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**NAIROBI  
CONVENTION**

**WORLD OCEANS DAY**

2019



**NEWSLETTER**  
SPECIAL EDITION

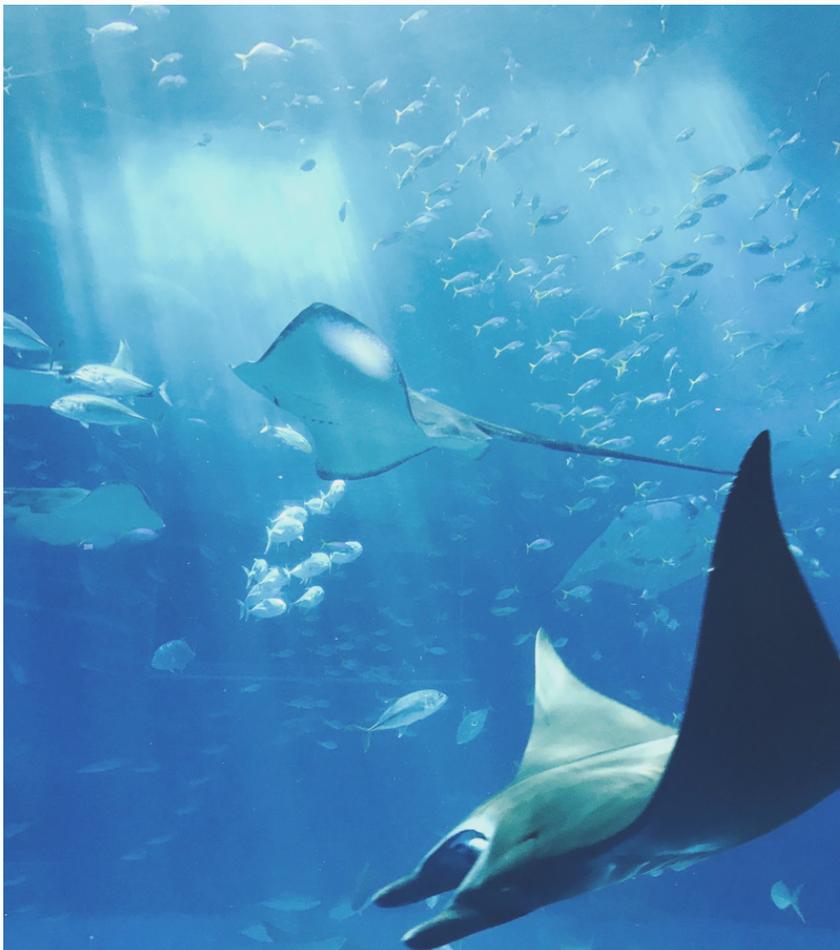


# WORLD OCEANS DAY 2019

WORLD OCEANS DAY WAS 8 JUNE 2019. THIS YEAR, THE NAIROBI CONVENTION CELEBRATED BY RELEASING INFORMATION ON MAJOR ISSUES FACING THE WESTERN INDIAN OCEAN (WIO) REGION AND HOW THE CONTRACTING PARTIES ARE WORKING TO SUSTAINABLY PROTECT, MANAGE, AND USE THEIR MARINE AND COASTAL RESOURCES.

In addition to sharing stories highlighting actions taken by each of its Contracting Parties, the Convention also received several stories from partner institutions outlining progress, challenges, and recommendations.

**Find all the stories and contributions below!**



*The Nairobi Convention would particularly like to thank all of its Focal Points, as well as CORDIO, Birdlife International, Jomo Kenyatta University, World Wide Fund for Nature, University of Nairobi, Indian Ocean Commission, Wildlife Conservation Society, and The Nature Conservancy for their contributions and input.*

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# COMOROS

## TOWARDS A NETWORK OF MARINE PROTECTION

The Comoros, an archipelago of four islands, harbors an astonishing array of critical habitats and biodiversity—from coral reefs and mangroves to threatened whales, sharks, dugongs, and turtles. As an island state, Comoros’ economy and culture is deeply entwined with these marine and coastal resources. Nevertheless, these ecosystems—and the employment, food, and physical protection they offer—are under strain. Beach resources—such as sand, pebbles, and sediments—are being overexploited, disrupting nearby ecosystems. Meanwhile, fishermen are poaching sea turtle eggs, adult turtles and dugongs, threatening the survival of these species. Mangrove forests are vanishing, along with the species they support and the protection from erosion they provide.

