. The results are often presented as a 'dashboard' of key metrics. Although ocean accounts may appear technically complex, there is an internationally agreed framework. Much of the data is already available, although disperses or embedded in existing accounts, and international support for building national accounts is available. Ocean accounts can be progressively built and both physical and economic or financial metrics may be used, for example, the state of fish stocks, rather than the value of fish stocks, numbers employed rather than their incomes. The System of Environmental-Economic Accounting provides a standard methodology. Within the Blue Finance Architecture, the ocean accounts framework can be envisaged as providing common metrics to report on the state of the oceans and coasts, to track investment performance, and reduce the duplication in project-by project monitoring and evaluation requirements. Unlike many project indicators, ocean accounts track both the changes in blue capital and in the flows of blue costs and benefits.

389. At WIO level, there is broad consensus among the ROGS Task Force and at technical level that basic regional ocean accounts can progressively be compiled from existing information, including from national environmental accounts, state of the coasts reports and a range of other environmental, social and economic assessments.[397] Actions are already under way to develop national ocean accounts and related knowledge products for the WIO.[398] This ongoing process is expected to progressively build regional ocean accounts, initially for priority sectors and for key indicators of ocean health, of the blue economy, on the wellbeing of coastal peoples, and on the effectiveness of ocean governance. The partners include the institutions preparing national environmental accounts and the range of sector institutions that generate the information on the blue capital accounts and the flow of blue benefits. Ideally the ocean accounts work will create synergies with and complement the UN Oceans Regular Process.

390. The ocean accounts can help set baselines for tracking changes for SGD14 indicators and other ocean-related indicators that reflecting the status and trends in the ocean environment and the social and economic activities of coastal and ocean-dependent communities. The ocean accounts enable tracking the extraction of non-renewable ocean resources (such and offshore gas) and the

[394] ASEAN Taxonomy for Sustainable Finance.
[395] International Standard Industrial Classification
[396] High Level Panel. National Accounting for the Ocean and Ocean Economy.
[397] Report of the ROGS/ IMS Worksop on Ocean Accounts, 2023.
[398] GOAP Africa Community of Practice; Ocean Accounting in Africa; West Indian Ocean Governance Exchange Network. €COFISH, 2022. Blue Economy Fisheries Satellite Account. UNECA, 2020. Comparative analysis of the Blue Economy Impacts and Strategies in Seychelles and The Bahamas Using Blue Economy Satellite Accounts.

resulting benefits accruing to the national economy. Ocean accounts also track the flows of costs and benefits and the environmental, social and economic impacts and trends in ocean activities.

391. However, ocean accounts do not necessarily track the performance of individual projects or businesses and may not capture emerging SME initiatives. The corporate enabling environment includes applying acceptable sustainability-related disclosure standards and transparency that provide investors and capital markets with information on corporate sustainability and social and environmental responsibility (e.g., efforts to reduce emissions).[399]

8.5 MONITORING AND ADJUSTMENT OF THE ROGS

392. As indicated above, it is proposed that the ROGS is monitored through the ocean accounts framework.[400] This approach and related technical considerations have been discussed in in section 7.5. While ocean accounts are generally used as a macroeconomic tool, in the case of the ROGS, the intention is to use the ocean accounts to monitor progress or outcomes of investments, policy reforms and the aggregate outcomes and impacts of ROGS activities. This implies that the financial institutions underwriting ROGS investments (whether at national or regional scale) will take measures to align their indicators and metrics with a common suite of ocean accounts input and output information. It also implies that individual projects or programmes will help to build and contribute to the ocean accounts. It implies that individual projects refrain from or minimise the creation of project specific indicators, or duplicate data which is already being captured through the ocean accounts. Rather, a project would actively explore means of contributing project-specific data to the ocean account for the country and improving its ocean accouting.

393. The monitoring is an essential 'feedback loop' and will contribute to a process of iterative adjustment to the ROGS. This will be undertaken through the analyses and advice of the technical, financial and policy platforms. The timescale could be aligned with the NC quadrennial COP process or other regional timetable linked to financing cycles or other processes. At national level, some attention may also be directed to aligning the timescales of national ocean action plans to avail of funding cycles, or to coordinate actions on regional oceans processes.

