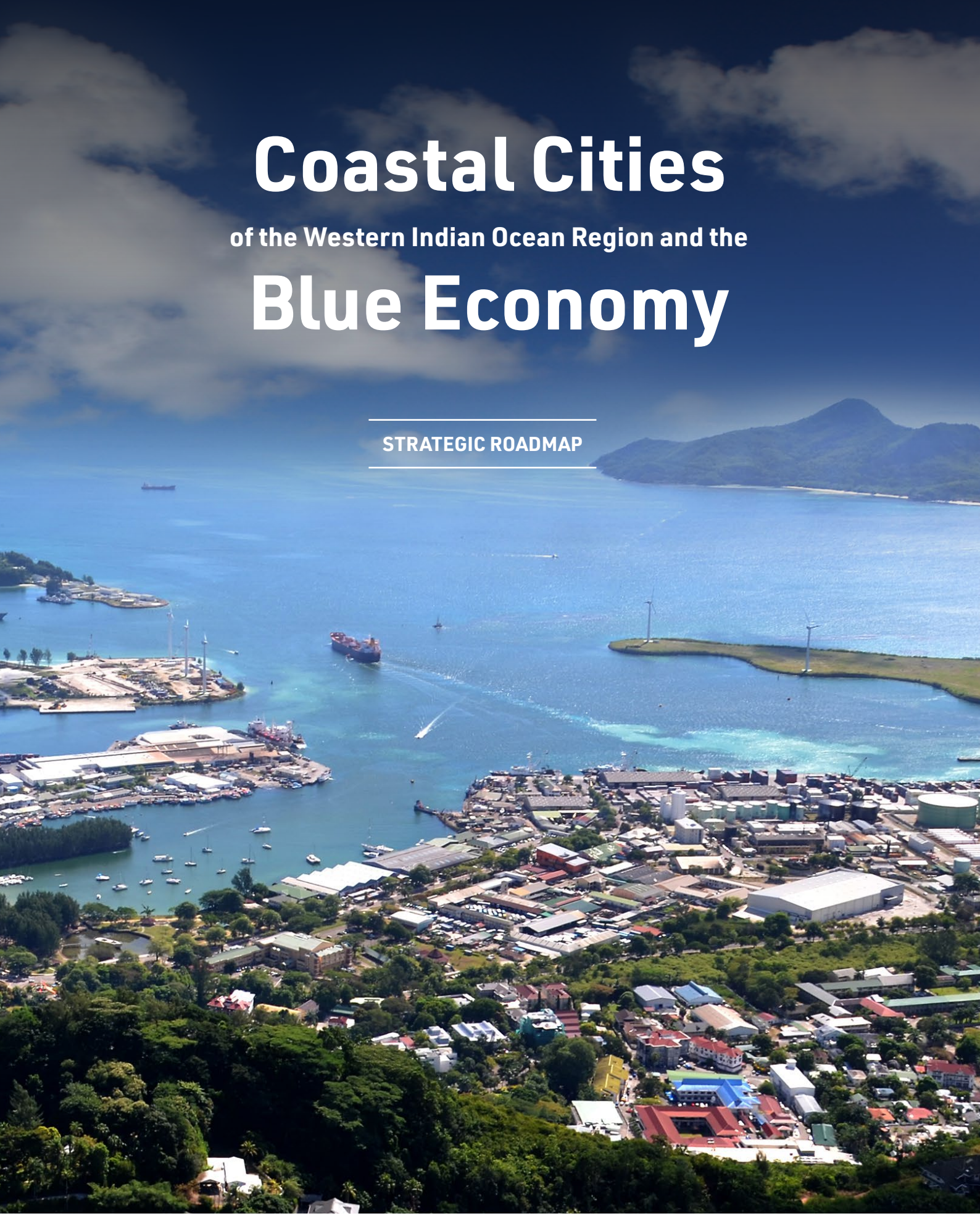
Coastal Cities

of the Western Indian Ocean Region and the

Blue Economy

STRATEGIC ROADMAP



WIOMSA
Coasts Ocean and People
WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION

UN HABITAT
FOR A BETTER URBAN FUTURE

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WIOMSA
Mizingani Street, House No. 734,
P. O. Box 3298, Zanzibar,
United Republic of Tanzania
Tel: + 255 24 2233472/2234597
Fax: + 255 24 2233852
Email: secretary@wiomsa.org

Authors: Kieran Birtill, Darren Gill (Arup)

Wider Project Team: George Beane (Arup), Alex Harris (Arup), David Njenga (Independent)

Graphics: Roman Svidran

Reviewers: Dr. Arthur, O. Tuda, Dr. Ochanda, K. Valentine and Dr. Julius, W. Francis (WIOMSA), Thomas Chiramba and Isabel, S. Wetzel (UN-Habitat), Callum Newman (Arup).

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▸ Image: Durban Coast, South Africa

ACRONYMS

BE – Blue Economy

BMU – Beach Management Unit

COP – Conference of the Parties

ESIA - Environmental Social Impact Assessment

FDI - Foreign Direct Investment

FTZ - Free-trade zone

GDP – Gross Domestic Product

GHG - Greenhouse Gas

GIS – Geographic Information Systems

ICZM - Integrated Coastal Zone Management

LMMAs - Locally Managed Marine Area

MPA – Marine Protected Area

MSP – Marine Spatial Planning

NGOs - Non-Governmental Organisation

SDG – Sustainable Development Goal

SEZ - Special Economic Zones

SIDS – Small Island Developing States

TVET - Technical & Vocational Education & Training

WIO – Western Indian Ocean

WIOMSA – Western Indian Ocean Marine Science Association

WWF - The World Wildlife Fund

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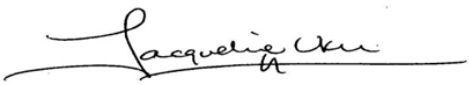
FOREWORD

Although cities only represent 2 percent of the world's geographical area, the activities within their regional boundaries use over 75 percent of the planet's material resources, according to a study released by the International Resource Panel in 2018. This among other reason is why the UN in 2015 approved a stand-alone Goal, SDG 11, Sustainable Cities and Communities, which recognizes urbanization and city growth as a transformative force for development. This is the first-ever international agreement on urban-specific development and acknowledges that sustainable urban development is a fundamental precondition for sustainable development in general.

Coastal cities are the location for high levels of economic activity mainly because of their association with ports, waterfront development and well-endowed coastal and marine environment. In the Western Indian Ocean (WIO) region, some of the coastal cities are capitals of respective countries (e.g. Victoria, Seychelles; Port Louis, Mauritius and Maputo, Mozambique) while some are important hubs of trade, industry and commerce, such as Mombasa, Dar es Salaam, Beira and Durban. For the most part, some of these cities are experiencing comparatively rapid population and economic growth, which is known to have negative impacts on the natural environment through resource extraction and use, as natural resources come under increasing pressure. Climate change and the anticipated increase of extreme events exacerbates the problem, , with the UN-Habitat's State of African Cities Report suggesting that sea-level rise threatens the very survival of some of these cities. Cities with large proportions of economically and socially vulnerable inhabitants, such as Port Louis, Maputo, Dar es Salaam, Victoria, and Mombasa, are particularly susceptible.

The Blue Economy is an emerging policy area that is subject to ongoing political discussions at the global and regional levels. In 2018, Kenya hosted the first high-level international Sustainable Blue Economy Conference. The Blue Economy seeks to promote economic growth, responsible production and consumption, social inclusion, preservation and improvement of livelihoods while at the same time ensuring environmental sustainability of ocean and coastal systems, as well as other waterfront areas, through the circular economy. UN-Habitat published a report on "The Blue Economy and Cities", highlighting the need to recognize the role of urbanization and urban planning in shaping the Blue Economy. This underscores the urgency of including urban policymakers in the global discussions around the Blue Economy concept.

Since 2018, with the funding from the Government of Sweden, WIOMSA has been implementing a five-year project, Cities and Coasts project, whose goal is to build and strengthen human and institutional capacity in coastal and marine planning for sustainable coastal cities in the WIO region. Through this project, WIOMSA, in collaboration with UN Habitat commissioned a series of studies to explore the current relationship between coastal cities of the WIO region and the blue economy, challenges and opportunities and offer recommendations moving forwards.



Dr Jacqueline Uku, President of WIOMSA

PREFACE

The linkages between environment, society and economy in coastal cities are important in the countries of the WIO region, and there is a need to understand better their interdependencies and the associated constraints to sustainable development. If managed properly, cities can offer better socio-economic conditions and quality of life to residents and the wider context in which they are situated effectively facilitating sustainable cities and the communities. The integrated adaptive management and sustainable development of coastal cities and their marine environment are therefore essential.

At the Ninth Conference of Parties to the Nairobi Convention (COP 9) August in 2018 in Mombasa, countries of the region acknowledged for the first time the importance of collaborating with UN-Habitat to address the environmental challenges and opportunities posed by rapid urbanization, particularly in coastal cities in the WIO region, as articulated in the SDG 11 ("make cities and human settlements inclusive, safe, resilient and sustainable" (Sustainable Cities and Communities)) and the New Urban Agenda (NUA) on sustainable cities and communities. Further, COP 9 urged Contracting Parties to consider undertaking climate change vulnerability assessments of their urban coastal areas, including urban spatial planning processes, and integrating marine natural capital (Decision CP.9/9). The Nairobi Convention Secretariat was requested to collaborate with UN-Habitat and other partners to develop a regional action plan and roadmap to assist the Contracting Parties in integrating the NUA into coastal cities in the WIO region for the protection of the marine and coastal environment (Decision CP.9/13). Furthermore, countries agreed to advance Blue Economy approaches in SDG 14 as a pathway for sustained incomes and economic benefits from natural blue capital including fisheries, tourism, oil and gas development, offshore renewable energy, and other maritime activities.