These are just a few of the environmental challenges facing the Comoros, which is why the government has decided to take strong action to sustainably protect and use these precious resources. The government declared its first protected area, Mohéli National Park, in 2001 [1]. The park, which includes ten marine reserves, is co-managed by village communities and aims to conserve biodiversity and improve the living conditions of the local population in an environmentally-harmonious manner.

Comoros, however, recognized that true coastal and marine protection would require its other islands to be afforded similar protection. In 2016, the government announced that five new national parks would be created—three of which are marine and coastal areas—along with a new, autonomous agency to manage these parks. Comoros is in the midst of passing a ‘Protected Areas Act’ to formally enshrine their protection and establish an “Environmental Fund” for their management. Once formally created, the new areas will help the Comoros achieve its vision of protecting 25 per cent of its national territory by 2021. [2]

The three future marine parks will be Mitsamiouli-Ndroudé, Coelacanth National Park, and Shisiwani National Park. The areas are home to several threatened or endangered species, like whales and dugongs, and enormous swaths of coral reefs, seagrass, and mangrove forests. The government plans on embracing a community-centered approach to the management of these protected areas. Establishing this sense of local ownership will help ensure that the protection of these parks—and the vital habitats, marine life, and ecological services therein—is truly sustainable.

*References on page 27.*

# FRANCE

## UNDERSTANDING ECONOMIES AND ECOSYSTEMS IN LA RÉUNION

La Réunion is an island and region of France in the Western Indian Ocean, whose varied terrains and climates host tremendously diverse species and habitats. One Réunion natural marine reserve alone counts 6,433 types of sponges, shellfish, reptiles, seabirds, mammals, and other marine species.[1] But invasive species, climate events, overfishing, tourism, urbanization, and other threats have imperiled these species and the habitats on which they depend, which is why Réunion, France, the EU, and regional partners have embarked on a new project called “Océan Metiss” on the island.

In 2014, the European Union (EU) adopted a directive on Maritime Spatial Planning (MSP, often referred to as Marine Spatial Planning), defining the process as one in which its member States “analyze and organize human activities in marine areas to achieve ecological, economic, and social objectives.”[2] The EU Directive instructs its member states to develop their own MSP policies and to use these plans to promote sustainable development and growth of maritime and coastal economies. After adopting the EU Directive into its own legislation in 2016, France and Réunion’s Regional Council and Prefect began the “Ocean Metiss” project, which gained the support of the EU and the Indian Ocean Commission (Mauritius, La Réunion, Comoros, Madagascar, and Seychelles.) The project’s main objectives are to 1) develop a status report on factors impacting local economies and ecosystems, and 2) assess the potential of Réunion’s maritime zone to boost economic development through conservation of its biodiversity.[3] A major output of the project will be a new MSP tool to help shape public policies across different sectors.

The project will have six main components:

- **Biodiversity, Ecosystems, and Energy:** this component will focus on collecting data, mapping habitats and species distribution, and understanding the characteristics of Réunion’s marine life.
- **Sustainable development of the Blue Economy:** this component will focus on mapping and analyzing ocean-related economic activities on the island to determine needs and new development opportunities.
- **Research and Innovation:** the goal of this component is to develop an inventory of maritime and coastal resources of La Réunion, tools for integrated management, and an assessment of pollution and health risks.
- **Legal and Societal Environment:** under this component, the project will identify legal constraints and regulatory gaps.
- **Risks, threats, and conflicts of use:** the focus of this component will be on mapping potential conflicts of use, developing an inventory of intervention activities to counter threats to the marine environment, and setting up a natural disaster monitoring system for the project.
- **Cooperation and networks:** this component will center on identifying issues and synergies to promote international partnerships, networks, and new project initiatives.