394. Although the SDG 14 indicators have been suggested for tracking the ROGS The relationships between regional actions and outcomes are indirect and key trends may not be effectively captured by the SDG indicators.[401] This underscores the complexity of the social-environment linkages and the need for strong and continuous review and adjustment of policies and interventions based on monitoring and evaluation feedback. The ROGS is likely to require a more nuanced and targeted set of quantitative and qualitative indicators which are progressively available across all countries. Innovative metrics using expert opinion, social media, online surveys and AI tools can be considered as the ROGS implementation takes shape.

8.6 THE ROGS AND THE NAIROBI CONVENTION WORK PROGRAMME

395. Assuming that the ROGS and a new 4-year NC work programme are approved by the COP, the NC Secretariat will examine the correspondence between the proposed actions at various stages of preparation or financing and identify the gaps and priority actions required to bridge those gaps. Targeted dialogues with regional and international financial and technical partners are contemplated under the proposed Blue Finance Platform.

[399] E.g., International Sustainability Standards Board. Equator Principles.
[400] For an example, see Mediterranean Quality Status Report (MED QSR 2023) an its 2023 Integrated Monitoring and Assessment Programme.
[401] The SDGs provide limited evidence that environmental policies are delivering multiple ecological and social benefits

APPENDIX

Over 900 stakeholders participated in the ROGS development processes through the Technical Dialogues, workshops and associated events. Of these, non-state actors comprised 25% and about 25% were from outside the WIO region.

Members of the ROGS Task Force, Nairobi Convention Working Groups, Task Forces and Expert Groups linked to ROGS preparation

Regional Ocean Governance Task Force Members

Country	Country Nominations	Alternates
Comoros	Mme RADJA Ambadi	Mme Said Ibrahim Saandia
France (Reunion)	Dr Francis Marsac	Mr Benoît Rodrigues, Ms Florence Galletti
Kenya	Dr. Pacifica F. A. Ogola	Ms Bellinda Akello
Madagascar	Mr José Victor Randrianarimanana	Ms Robson Onja Dauphine
Mozambique	Mr Moniz Munguambe	Mr José Ariscado
Mauritius	Mr Belal Rajabalee	Mr Dharmendra Degambur
Seychelles	Ms Sharon Gerry	Ms. Beatrice Morel
Somalia	Dr. Abdirahman Jama Kulmiy	Dr. Abdikarim Hersi
South Africa	Mr. Yamkela Mngxe	Mr Moses Ramakulukusha
Tanzania	Captain, Hamad Bakar Hamad, PhD	Dr. Immaculate Sware Semesi

Regional Economic Communities and Indian Ocean Commission nominated persons

AU	Ms Leah Wanambwa	Mr George Mba Asseko
COMESA	Dr Yoseph Mamo	Ms Edith B Tibahwa
EAC	Mr. Dismas Mwikila	
IGAD	Mr Mohamed Ali Muse	Mr Abdulwahid M. Hersi
IOC	Ms Gina Bonne	Mr. Raj Mohabeer
SADC	Ms Sibongile Mavimbela	Dr Motseki Hlatshwayo

Task Force Regional Experts and Partners

Chumbe Island Coral Park	Ms Sibylle Riedmiller
KMFRI	Dr James Kairo
MIHARI	Mr Guy Celestin Rakotovao
Oceanhub	Mr Alexis Grosskopf
Plastics SA	Mr Douw Steyn
PMAESA	Capt. Andre Ciseau
SAIIA	Mr Alex Benkenstein
Univ. of Dar es Salaam	Dr Julius Francis

Nairobi Convention ROGS Support Group Members

Person	Role/ Institution
Dr. Tim Andrew	ROGS Coordinator, Nairobi Convention Secretariat
Kieran Kelleher	ROGS Adviser (WIOMSA)
Dr Arthur Tuda	WIOMSA
Yvonne Waweru	Western Indian Ocean Governance Initiative (GIZ)
Dominic Stucker	Collective Leadership Institute
Mai ElAshmawy	Collective Leadership Institute
Bonface Mutisya	Nairobi Convention Secretariat
Agnes Muriuki	Nairobi Convention Secretariat
Carol Mutiso	Nairobi Convention Secretariat
Melisa Mureithi	Nairobi Convention Secretariat