As part of the implementation of these decisions and to provide a greater understanding of the local challenges and opportunities faced by coastal cities in the WIO region and to support the future development of an environmentally sustainable and socially inclusive roadmap for the Blue Economy, WIOMSA and UN-Habitat commissioned Arup to prepare a portfolio of six reports:

- Four blue city economy case studies;
- A 'Status Report' which outlines more broadly the current situation concerning the blue economy in coastal cities across the region; and
- A 'Roadmap for the Development of the Blue Economy in Coastal Cities', which provides recommendations for cities in current and future blue economy planning, activities and investment.

These reports offer knowledge resources for city and national government stakeholders, WIOMSA, UN-Habitat, private sector and civil society. Each case study provides specific blue economy recommendations for that city, focusing on strategic and operational opportunities for the city and its blue economy stakeholders, informed by primary and secondary research. Key points and recommendations from each case study have also been extracted and integrated into the main body of the Status Report, which has, in turn, informed the Roadmap. The Roadmap provides strategic and operational blue economy recommendations across case study cities, which stakeholders are encouraged to also read and consider with respect to their city or region.

Oumar Sylla
(Director Regional Office for Africa - UN Habitat)

Arthur Tuda
(Executive Secretary - WIOMSA)

CHAPTER 1

INTRODUCTION

This Roadmap provides strategic and operational blue economy recommendations for coastal cities in the Western Indian Ocean (WIO) region. The report responds to primary and secondary findings which are presented in a WIO Coastal City and Blue Economy Status Report and series of city case studies.

▸ Image: Small Scale Fishermen on shores of Dar es Salaam © Igor Groshev, Adobe

Arup is pleased to present this Strategic Roadmap commissioned by the Western Indian Ocean Marine Science Association (WIOMSA) in collaboration with UN-Habitat, on **'Coastal Cities of the Western Indian Ocean Region and the Blue Economy'**. The Roadmap is part of a portfolio of six WIO blue economy reports. It is the culmination of detailed research across cities in the Western Indian Ocean (WIO) region which is detailed in full in four separate city case study reports and an overarching Status Report.

The study overall, examines the role of coastal cities with respect to the blue economy in eight countries of the WIO region – Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa and Tanzania. The study is informed by secondary research across the region, and by primary research in case study cities of Mombasa and Kilifi in Kenya, Dar es Salaam in Tanzania and Port Louis in Mauritius. Chapter 2 provides a brief summary of key findings across the research.

This Roadmap responds to challenges and opportunities identified in the wider research and provides specific blue economy recommendations for WIO cities and their stakeholders including but not limited to, city and national government stakeholders, WIOMSA, UN Habitat, donors, private and civil society organisations. The Roadmap focuses on specific policy and operational blue economy actions for cities, rather than theoretical or conceptual approaches on how cities relate to the blue economy.

Recommendations highlighted in Chapter 3 are the result of a detailed selection process which prioritised recommendations from a longer list of options gathered throughout the research. The prioritisation process is described in Annex 1 and the longer list of recommendations can be found in Annex 2. Certain recommendations in Chapter 3 are accompanied by examples of best practice from coastal cities globally.

Recommendations are generally viewed as applicable across WIO cities including mainland and island contexts. The report acknowledges that some recommendations may have already been undertaken to some extent in certain WIO cities but it is believed that the activities and examples listed will still provide information and inspiration for the further strengthening of existing city initiatives, as well as new ideas which can add to a city's current blue economy initiatives.

The report has intentionally avoided assigning responsibility for delivery of a recommendation to any particular stakeholder, acknowledging that this will depend on local context including local levels of decentralisation. In many cases a recommendation would involve more than one actor. City blue economy stakeholders are encouraged to come together and discuss recommendations, (including the annex long-list) in the context of their city, discussing local appropriateness, value and viability, agreeing on different stakeholder actions moving forwards.

The blue economy is an emerging policy and programme area, especially at the city scale. It is hoped that this document can provide a useful foundation or supplement to blue economy planning and programming in WIO cities. The authors welcome feedback from all readers and users of the Roadmap as further practice will inform what we learn about coastal cities and the blue economy.

CHAPTER 2

SUMMARY OF RESEARCH

This chapter provides a summary of the primary and secondary research including key challenges identified and opportunities which the Roadmap recommendations of Chapter 3 respond to. Research is outlined in full in the Status Report document and individual WIO City Case Studies.

▸ Image: Dar es Salaam © Moiz, Adobe

IMPORTANCE OF CITIES TO THE BLUE ECONOMY

Coastal cities are gateways of trade and transport for countries in the WIO region and sites of key blue economy activity and infrastructure including ports, airports, hotels and fish markets, as well as providing the workforce that supports key blue economy sectors. These sectors do not necessarily exist in harmony and competing demands must be managed. Coastal cities are also sites of significant urban population growth, much of which is unplanned and vulnerable to climate induced hazards including sea-level-rise and coastal flooding.

Urban growth challenges do not only concern major coastal cities and it is important to recognise and respond to the cumulative rapid growth of smaller secondary coastal cities much of which is unplanned and lacking corresponding infrastructural development.

All these challenges play out at the city level, and the role of cities must be fully recognised in blue economy policy and operational action.

BLUE ECONOMY GOVERNANCE AND VARYING CITY INFLUENCE

The influence of municipal authorities with respect to the blue economy differs considerably across WIO countries, linked to decentralisation and fiscal autonomy. Mainland cities with a more advanced devolution process (e.g. Durban, Mombasa and Dar es Salaam) have significant responsibilities and relatively high levels of fiscal autonomy compared to other WIO cities. Mozambican cities also have devolved responsibilities but have lower fiscal and administrative capacity. On Comoros and Madagascar, local authorities offer stable governance but are undermined by low fiscal capacity, while on Seychelles and Mauritius, city authorities typically have much lower responsibility than their mainland counterparts and a limited role in blue economy planning and implementation. **Nationally driven blue economy projects and FDI play a crucial role across WIO cities.**

Even cities with limited blue economy responsibility are responsible for the provision of key municipal services which can support or undermine blue economy sectors and it is therefore important that all local authorities are engaged in BE planning. Nationally, WIO countries are at varying stages of Marine Spatial Planning (MSP) and blue economy strategic development, with Seychelles, Mauritius, South Africa and Kenya having made furthest progress in the region. In Kenya, MSP is starting to be undertaken at both national and local level and other countries may follow suit in future.

Blue economy strategy development and MSP are parts of a complex web of marine governance that also includes Integrated Coastal Zone Management (ICZM), Marine Protected Areas (MPA) and Locally Managed Marine Areas (LMMAs). These planning mechanisms take place across several scales involving various actors are requiring effective coordination. MPAs are critical for the protection and sustainable use of ocean waters, while at the local scale LMMAs can fill MPA gaps and engage local communities in the process of marine conservation. Designated protection of coastal waters ultimately ensures future sustainability of ocean resources and future sources of food and livelihoods for urban residents, while mitigating some of the wider environmental damage of urbanisation processes.

SECTOR SPECIFIC CHALLENGES AND OPPORTUNITIES

The Status Report profiles specific social, economic and environmental challenges and opportunities of the blue economy in coastal cities across certain key sectors:

Ports are crucial not just to national GDP, but also to the socio-economic performance of their host cities as illustrated by the Port of Durban which employs 53,000 people directly and an estimated 50,000 indirectly. However, as demonstrated by the Port of Mombasa, in WIO cities ports are typically nationally owned and operated assets. Local authorities often have little involvement in port operations and are therefore vulnerable to decisions made at national level which may conflict with city aspirations and impact direct and indirect employment in port cities.

Nationally, there is a need to ensure that ports are supported by sufficient economic infrastructure such as road and rail, while at local level authorities may wish to work towards having greater input in city port operations and also ensure that the city economy is sufficiently diverse so local government is not overly reliant on an asset beyond their control.

Ports also pose significant challenges to coastal waters through shipping processes such as fuel and ballast water pollution and issues associated with land reclamation. Future port investment in WIO cities needs to be connected to Green Port conditions and certifications, to minimise environmental impact and cascading impact on other blue economy sectors such as fishing and tourism.

Coastal areas and coastal cities are key to the tourism sector in many WIO countries. For example, Durban accounted for 24% of tourism earnings for South Africa in 2015, and coastal tourism provides around 60% of overall tourism earnings in Kenya. For coastal cities challenges include the need to protect the tourism sector from external shocks (such as terrorism and pandemics) which dramatically affect visitor numbers and to ensure that tourist spending in cities filters down to local communities rather than remaining in foreign-owned, all-inclusive hotels. Cities facing such challenges have been exploring ways to better cater to domestic visitors and conference guests, who are less susceptible than international tourists to external shocks and are more likely to visit and spend money in local communities.

In Port Louis, Mauritius and for cities on other WIO small island states, one key challenge is how to attract visitors who normally bypass the city and head straight for more remote beach resorts.

Across cities, the report details evidence of community-led ecotourism which can sustain both marine biodiversity and local livelihoods.