After the conclusion of Océan Metiss, La Réunion will be in a better position to capitalize on its unique natural resources to develop its economy, while at the same time reducing the threats on these same resources.

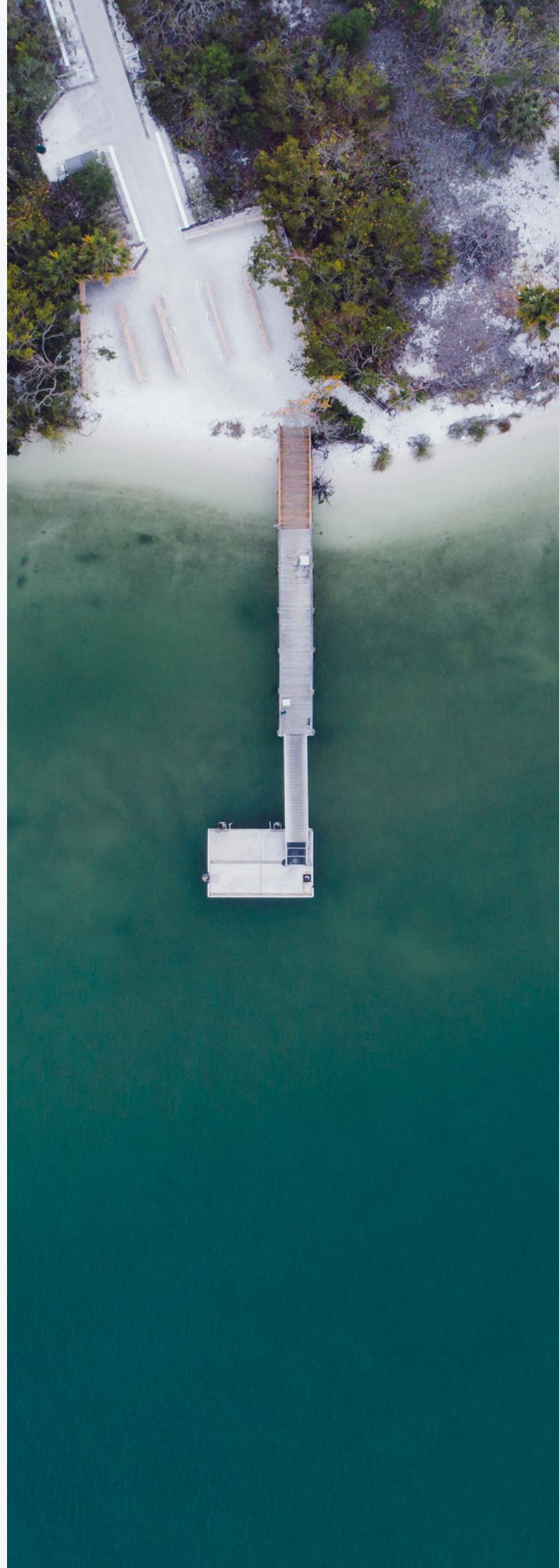
# KENYA

## PROMOTING BLUE ECONOMY AT HOME AND ABROAD

Kenya's coastal and marine environment is endowed with rich natural resources, which are of immense social and cultural value to the coastal region inhabitants and the nation at large. Yet though their environmental and cultural value is undeniable, the resources also have massive economic potential. To harness such potential, the Kenyan government created a Presidential Blue Economy Task Force in 2017. Blue Economy (BE) objectives, as identified by the Task Force through stakeholder participation, prioritize the sustainable use of ocean resources for economic growth, livelihoods and jobs, and ocean ecosystem health. The Task Force oversees interventions to achieve these objectives in sectors such as fisheries and aquaculture, maritime transport, culture and tourism, environmental conservation and oil and mining. The eight-member committee reports monthly to the President.