Experts engaged at various stages of ROGS preparation

Oil spill contingency plan

Country	Expert
Comoros	Soifoine Abdillah
Kenya	Mr. Michael Mbaru
Madagascar	Mon. Nolave Luck Aristide Andriatsihala
Mauritius	Mr. Bhawani Prakash Bundhun
Mozambique	Mr. Helder Eduardo Matola
Seychelles	Mr Kenneth Antat
Somalia	Abdifatah Mohamed Mohamud, Mr Abdulkadir Abdinor Yusuf
South Africa	Mr Metse Ralephenya, Capt. Ravi Naicker
Tanzania	Mr Elias John Chundu, Mr Usi Ali

WIO Marine Spatial Planning (MSP) Technical Working Group members

Country	Name and Affiliation
Comoros	Mr. Mouchitadi Madi Bamdou, Mr. Soifa Ahamed Soilihi
France	Mr. Fabrice Bernard, Mr. Pascal Talec
Kenya	Ms. Susan Otieno, Mr. Harrison Onganda
Madagascar	Mr. Fano Mezantsoa Randrianarison, Mr José Victor RANDRIANARIM
Mauritius	Dr. Rezah Badal, Dr. Arshad Rawat (*Alternate*), Mr. Rajaram Luximon
Mozambique	Mr. Moniz Munguambe, Eng. Sofia Chambe
Seychelles	Mrs. Marie-May Muzungaile, Ms. Helena Sims
Somalia	Mr. Dahir Farah Hussein, Dr. Amina Lula Sekaly, Dr. Abdulqadir Ziyad
South Africa	Mr. Potlako Khati, Mr. Moses Ramakulukusha
Tanzania	Dr. Saleh A.S. Yahya, Eng. Siajali Pamba Zegge

FARI MEMBERS

Country	Institution	Contact Person
France	IRD	Pascale Chabanet
Kenya	Kenya Marine and Fisheries Research Institute	James Njiru
Kenya	Technical University of Mombasa	Cosmas Munga
Kenya	Pwani University	Mwakio Tole
Kenya	University of Nairobi	Agnes Muthumbi
Mozambique	IIP Mozambique	Jorge Mafuca
Seychelles	UNISEY	Jerome Harley
South Africa	Cape Peninsula University of Technology	Rashieda Toefy
Tanzania	Institute of Marine Science	Margareth Kyewalyanga
Tanzania	University of Dar es Salaam	Blandina Lugendo
Tanzania	Tanzania Fisheries Research Institute	Ismael Kimirei
Tanzania	State University of Zanzibar	Ali Makame Ussi

Experts – Ecosystem Monitoring

Country	Expert
Comoros	Mr Said Ahamada, Itsoundzou Badjini
Kenya	Mr. Daniel Ashitiva
Madagascar	Gildas Georges Boleslas Todinanahary
Mauritius	Mr. Vinesh Emrith
Mozambique	Ms Clousa Maueua
Seychelles	Ms. Ashley Dias
South Africa	Mr Ayanda Matoti
Tanzania	Dr Siajali Pamba, Mr Zahor Mwalim Khalfan

Nairobi Convention Expert Groups and WIO Regional Networks

Task Forces and Expert Groups

Information Management Strategy Multi-Stakeholder Working Group
Critical Habitats Task Force, Coral Reef Task Force (CRTF)
Regional Task Force on Water Quality, Marine Turtle Task Force (WIO-MTTF)
Group of Experts for Marine Litter and Microplastics
Legal and Technical Working Group in the Western Indian Ocean
Group of Experts on Marine Protected Areas in the Eastern Africa (GEMPA-EA)

Networks

Forum of Academic and Research Institutions (FARI)
WIO Mangrove Network, River Flows, Ocean Acidification (OA network Africa (OA-AFRICA))
The Western Indian Ocean Marine Protected Areas Management Network (WIOMPAN)
Women in Marine Science (WiMS), The Western Indian Ocean Early Career Scientists Network

Task Force Technical Dialogue and Workshop Reports, background briefs, action plans and other materials

The Working Papers, Technical Dialogue and Workshop Reports, Presentations and other materials prepared for the Task Force and NC Focal Points are made available on the ROGS web pages, through the NC Community of Practice or the NC Clearinghouse Mechanism