Fishing provides an important source of livelihood to fishermen in waters off the coast from WIO cities and to those engaged in fish processing and value addition. Fishing is also a crucial source of protein for city residents. Poor equipment including vessels and ancillary equipment reduces the potential of the fishing sector for local fishermen across several WIO countries and cities. Local fishermen are limited to nearby waters which are overfished as a result. Limited processing and storage facilities in WIO cities is another prohibitive factor meaning that much fish stock is wasted or little value added. For fishing potential to be realised in WIO cities these are two key areas of investment. Local community groups exist in most WIO cities, known as Beach Management Units (BMUs), fishing associations or similar. Supporting these community groups can increase local livelihood potential and contribute to more sustainable management of coastal waters.

Waterfront Development projects, if delivered effectively, through well-designed mixed-use development can provide valuable public space for community activity, exercise, interaction and trade, generating sustainable economic benefits from natural

▸ Image: Durban Harbour and City © Chris Van Lenne, Adobe

coastal assets, while being respectful and protective of natural coastal and marine habitats. However, not all waterfront developments in WIO cities balance these factors and robust development control and environmental impact assessments are key to ensuring that development is done responsibly.

Beyond these core sectors, there exists a host of other urban challenges which impact the marine environment. Failings in the wider operational environment can impact performance across blue economy sectors. For example, widespread deficiencies in sewage and solid waste management systems exist in small and large urban settlements alike, and sewage often goes into the ocean untreated. The resultant pollution inevitably has a negative impact on marine life, and as a consequence impacts blue economy sectors such as fishing and tourism which rely on clean waters. Moreover, future economic development projects need to be fully aware that they can stimulate further population growth and need to plan accordingly. Education is key to local employment, and research demonstrated the importance of technical training and skills development of local populations across blue economy sectors in order for national and local blue economy aspirations to be realised, and for communities to benefit. Finally, population and infrastructure in WIO cities are particularly vulnerable to the future impacts of climate change. For the blue economy to flourish in coastal cities, service provision challenges must be addressed, alongside or as part of, specific blue economy investments, and holistic programming, integrated with wider resilient urban planning.

▸ Image: Maputo @ Rohan Reddy

SUMMARY OF KEY ISSUES

GOVERNANCE AND PLANNING

- Overarching deficiencies in national and local planning capacity hamper blue economy planning progress;
- There are limited levels of local fiscal capacity to support blue economy activity;
- There is a current lack of marine planning jurisdiction for local governments of WIO cities;
- There is a need for improved data collection across economic, social and environmental pillars from national to local scales
- There is a need for improved coordination and integration of marine planning processes and activity across both national to local scales;
- There is a need to bring marine planning down to the local community level and engage local communities in planning;
- Progress is required in national and local climate resilience and adaptation planning, coordinated with blue economy strategic planning.

SECTOR SPECIFIC BLUE ECONOMY CHALLENGES AND OPPORTUNITIES

Ports and Maritime Trade

- Many WIO cities struggle to engage and play a meaningful role in local port activities;
- There is a lack of port infrastructure capacity to meet demand in many cities;
- There is a need for skills development for local populations associated with port expansion;
- There are challenges in for WIO cities in tackling illicit trade such as drugs and smuggling, especially through Free Trade Zones (FTZs);
- There is a need to balance national economic interests with the needs of local communities;
- Managing direct and indirect environmental impacts from port expansion and activity;
- Green Port policies present an opportunity to mitigate many environmental issues.

Tourism

- External shocks like terrorism and pandemics have challenged the WIO tourism industry;
- Challenges in attracting beach-resort tourists into cities on WIO islands;
- A need to boost and diversify tourist offerings in WIO cities;
- Ensuring distribution of tourist income in WIO cities down to local communities;
- Municipalities need to collect tourist revenue but also support local businesses;
- There is a need for improved livelihood training for youth and disadvantaged groups;
- There is a need to tackle sex tourism which is largely driven by international visitors;
- A need for stronger land-use planning and development control of tourist developments;
- Direct and indirect tourism-driven pollution and other damaging activities must be tackled;
- There is an opportunity for national and local marine protected areas and ecotourism to protect and enhance marine habitats.

SUMMARY OF KEY ISSUES

Fishing

- There is a need to build local fishing capacity (including vessels and ancillary equipment);
- There are limited processing and storage facilities in WIO cities;
- Maritime security and illegal fishing present challenges for the industry;
- There are potential opportunities beyond traditional fisheries e.g. aquaculture and mariculture;
- Supporting Beach Management Units can help improve local fishing and livelihoods;
- There is potential for the fisheries sector to further support female livelihoods;
- There is a need to balance economic ambitions with sustainable fish stocks and related conservation efforts. There is overfishing by small vessels in shallow waters and unsustainable practices in deeper waters;
- Pollution from both point and diffuse sources affecting marine species and catches;
- Seaweed farming has potential as a less damaging form of aquaculture;
- National and local marine protected areas are tools that can support sustainable fishing.

Waterfront Development

- There is a need for coordinated planning of different stakeholders and uses of waterfronts. Sustainably-planned mixed-use can support economic, social and environmental needs;
- There is the potential to create both employment and tax revenue related to waterfront development;
- Waterfront development plans need to find ways to managing operational costs;
- Storm surge and sea-level rise present economic and social risks to waterfront developments;
- The historic, cultural and architectural value of waterfront neighbourhoods can be promoted;
- Waterfronts can be key sites of public realm, contributing to social cohesion and wellbeing;
- Waterfront development on greenfield sites can degrade environmentally-important space. Instead there is at times the potential to rehabilitate degraded waterfront spaces. There is also the potential for greenified waterfronts to increase biodiversity and flood resilience;
- There is the possibility to combine tourist attractions with marine research through aquariums, nature reserves and other waterfront tourist attractions.

OPERATIONAL ENVIRONMENT

- Sewage often goes into the ocean untreated due to poor infrastructure and practices;
- Diffuse pollution from agriculture and industry ends up in ocean waters;
- Systemic issues in solid waste management contribute to ocean plastic pollution;
- Linking infrastructure demands to population growth and economic development;
- Improving (safe) transit of people and goods in WIO cities, to other WIO cities and inland;
- Availability of relevant, quality, accessible and inclusive blue economy livelihood training.

CHAPTER 3

CITY BLUE ECONOMY RECOMMENDATIONS

The Status Report examines the relationship between WIO coastal cities and the blue economy, providing a foundation from which strategic and operational actions for cities in the region can stem. The 'Roadmap' presents these strategic and operational recommendations. These recommendations were prioritised from a long list of recommendations by a panel of experts, through a modified Delphi selection process.

▸ Image: Durban Coastline

The following pages present recommendations across key WIO blue economy (BE) themes as discussed in Chapter 2. The Status Report acknowledges the potential future growth of other blue economy sectors such as marine biotechnology, renewable energy, and resource extraction (e.g. oil/gas) and future possibilities within those, and other developing sectors are considered in Annex I of the Status Report. In the following pages, Roadmap recommendations focus intentionally on blue economy sectors and themes which are currently most prominent across WIO coastal cities.

This chapter present the top five highest scoring recommendations under each BE theme, giving special attention to one recommendation per theme, which scored highest in the expert reviewer prioritisation exercise, explained further in Annex 2.

Thematic recommendations are intended to be considered together, creating a holistic city blue economy strategy. For comparative purposes, highest scoring recommendations per theme are summarised below, before being explained in detail on the following pages:

THEME	RECOMMENDATION
BLUE ECONOMY GOVERNANCE AND PLANNING	**Establish national blue economy operationalisation framework and coordination unit, including mapping of ocean stakeholders and plans across scales. Formalise local Marine Spatial Planning (MSP) in legislation and allow local governments to plan 5km into the ocean, establishing coordinated city structures for BE planning.**
PORTS AND MARITIME TRADE	**Identify additional supply chain opportunities (processing, other value addition activities) economically proximate to existing port activities.**
TOURISM	**Develop and promote city region tourist strategies, promoting local assets, local communities, connecting cities and beach resorts, and coordinating between regional tourist locations.**
FISHING	**Incentivise bulk buyers in WIO cities to buy local seafood produce. E.g. restaurants which can showcase local produce.**
WATERFRONT DEVELOPMENT	**Public-private partnerships (PPP) to facilitate waterfront development, including multiple area market analysis, land use assessment, financing, and/or operations.**
OPERATIONAL ENVIRONMENT	**City mapping of circular economy opportunities including livelihood opportunities for local communities; innovative plastic waste solutions; and systematic interventions with respect to recycling infrastructure and processes. Creation of city circular economy strategy.**

GOVERNANCE AND PLANNING

1ST RECOMMENDATION

Establish national blue economy operationalisation framework and coordination unit, including mapping of ocean stakeholders and plans across scales. Formalise local Marine Spatial Planning (MSP) in legislation and allow local governments to plan 5km into the ocean, establishing coordinated city structures for BE planning.

DESCRIPTION

Nationally, an operationalisation framework and/or co-ordination unit is a required foundation for conceptualising and initiating policies and projects affecting the blue economy (BE). Such a framework should engage and involve regional and local BE Stakeholders, possibly supported by a detailed mapping exercise of BE actors at different scales

National government could undertake mapping of ocean plans and tools at different scales. Specifically, Marine Protected Areas and Locally Managed Marine Areas can be integrated with Marine Spatial Planning (MSP) and Integrated Coastal Zone Management (ICZM) processes, which could themselves be better coordinated with each other, and with broader urban, county and national plans. National government guidance could provide a clear explanation of the relationship between different plans, tools and actors and provide advice and support for local governments in integration of marine and coastal plans. A national platform/mechanism may help to coordinate interests and objectives of different BE stakeholders. Such a platform would be useful in all contexts - mainland, island, centralised and decentralised. While the degree of responsibility of local governments varies across the WIO, effective coordination is always important.