Underscoring how much the BE has become a priority for Kenya, the government hosted the first-ever global 'Sustainable Blue Economy' conference on 26 to 28 November 2018 with Japan and Canada. Over 16,000 participants from 184 countries attended the conference, which resulted in the Nairobi Statement of Intent on Advancing a Sustainable Blue Economy. Key political messages in the statement include the need to mobilize financing for the BE; create BE and people-centered strategies on sustainable development; promote access to gender equality; and strengthen science and research, among others. Participants made voluntary commitments amounting to \$172.2 million in various aspects of the BE, as well as several non-monetary commitments in areas like partnerships and capacity-building [1].





In his opening address[2], Kenyan President Uhuru Kenyatta noted his own country's present and future commitments to a sustainable BE. Noting the need for policies, strategies, and mechanisms to harness the BE, he pledged that Kenya would expand its existing institutional governance mechanisms to enhance coordinated management of the BE. Waste and plastic pollution that threatens food security, public health, and marine life needs to be prevented, and he highlighted Kenya's recent ban on single-use plastic as an important step in this regard. Countries also need to ensure responsible and sustainable fishing—a sector on which millions of people depend—which is why Kenya launched a new Coast Guard in 2018 to fight piracy and illegal fishing. This initiative also supports Kenya's commitment at the UN Ocean Conference, in which the country pledged it would ensure sustainable fisheries resources through strengthening ocean governance and environmental protection. President Kenyatta also referenced the creation of a new Fishing Corporation, housing programme, and port expansion measures as examples of how countries could revitalize their economies through BE initiatives.

Implementation of these and similar progressive actions from Kenya and partners can help the country and region development vibrant and resilient economies that are protective of the environment. As President Kenyatta noted, "unless our environmental riches are protected, there can be no lasting prosperity for any of us."



# MADAGASCAR

INNOVATIVE MANAGEMENT OF ONE OF THE  
WORLD'S MOST BIODIVERSE ISLANDS

[with contributions from Jacquie Rasoanaina, Ministry of Environment, Ecology, and Forests, Focal Point of Madagascar for the Nairobi Convention)

Madagascar, the fourth largest island in the world, has been endowed with significant ecological gifts. Nearly 25% of the Western Indian Ocean's (WIO) coral reefs can be found off its coasts [1]. Eight of the nine types of mangrove species found in the WIO cover nearly 3,000 square kilometers of land [2]. Perhaps most impressively, World Wildlife Fund estimates that an astounding 92 percent of its mammals, 95 per cent of its reptiles, and 89 per cent of its plant life exist nowhere else on the planet. Indeed, in one decade alone (1999-2010), scientists had discovered 615 new species on the island.

Globally, Madagascar ranks among the top 15 countries in terms of coral reefs and mangrove forests. Indeed, the coral reefs in the Northern Mozambique Channel, especially those in northern Madagascar, are the 2nd richest in coral species on the planet (after the Coral Triangle in Southeast Asia). Marine and coastal habitats, including coral reefs and mangroves, provide many ecosystem services to the Malagasy population—more than 50% of whom live close to the coast—including food resources, employment and income from fishing and tourism, and protection against coastal erosion.

In addition, Madagascar has important marine resources, with annual catches of fishery resources estimated at about 130 000 tonnes, most of which comes from traditional fishing practices. Over 100,000 traditional fisheries harvest numerous fish species, cephalopods (octopus, squid) and crustaceans (shrimps, lobsters, crabs). These traditional fisheries are of vital importance for coastal communities, especially in the south and west of the country, where a lack of fresh water and aridity prevents agricultural development.

However, being an island state makes Madagascar especially vulnerable to the effects of climate change; coral reef bleaching and degradation; coastal erosion; and illicit animal poaching. And although marine and coastal ecosystems in Madagascar are among the most productive, they are also among the most threatened by human pressures. Recent studies indicate that the area covered by mangroves has decreased 15% over the past 60 years [Rasoanaina]. Furthermore, 94% of Madagascar's coral reefs are classified as threatened, due to both local pressures and climate change [Rasoanaina]. Protecting such a large swathe of ocean, coastline, and biodiversity requires strong commitments and innovative policies and strategies. Madagascar recognized the need for environmental protection early on, developing a national Environmental Action Plan in the late 1980s and beginning sustainable management practices of marine and coastal zones in the 1990s.