ROGS preparation working materials

- Nairobi Convention – COP Decisions
- Nairobi Convention analysis of WIO regional ocean governance (2018)
- ROGS Inception Report
- ROGS Inception Meeting (Task Force) Report
- Terms of Reference for the ROGS Task Force (approved by the NC Focal Points)
- Regional priorities identified by the Task Force
- ROGS Skeleton (outline ROGS architecture) as endorsed by the Task Force

CLUSTER. Maritime Security

Technical Dialogue on "Prevention of, Preparedness for, and Response to Spillage of Oil and Hazardous and Noxious Substances (HNS)

- Working Paper
- Draft Regional Action plan on Preparation for Oil Spillage

The dialogue on maritime security was blended with the Technical Dialogue on ports and shipping

CLUSTER. Blue Economy

Technical Dialogue on Fisheries (held jointly with SWIOFC)

- Background papers
- Presentations (Kelleher, Taylor)
- Report of Technical Dialogue

Blue tourism workshop

- Presentations
- Report of workshop

Technical Dialogue on the Regional Action Plan to Combat Marine Plastic Pollution for the Western Indian Ocean (and parallel action plan for West Africa) (held jointly with the Indian Ocean Commission)

- WIO Draft Regional Action Plan to Combat Marine Plastic Pollution
- West Africa Draft Regional Action Plan to Combat Marine Plastic Pollution
- Background study for Africa Indian Ocean Developing Island States including country estimates of marine plastic pollution (2020) (IOC)
- Plastic pollution hotspot studies East Africa mainland countries (IUCN, several reports)
- Action Plan on Marine Litter prepared by the Working Group on Marine Litter
- Updates on 'plastics treaty' negotiations – see UNEP website

Technical Dialogue on Ports, Shipping and Maritime Security (held jointly with PMASEA)

- Background papers (port digitalization, single window)
- Presentations (Weerts, Ciseaux, Mohabeer)
- Report of Technical Dialogue

Our Blue Future, collaborating initiative.

CLUSTER: Environment and natural resources

Brief on enhanced regional cooperation to address chemical pollution (WIOMSA Symposium).

Technical Dialogue on "Priority Actions on Water Quality in the WIO Region"
- Background Paper on the WIO Strategic Framework for Coastal & Marine Water Quality
- Management in WIO Region
- Presentations (Taljaard/Weerts, Bosire, Mwangi)
- Strategic Framework for Coastal & Marine Water Quality (text)
- Report of Technical Dialogue

Technical Dialogue on Marine Protected Area
- Background Paper
- Presentations (Tuda, Manyara, Hafaly)
- Report of Technical Dialogue

Biodiversity Beyond National Jurisdiction (BBNJ)
- Presentation WIOMSA Symposium (Kelleher, Waweru)(prior to approval of treaty text)
- UNDOALOS training course module (UNDOLOS team)

CLUSTER. Knowledge management and capacity building

Technical Dialogue on Knowledge Management and Capacity Building
- Background Paper
- Report of the TD

Technical Dialogue on Ocean Accounts (joint workshop with the IMS)
- Background brief
- Presentations on Ocean Accounts in the ROGS (Kelleher)
- Presentation on technical aspects of Ocean Accounts (Findlay)

Capacity building
- Ocean governance training course materials available through the Int. Ocean Institute (South Africa)
- UNDOLOS training course materials
- Information Note on UNDOALOS Regular process event (Seychelles July/ August 2023)

Workshop on Information Management Strategy

Proposed ROGS institutional arrangements

Science to governance meeting (Maputo December 2023)
- Presentations on the ROGS structure and content

Joint Collective Leadership and Technical Dialogues Writeshop for the Regional Ocean Governance Strategy (ROGS) and the Information Management Strategy (IMS) Report.

Proposed ROGS financing

Technical Dialogue on "A Regional Blue Financing Architecture"
- Background Paper. Financing the ROGS (long and short versions)
- Presentations (Vestergaard, Kelleher)
- Report of the Technical Dialogue

Brief on Blue Finance for Islands Ministers meeting (AIODIS, Mauritius 2023)
Presentation on' Financing the ROGS' to the NC Science to Governance Meeting (Maputo December 2023)