National government could ensure that legislation is in place to legitimise local (i.e. city/county) MSPs in countries where decentralisation merits creation of such plans. This legislation could allow local governments in decentralised WIO countries to plan into the ocean beyond current the 2km of ICZM. A suggestion is up to 5km where local artisanal fishing activities and tourism largely take place. Of course, there are many actors with a stake in local waters and local marine planning would likely require the formulation of local or regional multi-stakeholder planning partnerships to manage different ocean priorities and uses and coordinate blue economy investment with national and local actors.

The success of this recommendation is somewhat linked to other recommendations, adjacent and in the appendix, including building of local government capacity, and strengthening of BE data collection.

CASE STUDY EXAMPLE

Local Marine Planning Partnerships - Scotland

The Marine Scotland Act 2010 established eleven Scottish Marine Regions in which local planning will take place, in accordance with the National Marine Plan. Planning will be developed by local Marine Planning Partnerships (MPPs) allowing for greater local ownership and decision-making with respect to activity in local coastal waters out to 12 nautical miles.

The first MPPs to be established are the Shetland Marine Partnership and the Clyde Marine Partnership. The latter comprises of 25 member organisations including local councils of North and South Ayrshire and Argyll and Bute, ferry, port and fishing stakeholders, national tourism agency Visit Scotland, the Scottish Environmental Protection Agency and the Royal Society for the Protection of Birds plus several other members.[1]

The Shetland Islands Marine Spatial plan 2015, prepared by Shetland Islands Council and the University of the Highlands and Islands is the first Scottish Marine Regional Plan to be published and details MPAs, port areas, fishing areas and marine and coastal recreation areas in addition to other ocean resource mapping.[2]

▸ Image: Lerwick Harbour, Shetland, Scotland © Allan Watt, Flickr

OTHER RECOMMENDATIONS

2ND **Build BE knowledge and planning capacity of local government. i.e. MSP planning capacity and marine knowledge.**

For local MSP and blue economy strategic development to be effective there needs to be a high level of local technical planning capacity, especially in local administrations assigned with significant planning responsibilities. In many cases, the planning and GIS capacity of local authority departments in WIO cities needs to be improved alongside wider technical knowledge regarding MSP, marine science and law, and marine-terrestrial plan integration. Specific training for planning departments could be combined with training for wider local government departments on the blue economy sustainability, informing broader regional/city activities. Any local (or national) MSP process could look for marine input from a diverse range of marine experts across disciplines and stakeholder types and establishing partnerships with NGOs and universities may help in capacity building activities, in addition to national coordination.

3RD **Promote resilient, adaptive urban planning, enhancing development control & Environmental Social Impact Assessment (ESIA), undertaking proactive measures to manage environmental pressures on the coast and ocean from rapidly growing populations, particularly in secondary cities & towns**

Resilient, adaptive and proactive urban planning and design is needed to promote local economic development while mitigating environmental degradation – paying special attention to water management, wastewater, oceans and marine pollution - captured in national and local integrated terrestrial and marine plans. There could be robust city population projection mapping where missing, factoring in development-triggered growth from blue economy projects and from wider economic development initiatives. Robust Economic and Social Impact Assessment (ESIA) and development control mechanisms should recognise and outline environmental pressures from new projects - both direct impacts and cascading longer-term pressure on infrastructure services and environmental systems. Other specific measures might include:

- Where missing, capacity needs assessments could be undertaken to inform staffing plans in county building authorities.
- Minimum academic and professional qualifications for the employment of local government building code officials;
- E-platforms to support the building control process across local areas.

It may be possible for local authorities to leverage resources from the private sector in order to strengthen the capacity for plan reviews and inspections. Careful setting of permitting fees can also support cost recovery and capacity building processes.

4TH **Identify and map critical blue economy infrastructure, and prioritise climate change adaptation and disaster risk reduction measures**

Blue economy infrastructure such as ports and other waterfront development are generally increasingly vulnerable to climate-driven hazards across WIO cities. There is a need for national and city government and specific blue economy sector stakeholders to ensure that robust plans are in place for the protection of critical blue economy infrastructure (and supporting infrastructure). Infrastructure could be identified and mapped by blue economy sector. Climate Change Adaptation and Disaster Risk Reduction measures should be fully integrated into wider city planning.

5TH **Further research into sustainable multi-use of ocean spaces in blue economy planning**

The zoning and acceptance of multi-use spaces may reduce unplanned competition and enhance maximum productivity and sea space use across WIO locations. If implemented sustainably it should also help support environmental protection by concentrating human activity and infrastructure in a smaller area than if two sectors (e.g. wind farms and mariculture) were located at two different sites. WIO cities may wish to undertake an extensive mapping exercise of BE sector spatial complementarities, supported by other BE actors and marine experts.

PORTS AND MARITIME TRADE

1ST RECOMMENDATION

Identify additional supply chain opportunities (processing, other value addition activities) economically proximate to existing port activities.

DESCRIPTION

An opportunity exists for all WIO port cities to strengthen value addition services linked to port activity, creating both direct economic benefits and increasing port-related employment multipliers. City administrations and the private sector could collaborate to identify supply chain, processing, and support activities which are economically proximate to existing port activities in order to increase the volume of secondary jobs associated with existing city ports. Such activity would also improve the value-added to goods in transit.

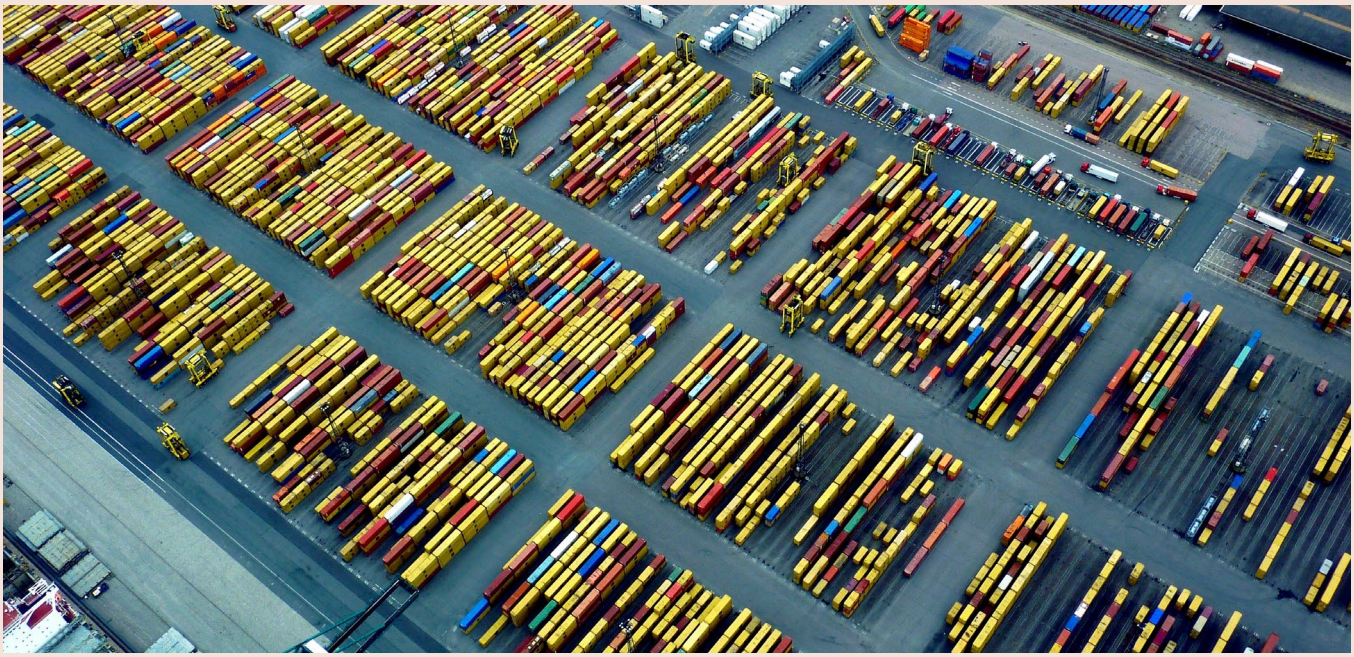
CASE STUDY EXAMPLE

The Port of Antwerp, Belgium

The total value add at the Port of Antwerp is estimated to be approximately US$23billion a year. Many of the 900 logistics companies at the port offer tailor made services for customer cargo including controlling, packaging, cutting, weighing, cleaning, sanitary checks, sorting, labelling and processing. All logistics activities are digitally supported with strong supply chain visibility. The port has bespoke processing centres for industries such as coffee, fruit and automobiles which can offer the specialist services needed for each of these categories of cargo.

Certain industries have clustered around the Port of Antwerp including a huge petrochemical complex which has the presence of international companies such as BASF, Total and ExxonMobil.

The Port of Antwerp is supported by a liberal Special Economic Zone (SEZ) policy with the removal of duties and Value Added Tax for incoming value addition goods.[3,4]



▸ Image: Port Logistics, Antwerp. Jan Paulussen

OTHER RECOMMENDATIONS

2ND **Strengthen ESIA processes regulating port expansion and promote and adopt Green Port principles and practices including dredging polices, ballast receptor requirements and wider pollution monitoring, especially in line with any port expansion plans.**

All port cities need robust ESIA procedures regulating port expansion. Such procedures should ensure that rigorous, independent assessment of the environmental impacts of expansion is in place including effects of expansion on biodiversity, habitat loss and pollution. Without such measures, marine ecosystems can be significantly impacted, which may in turn affect other BE sectors which depend on ocean ecological functionality.