In 2003, at the IUCN World Parks Congress in Durban, the Malagasy Government pledged to triple the surface of its protected areas, i.e. increase coverage from 1.7 million hectares to 6 million hectares. The Government then initiated the Protected Areas System of Madagascar (PASM) for the 50 national parks managed by Madagascar National Parks (MNP) and the 73 New Protected Areas (NAP), which are intended to increase the involvement of local people in governance of protected areas—thereby contributing to reducing poverty.

Ten years later, this commitment was confirmed by the President of the Republic of Madagascar during the Sydney World Parks Congress in November 2014. This commitment, known as the "Promise of Sydney", aims to ensure the conservation of the unique biodiversity of the country. It includes the extension of the area of Marine Protected Areas (MPAs), the promotion of Marine Protected Areas Community Management Areas (LLMAs) to involve riverside communities in the management of these MPAs, and granting permanent status to protected areas currently classified as temporary.

The Ministry of Environment and Sustainable Development (MEDD) has authority over MPAs in Madagascar, but management is often delegated to technical experts such as national associations, private companies, or NGOs. However, ever since the Durban Conference, local communities have also taken an active role in creating and managing MPAs in Madagascar. Certain MPAs grant them full or partial responsible responsibility for managing the MPA or its bordering areas, and they frequently patrol, record illicit activities, and monitor biodiversity. Their involvement is supported by a social safeguard plan included by Madagascar in each MPA, which seeks to aid communities in developing alternative livelihoods that do not depend on use of the MPA's resources.[3]

Madagascar has strongly welcomed the use of LMMAs, which are a protected areas near shore largely managed by coastal communities or neighboring groups, or co-managed by both resident communities and local government authorities. Some LMMAs are legally-recognized and formal MPAs, such as Ambodivahibe, or adopted and run through local bylaw processes in coastal communities. Nearly 200 LMMAs now exist in Madagascar. Through NGO partners such as the Mahari Network, LMMAs can share best practices, secure joint funding, and combine advocacy efforts.

Through offering them a role in managing formal MPAs or by embracing the spread of LMMAs, Madagascar has given communities a sense of ownership in protecting their own cultural heritage and economic resources—a step that will undoubtedly make the management of these protected areas more sustainable and effective.

Finally, as a Contracting Party to the Nairobi Convention, Madagascar is implementing two of its main projects, i.e. WIOSAP and SAPPHIRE. Through WIOSAP, Madagascar is working to reduce land-based stresses on marine and coastal ecosystems and is currently finalizing project proposals on the sustainable management of critical habitats, improving water quality, and the sustainable management of river flows. On SAPPHIRE, Madagascar is identifying its priorities and recommendations in ocean governance and devising project proposals on policy harmonization and management reforms.



# MAURITIUS

## TAPPING INTO THE ECONOMIC POTENTIAL OF THE WESTERN INDIAN OCEAN

The economic potential of the ocean, according to a 2015 World Wildlife Federation study [1], is staggering—if the world’s ocean were a country, the study claims, it would have the 7th largest economy, with an estimated Gross Domestic Product (GDP) of \$24 trillion. Mauritius, an island state with 322 km of coastline [2] and an Exclusive Economic Zone (EEZ) of 2.3 million square kilometers, has long been aware of the economic potential of its marine and coastal resources. Ocean-related sectors, such as tourism, fishing, and transportation, contribute roughly 10.5 percent to Mauritius’s GDP [3]. Yet as an island state, Mauritius is also worryingly vulnerable to climate change, erosion, land degradation, and other environmental dangers—indeed, 17 per cent of its coastline is suffering from erosion [4]

Tapping into the economic potential of the ocean—while at the same time protecting this resource—therefore requires thoughtful policy, planning, and management. With this in mind, Mauritius decided to make the “Ocean Economy” a pillar of its economic development strategy, with an objective to double the contribution of the ocean economy to GDP by 2025. It created an Oceans Economy Roadmap, which aims to make use of the untapped value of the country’s ocean resources by sustainably coordinating the use of resources. The country endowed a new Ministry for Ocean Economy, Marine Resources, Fisheries, and Shipping with the authority to coordinate and manage ocean-related activities.