The Social component of ESIA should incorporate inclusive engagement of affected communities, with mechanisms to ensure that acceptable mitigating actions are agreed and undertaken wherever required, including agreement of satisfactory compensation with affected parties, and steps to ensure protection of cultural heritage.

As ports and cities increase in size, the risk and impact of pollution may also increase. Day to day, inadequate environmental control and regulation of ports is evident in some cities across the WIO region. All ports have potential to develop and/or strengthen environmental measures aligned to Green Port policy. Actions include:

- The agreement of dredging/dumping policies and practices between port owners/operators and independent marine experts;
- Sufficient checks on vessels, inspecting for equipment such as ballast receptors (to prevent arrival of foreign organisms in local waters); and
- Use of LNG fuel and Alternative Maritime Power over diesel.

3RD **Economic diversification to reduce city reliance on port revenue**

Decentralised cities which are overly reliant on port operations might look to diversify their employment base, with support from national, international and private actors, in order to improve local economic resilience. Cities which are heavily dependent on ports for employment are at risk of shocks that reduce employment, as evident in Mombasa and the recent decision to relocate some operations to an inland dry port. It is not only Mombasa which is vulnerable to shocks. Other port cities may have to contend with other new ports set up nationally or in the region. Most recently COVID-19 has impacted port operations globally and while this impact has not been as significant as it has been on other BE sectors such as tourism, it still provides further argument for measures to increase the diversity and therefore resilience of city economies which are dominated by a few industries.

4TH **Assess and seek to improve the performance / efficiency of existing port operations, and of surrounding support systems, e.g. strengthen traffic management processes**

Traffic congestion in many Sub Saharan African cities is a result of inadequate traffic management as well as infrastructure deficits. Such congestion can considerably affect port operations and therefore profitability, as well as having similar effects on other BE sectors such as tourism. Beyond hard infrastructure upgrades, port cities implement softer measures which improve traffic management, such as giving priority to freight vehicles on certain roads, at certain times as part of a coordinated city congestion plan. Such steps could in many cases significantly improve landside port access and operations.

5TH **Strengthen port monitoring capacity of illicit goods and narcotics which find their way into local communities. Combine this with social initiatives at city level**

The narcotics trade has become a significant social challenge in many port cities, notably on SIDS. In future, automation and digitisation can improve efficiency of port inspection procedures, but the problem must be tackled on both sides, combining customs strengthening with community engagement, and development of employment and education opportunities in local communities, especially those communities and demographic groups identified as highest risk.

TOURISM

1ST RECOMMENDATION

Develop and promote city region tourist strategies, promoting local assets, local communities, connecting cities and beach resorts, and coordinating between regional tourist locations.

DESCRIPTION

A city region tourism strategy can improve coordination between proximate tourism locations in WIO regions such as Mombasa, Diani and Kilifi in Kenya, or Dar es Salaam and Zanzibar in Tanzania. WIO cities within the same local region could work together, encouraging visitors to stop at several locations, all of which offer different experiences, enabling agglomeration effects rather than competition.

On WIO islands one challenge for municipalities is that tourists often tend to bypass or not linger in cities, instead heading straight for beach resorts. Government-sponsored campaigns could promote an urban area's diverse architectural, historical and culinary offerings, offering an authentic experience to tourists interested in learning about and tasting local culture. Such a strategy may encourage tourists to spend a little longer in WIO cities as part of a wider holiday experience.

COVID-19 has impacted tourism globally including for WIO cities and regions. As travel and tourism restrictions begin to ease, national and local governments could undertake marketing campaigns aimed at foreign tourists who make take longer to return than domestic visitors.

Project research also highlighted that domestic tourists are often more likely to spend time and money in local communities, beyond the confines of hotels as well as being more resilient than international tourists to external shocks such as COVID-19 and terrorism. If not already recognised, the importance of domestic and conference tourism could be recognised in any strategy, with steps to ensure optimisation and tailored holiday packaging.

CASE STUDY EXAMPLE

The South Australia Regional Tourism Strategy 2018

It has brought together numerous stakeholders across the region's 'visitor economy' including national, regional and local government and private organisations. The strategy details key regional tourist destinations including the hills of the City of Adelaide, Clare Valley, the Outback and coastal peninsulas. It seeks to champion regional experiences and is in part based on the realisation that 'bundling experiences together can encourage visitors to stay longer and spend significantly more'.

Other key pillars of the strategy include:

- A desire to attract the right mix of visitors including international, national and local visitors;
- Utilising the right balance of marketing channels including digital and traditional methods; and
- Consistent, coordinated messages of the range of attractions that the region has to offer.

Specific interventions include the creation of 'touring routes' - road journeys that stop at several destinations, (catering to the 87% of visitors that travel by car); event coordination of festivals and seasonal attractions amongst local councils; a planned regional audit of quality tourist accommodation; expansion into niche tourism experiences for example, cruise tourism and day excursions; and cultural tourism including connectivity of visitors to traditional Aboriginal history and culture.[5]

▸ Image: Zanzibar © Bradclin Photography, Flickr

OTHER RECOMMENDATIONS

2ND **Advocacy against unsustainable tourist behaviours (e.g. coral removal and littering) as part of a 'leave no trace' campaign**

Public awareness campaigns can help to keep popular tourism areas, particularly natural assets such as the coast and ocean in good condition, generating both environmental benefits and aesthetic appeal, which are important to the tourism industry. Such initiatives could include digital media and traditional methods, such as signs at popular locations; raising awareness of responsible visitor behaviour; and publicity against inappropriate activity such as removal of corals and live marine organisms, dropping of litter and any behaviour at sensitive ecological sites which may disturb local biodiversity. Similar 'leave no trace' visitor messaging has been successful in other countries including the USA, UK and Ireland.

3RD **A 'One-stop shop' for obtaining licenses and tax relief incentives for local community businesses, especially those meeting green and marine friendly criteria; and business support for small and medium-sized businesses, to expand the city's tourist offerings and activities.**

A single window ("one-stop shop") for obtaining different business licenses could simplify administrative processes for small tourist businesses. Tax relief incentives for local community businesses especially those meeting green and marine-friendly criteria could also be implemented to support sustainable local business.

Other actions to help local small-medium tourism businesses could include training and support services, loans and market research and advertising support. Local governments could work with larger hotel owners and operators to diversify offerings, move away from all-inclusive packages and offer experiential tourism packages which support local residents /communities. Offerings could include tours of nearby communities - experiencing local life and culture. Other local experiences might include sport fishing, water-sports and diving.

4TH **Develop city mangrove/eco parks which can provide storm surge protection, increase biodiversity and attract visitors**

Mangrove parks can offer storm surge protection, pollution filtration, increase biodiversity and attract visitors. If delivered effectively and under the right conditions, such an intervention could be of value across economic, social and environmental pillars, and therefore be truly sustainable. One option could be the rehabilitation of previously dilapidated spaces; another could be the protection and enhancement of existing assets which might otherwise be lost. This could be a solely government-driven venture, in collaboration with development partners, and/or in partnership with coastal businesses, including travel operators.

5TH **Increase offering of effectively priced tourism experiences where profits are re-invested into conservation efforts. Tax incentives could be provided for operators who comply with the principles of eco-tourism**

The city and its tourism stakeholders could assess the willingness or demand of tourists to pay for experiences where profits are re-invested into conservation efforts. Equitable pay scales may be established for local residents, students and children to ensure that local environmental assets can be enjoyed by all. Such schemes may or may not be part of formal MPAs. A related intervention could be to explore the viability of introducing incentives/rewards for landowners who manage their land for positive ecological outcomes. Similarly, tax incentives could be provided for operators who promote/comply with the principles of eco-tourism - https://ecotourism.org/what-is-ecotourism/.

FISHING

1ST RECOMMENDATION

Incentivise bulk buyers in WIO cities to buy local seafood produce. E.g. restaurants which can showcase local produce.

DESCRIPTION

This recommendation proposes activity to create stronger linkages between smaller scale fisherfolk, workers in value addition services, and end of line buyers such as restaurants and hotels, in order to reduce reliance on imported fish and seafood. This recommendation is viewed as potentially of mutual benefit if delivered well. Local fishers would benefit from increased sales, while restaurants and hotels can attract visitors and perhaps even charge higher prices for local fish, appealing to visitors from both an experiential perspective, and those considering the sustainability of the meal, which can also be promoted.

Specific actions could include a value chain mapping exercise, government incentives for buyers to buy local catches, advocacy work and engagement of local hotels on the benefits of buying local, establishment of city fish markets, training to fishermen and processers on techniques and quality requirements in order to be able to sell to certain buyers, and use of digital platforms to connect buyers to fresh local produce.

CASE STUDY EXAMPLE

Abalobi - South Africa, Seychelles, Comoros

Abalobi, Xhosa for 'small-scale fisher', is a social enterprise behind an app of the same name currently active in several parts of South Africa as well as parts of Seychelles and Comoros, which connects chefs and restaurants to local fishers and produce.

The not-for-profit organisation originated from brainstorming sessions between researchers at the University of Cape Town, the South Africa National Department of Agriculture, Forestry and Fisheries, and several small-scale fisher community representatives.

The app allows fishers to log and legitimise their catches, connect fishers to co-ops and processing, and ultimately to restaurants. It also includes financial management tools and optional at-sea satellite traceability.

Beyond the app, Abalobi activities include surveying and monitoring, community engagement and training to both fishers and front-of-house restaurant staff.

In 2018-2019 Abalobi registered 582 fishers (478 male, 104 female) with the Abalobi app, and trained 315 community members and 280 restaurant front of house staff. Expressions of interest have recently come from Kenya, Mauritius, Madagascar and Tanzania.[6]

▸ Image: Western Cape © Peter Chadwick

OTHER RECOMMENDATIONS

2ND **Multi-stakeholder research and local knowledge dissemination for sustainable fishing**

Research partnerships could enhance knowledge sharing and seek to increase value addition and employment multipliers connected to sustainable fishing practices.

Where missing, local studies could be commissioned in order to better understand the full range of local offshore fish resources, identify areas of overfishing and then create limits, quotas, extended seasonal bans or full prohibition of fishing in exhausted areas to encourage replenishment of fish stocks. This activity could be done with fishers rather than separately, potentially supported by an organisation like Abalobi. Other actors might include national and local fisheries departments, local universities, Beach Management Units and representatives of other BE sectors.

Effective actions in this area would help to improve the ecological health of local waters, with associated benefits to tourism (e.g. dive tourism from improved corals and biodiversity).

3RD **Robust, sustainable multi-stakeholder and multi-scale fisheries plans which support local communities**

Where lacking, robust multi-stakeholder and multi-scale fisheries plans can be developed, led by national government but involving local government and engaging local communities. Such plans should seek to sustainably utilise national fish reserves and prevent a situation where deep-sea reserves cannot be effectively fished nationally. This may require strengthening of national fishing fleets.

Plans need to build capacity of local community organisations in terms of required equipment (especially vessels), safety, organisation and technical skills. Such technical skills might in part be achieved through skills exchanges (as evident between Pemba and Mombasa fishermen), actions of social enterprises such as Abalobi and through increasing formal vocational training opportunities. Plans need to be holistic and aligned with sustainable fishing practices, with management and monitoring mechanisms in place. Existing Beach Management Units (BMUs) in most countries can provide one structure through which support can be delivered.

Plans could in particular promote and support participation of youth and women in the fishing industry (including employment in fish capture and aquaculture and post-catch processing). Initiatives could involve targeted training/education, tax incentives to businesses, and policies such as parental leave and childcare that encourage female participation. In some instances, formation of fishing cooperatives may be valuable.

4TH **Expand use of Marine Protected Areas, both off the coast of WIO cities and elsewhere along the coast, supporting stock restoration**

Marine Protected Areas (MPAs) and Locally Managed Marine Areas (LMMAs) restrict fishing in certain zones to enable the replenishment of fish stocks and permit more sustainable activities such as conservation-based ecotourism. This recommendation concerns the expansion in coverage of MPAs and LMMAs, further integrating management of these areas with tourism and fishing sectors.

5TH **Identify opportunities for value retention and addition in WIO cities, e.g. increasing cold storage and processing facilities and markets**

Cold storage and processing facilities are key to value addition and prevention of spoiled catches. Processing and cold storage facilities would increase productivity, help to meet demand and reduce wastage. Such investments could be connected to skills development and training and provide employment opportunities locally. Relatedly, a large fish market which can cater to locals and tourists might be an asset for coastal cities if currently missing.

WATERFRONT DEVELOPMENT

1ST RECOMMENDATION

Explore public-private partnerships (PPP) to facilitate waterfront development, including multiple area market analysis, land use assessment, financing, and/or operations.

DESCRIPTION

Waterfront developments can provide high socio-economic value to WIO cities, but it is often a challenge to establish the necessary capital to get projects off the ground. Public administrations often face limitations in terms of financial and institutional capacity, human resource constraints and competing priorities. Private sector support may therefore enable the transformation of lower-value waterfront space into developments of high economic and social value. However there needs to be balance between outsourcing of responsibility and harnessing of revenue from the private sector to pay for public sector opportunities versus necessary establishment of sustainable public funding initiatives. Importantly, in any PPP, there also needs to be a shared vision for the development, which balances environmental considerations with socio-economic factors.[7]

▸ Image: Greenway, Portland © TM Images PDX, Flickr

CASE STUDY EXAMPLE

South Waterfront Central District Greenway, Portland, Oregon, United States

In 2003, 'Prosper Portland' (then Portland Development Commission), a community development corporation created by the City of Portland, formed a public-private partnership with developers, to revamp underused riverside land in the South Waterfront area of the city.

The project was coordinated by a 'South Waterfront Development Plan' which spanned 3 incremental phases and covered transportation, housing, sanitation and public recreation, to create a mixed-use development.

The resultant development has a strong environmental focus and includes 1,900m of park and urban walkway, connecting citizens from downtown to the city central east-side through a riverside walking and cycling network, with additional cycling signage to help riders find their way to the network from elsewhere in the city. The project also included riverbank restoration to create a better habitat for salmon fish, alongside installation of bioswales and other environmental improvements.

The majority of developers already owned land within the development area, and they agreed to dedicate land to the project at no cost to the city. Two of the developers also contributed to plan development costs. Core funding came from a range of sources including $9.3m in 'System Development Charges' collected from developers, $4m in tax increment funding (bonds repaid using business tax revenues generated by the improved area), $1.4m from the city public transport provider and $750,000 from the City's Bureau of Environmental Services.

The project reportedly demonstrated strong stakeholder engagement across scales and sectors in order to balance economic, social and environmental priorities. This included extensive consultation with environmental advocates during project design.[8,9]

OTHER RECOMMENDATIONS

2ND **Develop national or regional guidelines and case study guidance for safe, inclusive, sustainable and successful mixed-use waterfront development (WfD), including best practices across economic, social and environmental pillars**

Regional Blue Economy stakeholders could work together to develop guidelines for successful WfDs (which balance economic, social and environmental considerations), based on the regional context. The Director of the International Centre Cities on Water, sets out 5 key factors for WfD success:

1. Water must be a central characteristic not an afterthought
2. The identity of the site and original features should be enhanced
3. A balanced mix of uses should be sought
4. The waterfront should be integrated with the wider urban area
5. Projects should be pursued in an atmosphere of collaboration.

Other considerations include:

- Are proposals financially viable? - Is the site designed to attract necessary private investment, for example by encouraging people to live in the area once it improves, and creative programming for round the clock activity i.e. a space that feels safe and attractive at night with 24/7 use and maximised revenue potential?
- In the short-term, are proposals financially viable, including funding for any necessary environmental remediation/ improvement? In the longer-term, is the scheme likely to be environmentally sustainable over time without harming local ecology?
- Are there good interim uses for any land that will not be developed immediately? ●
- Has an appropriate developer(s) been found for key elements of the project? ●
- Does the site promote public safety and use of space (e.g. using Crime Prevention Through Environmental Design (CPTED) principles)? ●
- Is the site inclusive and does the scheme help to strengthen the rest of the town or city?

3RD **Prohibit heavy waterfront development of green sites, through legislation; map coastal areas requiring protection; and promote inclusive regeneration /greenification**

WfD sites are not necessarily sites of heavy built development. Greenification and protection of waterfront areas can provide sites of leisure and recreation, while also supporting coastal biodiversity and environmental protection. Areas such as Maputo Special Reserve, Mozambique, enable linkages between a mosaic of marine, coastal and inland components with important conservation value and excellent potential for high-value tourism. At a smaller scale, Mida Creek is a popular ecotourism and bird-watching attraction in Kenya, between Mombasa and Malindi. Creation and protection of similar areas proximate to WIO cities could provide significant value in terms of biodiversity, flood protection, carbon capture and tourism revenue.

4TH **Identify previously degraded, urban brownfield sites at/near water and rehabilitate as public spaces, with economic, environmental and social benefits**

Governments (national and/or local) could undertake a mapping exercise to identify waterfront sites that are suitable for redevelopment, for which investment can be sought. Such sites should be accessible with good city connectivity and should not negatively impact local biodiversity. In some cases, existing buildings can be restored and reused/ repurposed (e.g. former port sites as demonstrated in Cape Town). Some waterfront sites contain potential cultural assets which can be restored and promoted.

5TH **Develop projects which combine tourist revenue generation with the financing of marine science research and conservation**

Aquariums and local biodiversity hotspots offer opportunities to teach marine education to visitors and visitor income from such sites can contribute to local marine research activity. Current regional examples of such initiatives include Durban aquarium, which has financed extensive marine research since the 1960s.

OPERATIONAL ENVIRONMENT

1ST RECOMMENDATION

Undertake city mapping of circular economy opportunities including livelihood opportunities for local communities; innovative plastic waste solutions; and systematic interventions with respect to recycling infrastructure and processes. Creation of city circular economy strategy.

DESCRIPTION

Cities typically operate at present in a linear, 'take and make waste' system, consuming over 75% of natural resources, emitting between 60 and 80% of greenhouse gases and producing over 50% of global waste.[10] Plastic waste makes up 80% of all marine debris,[11] affecting over 800 marine species,[12] while non-renewable energy consumption can affect marine ecosystems indirectly though ocean acidification,[13] and directly through off-shore oil and gas exploration.[14] **Cities could work with national government, development partners, NGOs, the private sector and networks such as the African Circular Economy Network to map material and resource flows in and out of the city, and develop a holistic city circular economy strategy.**

Specific actions could include:

- Urban planning which supports the circular economy and waste reduction e.g. connection between residential areas and recycling sites, mass rapid transit, vehicle testing and new roads away from watercourses to reduce tyre shedding into ocean; [15]
- Support for recycling services e.g. removal of any levies for recycling trucks and establishment of recycling processing sites close to major cities;
- Creation of circular economy livelihood opportunities including recycling and advocacy roles;
- Exploration of new products for plastic capture and/or recycling e.g. river barriers that stop plastics but allow fish to pass through. Governments could engage producers of identified products and request partnership/subsidised support;
- Pursue national support for renewable energy;
- Industrial eco-parks that enable technology transfer into the wider city.
- Targeted circular economy intervention and activities for city's largest economic sectors and value chains;
- City small-medium business grants for circular economy innovation;
- City platforms which support a re-use culture between businesses and communities, reducing city landfill;
- Public campaigns and infrastructure for low consumption lifestyles. (This point has its own dedicated action on the adjacent page.)

CASE STUDY EXAMPLE

The City of Cape Town and WISP

The Western Cape Industrial Symbiosis Program (WISP) is a programme delivered by the not-for-profit, GreenCape with support from the City of Cape Town, Western Cape Government and British High Commission. The programme, informed by pioneering efforts in Kalundborg, Denmark, reduces CO2 and waste to landfill by connecting local member businesses to unused or residual resources such as materials, energy, water and logistics. An online database, SYNERGie matches businesses in the network and WISP provides technical support and facilitation of resource exchanges in this free-to-use programme.

Over 5 years from 2013 to 2018, WISP has attracted over 300 members, diverted 27,436 tonnes of waste from landfill, saved 46,700 tonnes of GHG emissions, generated ~US$2.8m in savings to businesses and created 143 jobs.

WISP's focus on industrial waste complements the City's wider efforts on household waste and has catalysed the exploration of similar programmes in Gauteng and KwaZulu Natal as well as cities as far away as Wuhan, China. [16,17]

▸ Image: Plastic waste, unidentified beach © Erlo Brown, Shutterstock

OTHER RECOMMENDATIONS

2ND **Identify industrial pollution hotspots in or near WIO cities and prioritise monitoring resources to these zones. With respect to agriculture, provide free advisory services and training for farmers on best practices for pollution prevention, highlighting economic benefits where they exist**

Any initiative to identify industrial pollution hotspots will require technical expertise and could take place through partnership between national/local government and universities.

With respect to agricultural run-off, there are a range of actions that farmers can be encouraged to take in order to reduce pollution (which ultimately ends up in coastal waters), such as:

- Establishing protection/buffer zones along surface watercourses and within and around farms;
- Manure management;
- Management of intensive operations that concentrate livestock, following national/global regulations.
- Proper use of feed additives, hormones and medicines which adheres to national/international standards.
- Stopping extensive livestock practices and overgrazing, in order to reduce land degradation.

3RD **Promote and incentivise responsible plastics and microplastics management, recycling and reduction through city-wide campaigns and public infrastructure**

Cities need to build a culture of 'our city, our ocean, our plastic'. Campaigns could highlight how plastic waste affects tourism, fishing (including the food we eat) and the wider environment. Residents could be motivated to improve disposal practices and police their local environment with respect to plastic waste.

Local shops could be encouraged/incentivised to promote a re-use culture (e.g. cheaper prices for customers using re-usable vessels). The city needs its population to buy-in to any vision of becoming a plastic-conscious city. Importantly, campaigns should be supported by provision of recycling bins, water refill stations and other supporting infrastructure across the city. City authorities could provide tangible updates to residents e.g. amount of waste recycled each month.

Cities could sign up to schemes such as WWF's Plastic Smart Cities for additional support and momentum.

4TH **Improve sewage management through sensitisation of local community on household practices, on-site treatment at large developments and exploration of innovative sewage treatment solutions**

On-site sewage treatment and solid waste management could both be made mandatory for large developments. Cities would need to work towards building capacity of environment agencies to ensure that such requirements are enforceable.

Local communities and sewage operators may need to be sensitized on issues such as soak pit disposal. There may be the need for education and highlighting of the connection between waste management practices, ocean health and local blue economy livelihoods.

Innovative sewage solutions need to be explored and considered for their local appropriateness e.g:

- Research of small islands without treatment facilities in Indonesia, found that marine bacteria like Enterococcus were reduced by 50% when seagrass meadows were present;
- Green wetlands may offer a solution for large developments in certain conditions and could be pursued through multi-stakeholder partnerships. Considerations include footprint, extra treatment processes needed and sanitation chain conditions (e.g. if area has sewers or not).
- Submarine outfalls may offer one solution when combined with preliminary treatment. But they must be accompanied by extensive environmental, engineering, and social studies.

5TH **Partner with TVET institutions to train and sensitise citizens for blue economy opportunities. Strengthen linkages between existing TVET institutions and universities and major city BE industries, including large organisations and businesses. Provide subsidised training for marginalised communities**

This recommendation concerns the development of local blue economy skills and education. Partnering with private Technical & Vocational Education & Training (TVET) industries and institutions, could help to create blue economy opportunities for local communities, aligned with any planned local blue economy sector investment. City businesses may also play a role in training provision, linking skills development to blue economy investments.

Improved linkages between governments, major local BE sector stakeholders (e.g. ports, tourism, fishing), TVETs, NGOs and WIO city universities could be encouraged. Education and training opportunities should strive to include historically marginalised groups within the city, removing traditional gender barriers that may exist with respect to certain blue economy roles and providing opportunities for cities' youth.

CONCLUSION

The blue economy has been an important part of life in WIO cities since long before the term became popularly used. Many cities have been built upon port and maritime trade and fishing, while tourism has been a key economic activity in many cities for decades. Still, in many cases the blue economy has to date, not been effectively exploited in WIO cities or worse has been exploited in an unsustainable fashion which is harmful to the local environment and livelihoods of future generations.

The research findings and recommendations outlined in this document have aimed to support WIO cities in the development of a blue economy plan, and/or provide a reference for the updating of an existing plan. Any such activity should seek to fully identify and plan according to the interdependencies that exist between different blue economy sectors and be conscientious of the need for harmony between different ocean uses. While recommendations have been presented by sector for ease of reference, many recommendations transcend several different blue economy sectors and should therefore be approached with corresponding coordination and communication.

The formulation of city blue economy plans also needs to be coordinated vertically, with national and regional blue economy plans and objectives and horizontally, between local government departments and existing city vision and urban development plans. City BE plans should also coordinate with other city BE actors and reflect the needs and aspirations of local communities. Such plans should therefore take place through inclusive, coordinated multi-stakeholder consultation and planning exercises.

We hope that this Roadmap has provided a useful resource for city BE planning and the authors welcome feedback and future engagement from all readers and users of the Roadmap.

▸ Image above: Sunset Aerial Mombasa, Kenya © Wirestock, AdobeStock

▸ Image right: Aerial shot, Mauritius.

ANNEX 1 - METHODOLOGY: STEPS TO BLUE ECONOMY ROADMAP RECOMMENDATIONS

While not an entirely linear process, the overall research can be summarised under five key steps:

STEP 1 - PRIMARY AND SECONDARY RESEARCH

- Desktop blue economy research was undertaken across WIO cities in 8 countries - Comoros, Kenya, Madagascar, Mozambique, Mauritius, Seychelles, South Africa and Tanzania. This result identified broad blue economy challenges and opportunities across the region as well as preliminary lines of enquiry for the primary research phase.
- Primary Blue Economy (BE) research was undertaken in four WIO cities: Mombasa and Kilifi (Kenya), Dar es Salaam (Tanzania) and Port Louis (Mauritius).
- Primary and Secondary research identified key blue economy sectors and supporting themes in WIO cities (Blue Economy Governance; Ports and Maritime Trade; Fishing; Tourism; Waterfront Development; and Operational Environment for the blue economy).
- Primary and secondary research explored major challenges and opportunities relevant to cities under each blue economy theme or sector.
- **Activities under Step 1 provided a long list of blue economy issues for WIO cities.**

STEP 2 – ISSUES TO RECOMMENDATIONS

- The research developed recommendations for identified issues. Some of these recommendations came from expert insights, others were directly extracted from primary and secondary research, and the remainder came from a further phase of desktop research.
- **Activities under Step 2 generated a long-long list of around 100 blue economy recommendations which were deemed pertinent to WIO cities and offering solutions to identified challenges.**

STEP 3 – INTERNAL FILTERING OF RECOMMENDATIONS

- The Arup team conducted an internal screening process merging recommendations that were related and removed recommendations that were lacking specificity or realism.
- **Step 3 resulted in a preliminary shortlist of 64 recommendations across the 6 themes outlined in Step 1.**

STEP 4 – EXPERT EVALUATION OF RECOMMENDATIONS

- A filtered list of recommendations from Step 3 was evaluated independently by 10 experts: 3 from Arup, 2 from WIOMSA and 5 from external organisations across the WIO region. Experts were a mix of urbanists, ecologists, economists and marine experts and came from mainland and island WIO countries.
- Experts were tasked to score each of the 64 recommendations against six criteria:
  - How well does the recommendation support economic development of WIO cities?
  - How well does the recommendation support social development in WIO cities?
  - How well does the recommendation support environmental sustainability of the marine and/or coastal environment?
  - Financial viability – how does the investment required align to existing or potential sources of finance and funding?
  - Technical viability – how does the technical complexity of the recommendation align to existing technical maturity in the sector?
  - Acceptance - Would there be general support across BE stakeholders necessary to realise this action/ambition?

- Experts scored each recommendation 1 (low) – 5 (high) against these criteria informed by an accompanying scoring guide.
- **Assessing each recommendation against 6 criteria provided a total score, from each expert, for each recommendation.**

STEP 5 – ANALYSIS AND FINAL SHORTLISTING

- Arup analysis calculated the average score across assessors for each recommendation, and recommendations were ranked highest mean score- to lowest mean score, within each sector.
- A standard deviation calculation was used to understand variance in scoring across assessors, as part of a sense-checking process.
- A smaller group of experts undertook a final round of review, considering close scores amongst recommendations, recommendations with high variance in scoring across participants, and opportunities to merge recommendations.
- No recommendations were removed from the top five as a result of the final evaluation round, but a limited number of recommendations were merged.
- **Highest scoring recommendations from Step 4 were ranked as 'top five recommendations' for each sector. These recommendations typically scored highly across the 6 criteria and are discussed in Chapter 3**

ANNEX 2 - RECOMMENDATIONS IN FULL

BLUE ECONOMY GOVERNANCE AND PLANNING

	RECOMMENDATIONS	Mean score /30
1ST	Formalise local Marine Spatial Planning (MSP) in legislation and allow local governments to plan 5km into the ocean	25
2ND	Build BE knowledge and planning capacity of local government. i.e. MSP planning capacity, marine knowledge	24.9
3RD	Promote resilient, adaptive urban planning, enhancing development control & ESIA, undertaking proactive measures to manage environmental pressures on the coast and ocean from rapidly growing populations, particularly in secondary cities & towns	24.5
4TH	Identify and map critical blue economy infrastructure, and prioritise climate change adaptation and disaster risk reduction measures	23.9
5TH	Further research into sustainable multi-use of ocean spaces in blue economy planning	23.8
6TH	Involvement of ecology economists in blue economy planning and project design	23.8
7TH	City undertakes detailed sea-level rise flood mapping. Results are built into planning and zoning, with risk informed coastal planning. Increased investment in ecosystem-based adaptation and natural defences	23.7
8TH	Establish national blue economy operationalization framework and coordination unit, including mapping of ocean stakeholders and plans across scales	23.6
9TH	Establish coordinated city structures for blue economy planning	23.4
10TH	Identify Key Performance Indicators for blue economy and institutionalise data collection to inform future evidence based policy decisions"	23.1
11TH	National/local city blue economy city knowledge exchange networks	23.1
12TH	Support local communities at sites of current and potential LMMAs within proximity to WIO cities. Train city BE stakeholders on LMMAs and integration of into city BE planning.	23
13TH	Public awareness campaign on the blue economy and mechanisms for community participation in BE planning. Policy mechanisms for local participation in BE supply chains	22.7
14TH	Provide technical assistance to city stakeholders to pursue and issue green and blue bonds alongside wider BE investment	22.2
15TH	Establish blue economy research centres in WIO cities	22

PORTS AND MARITIME TRADE

	RECOMMENDATIONS	Mean score /30
1ST	Identify additional supply chain opportunities (processing, other value addition activities) economically proximate to existing port activities	24.1
2ND	Strengthen ESIA process regulating port expansion	23.5
3RD	Economic diversification to reduce city reliance on port revenue	23.1
4TH	Assess and seek to improve the performance / efficiency of existing port operations both within the port and in surrounding support systems, e.g. strengthen traffic management processes	23
5TH	Strengthen port monitoring capacity of illicit goods and narcotics which find their way into local communities. Combine with social initiatives at city level	23
6TH	Promote and adopt Green Port principles and practices including dredging polices, ballast receptor requirements and wider pollution monitoring, especially in line with any port expansion plans.	22.9
7TH	Strengthen city role in port strategy and operations, developing coordinated city-port socio-economic development strategies	21.7
8TH	Develop port centred maritime clusters. In parallel, training institutions could be established or strengthened in port cities to ensure that technical roles can be filled by local communities.	21.7

TOURISM

	RECOMMENDATIONS	Mean score /30
1ST	Develop and promote city region tourist strategy considering: local and domestic tourists; industry resilience to shocks; income flow into local communities; beach resort-city linkages; and coordination between proximate locations.	25.8
2ND	Advocacy against unsustainable tourist behaviours (e.g. coral removal and littering) as part of a 'leave no trace' campaign	25.6
3RD	A 'One-stop shop' for obtaining licenses and tax relief incentives for local community businesses, especially those meeting green and marine friendly criteria	25.2
4TH	Develop city mangrove/eco parks which can provide storm surge protection, increase biodiversity and attract visitors	24.9
5TH	Increase offering of effectively-priced tourism experiences where profits are re-invested into conservation efforts. Tax incentives could be provided for operators who comply with the principles of eco-tourism	24.8
6TH	Business support for small and medium-sized businesses, to expand the city's tourist offerings and activities. Encourage hotels, resorts and operators to promote experiential tourism packages which support local communities	24.6
7TH	Prepare an action plan for public-private partnership initiatives for tourism recovery, learn from ongoing emergency measures and integrate lessons	24.4
8TH	Sensitisation of hotels and tourism workers on the issue of sex tourism and identification of the exploitation of minors. If missing, establish and promote simple, accessible yet robust related reporting mechanism	23.9
9TH	Improve assessment of hotels' environmental credentials and monitoring of issues such as onsite sewage and solid waste management. Encourage and incentivise waste reduction initiatives in city hotels	23.5
10TH	Partner with airline and travel operators to explore the potential of community blue carbon schemes, offsetting tourist activities.	23.4
11TH	Public-private initiatives to train and professionalise local workers in the hospitality industry. Creation of tourism training opportunities connected to businesses operating in the city/region	22.9
12TH	The cruise ship sub-sector could be further targeted through infrastructure upgrades and targeted campaigns promoting WIO cities as viable stopover destinations	22.1

FISHING

	RECOMMENDATIONS	Mean score /30
1ST	Incentivise bulk buyers in WIO cities to buy local seafood produce. E.g. restaurants which can showcase local produce	24.9
2ND	Partnership between national and local fisheries departments, research, universities and other BE sectors with complementary skills or resources. Related efforts to disseminate findings for sustainable, productive fishing down to local fisherfolk.	24.6
3RD	Robust, sustainable multi-stakeholder and multi-scale fisheries plans	24.4
4TH	Expand use of marine protected areas off the coast of WIO cities and along the coast supporting stock restoration	24.2
5TH	Identify opportunities for value retention and addition in WIO cities, e.g. increasing cold storage and processing facilities and markets	23.6
6TH	Invest in and promote sustainable mariculture/aquaculture practices	23.4
7TH	Consider the role of WIO cities in seaweed value chain and opportunity for sector expansion and value addition (e.g. healthcare and pharmaceutical products)	23
8TH	Support local communities in provision of vessels and equipment but combine with sustainable fishing advice and management/capacity building in Beach Management Units (BMUs)	22.6
9TH	Promote participation of youth and women in the fishing industry through targeted training, business incentives and policies that encourage female participation	22.4
10TH	Enhance coastguard capacity where lacking and ensure equal distribution of coastguard capacity across sub-national coastal regions	22.2
11TH	Establish fish quality monitoring facilities in WIO cities, particularly those cities with major fish markets	22.1
12TH	Develop local shipbuilding facilities in certain WIO cities	21.4

WATERFRONT DEVELOPMENT

	RECOMMENDATIONS	Mean score /30
1 ST	City-private sector partnerships to facilitate WfD including multiple areas-market analysis, land use assessment, financing, and/or operations.	24.4
2 ND	Develop national or regional guidelines and case study guidance for safe, inclusive, sustainable and successful mixed-use WfD including best practices across economic, social and environmental pillars	24.2
3 RD	Prohibit heavy waterfront development of green sites, through legislation. Map coastal areas requiring protection. Promote inclusive regeneration /greenification.	24.2
4 TH	City could identify previously degraded, brownfield sites at/near water and rehabilitate as public spaces, with economic, environmental and social benefits.	24
5 TH	Assets such as aquariums can combine tourist revenue generation with the financing of marine science research and conservation.	23.8
6 TH	"Establish multi-stakeholder board for planning, implementation and management of significant WfD projects, supported by best practice guidelines. Long term WfD projects may in some cases be best delivered by separate public benefit corporations"	23.4
7 TH	Stipulate as part of planning permission that WfDs should be free, or at least include significant free space and be supported by free public events	23.4
8 TH	Undertake mapping of historic, cultural and architectural coastal assets to protect and champion in WfD projects	23
9 TH	Establish and strenghthen mechanisms which ensure an early, extensive and continuous public engagement process for WfD projects, with social benefits clearly demonstrated, discussed and publically supported	22.9

OPERATIONAL ENVIRONMENT

	RECOMMENDATIONS	Mean score /30
1ST	Wider city circular economy mapping and strategy development including circular economy livelihood opportunities for local communities; innovative plastic waste solutions; and systematic interventions with respect to recycling infrastructure and processes	24.7
2ND	Identify industrial pollution hotspots in or near WIO cities and prioritise a degree of monitoring resources in these zones	24.2
3RD	Promote and incentivise responsible plastics and microplastics management, recycling and reduction. Promote a reusable culture for a more circular city economy and reduction of plastic into coastal waters	24.1
4TH	Improve sewage management with particular focus on on-site treatment for large developments; community sensitization (e.g. soak pit disposal) and innovative solutions (e.g. seagrass for bacteria removal, green wetlands, submarine outflows).	23.9
5TH	Free advisory services and training for farmers on best practices with respect to fertilisers, crop management and pollution prevention, highlighting economic benefits where they exist	23.7
6TH	Partner with TVET institutions to train and sensitize citizens for blue economy opportunities. Strengthen linkages between existing TVET institutions and universities and major city BE industries (port, tourism, fishing, WfD), including major organisations and businesses. Subsidised training for marginalized urban communities	23.6
7TH	Investment in ferries and water taxis improving connections within and between WIO coastal cities. Safety audit of existing water transport if missing	23
8TH	Address plastic waste at source, through levies placed upon producers and bans on certain plastic goods (e.g. bags, straws, cosmetic microbeads)	22.6

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