Lucrative investment opportunities for the Ocean Economy abound in Mauritius, including in fishing, marine renewable energy and seabed exploration, among others. Harmonizing these investments and developments requires careful management, which is why Mauritius is in the process of establishing a Marine Spatial Planning (MSP) Coordinating Committee to help enlarge economic marine space and avoid conflicting and non-sustainable use of this space. Working groups on conservation, development projects, and frameworks ensure that sustainability concerns and economic needs are balanced.

To further ensure the development of the Ocean Economy is “less carbon-intensive and more climate-resilient”—and in order to increase protected areas and improve ocean governance—Mauritius has also committed itself to achieving the UN’s Sustainable Development Goals, the Convention on Biological Diversity targets, and the UN Framework Convention on Climate Change [5]. Moreover, Mauritius has just developed a National Coastal Zone Adaptation Strategy, which can be shared with SIDS and global coastal communities. Through its Ocean Economy strategies, and complementary measures like MSP, Mauritius is demonstrating that conservation and protection of the ocean can have both environmental and economic benefits—a lesson from which all countries could learn. (*References on page 27*)



# MOZAMBIQUE

## ENSURING REGIONAL BLUE GROWTH

The Western Indian Ocean (WIO) region is among the most biodiverse in the world. Dangers such as climate change, pollution, degradation, pollution, and biodiversity loss are issues that do not just threaten Mozambique; they present risks to all countries in the Western Indian Ocean. Addressing such perils thus requires concerted, transboundary action, which is why Mozambique held its first “Growing Blue: Sustainable and Shared Exploitation of Oceans” conference in Maputo on 23-24 May.

The conference provided a consultation platform for Mozambique and its regional partners to share knowledge for fulfilling Sustainable Development Goal (SDG) 14, or “Life Under Water”, which focuses on the conservation and sustainable use of oceans, seas, and marine resources for sustainable development.” Other agendas relevant to sustainable use of the ocean included the African Union 2050 Integrated Maritime Strategy and the Blue Economy Policy Manual for Africa. Translating these global agendas into concrete actions at the regional and country level was a main focus of participants at the conference.

The conference had four main themes. The first was sustainable ocean governance, which included discussions on regional and international platforms that could help address threats like ocean pollution, biodiversity, and maritime security. Ocean Innovation was the second theme, under which participants shared best practices and lessons learned on science, technology, and innovation opportunities and research. The third theme was clean highways, under which attendees discussed transport and shipping, ports, commerce, and tourism challenges and opportunities for Blue Economies. Finally, the fourth theme focused on how “ocean power”—i.e., renewable energy, oil, gas, and trade—can contribute to Blue Economy development.

In addition to sharing experiences on Blue Economy Initiatives and approaches, partners made several commitments to develop capacity in research, innovation, and technology in the region. The conference also identified several elements that could go towards a common vision of development for the Western Indian Ocean. Mozambique will collect all such opportunities and commitments in an upcoming “White Paper: Blue Economy Road Map”. The country plans on having the next ‘Growing Blue’ conference in 2021.

# SEYCHELLES

## INNOVATIVE FINANCING TO SUPPORT THE ECONOMY AND ENVIRONMENT

Like other island states, the Seychelles relies heavily on the ocean to propel its economy. Indeed, the country's 1.37 square kilometers EEZ (Exclusive Economic Zone, or the ocean zone over which a state has special rights to explore and use marine resources) dwarfs its land area of 455 square kilometers. The country's future prosperity is thus inextricably linked to its marine and coastal assets [1]. These assets include over 2,600 documented species, including the critically-endangered Hawksbill Turtle; the endangered Green Turtle; and the vulnerable dugong [2].

The Seychelles decided to seize on the potential its vast EEZ offers by adopting a Blue Economy Roadmap in January 2018. A Blue Economy, or BE, is defined by the Seychelles as economic activities that directly or indirectly take place in the ocean or use outputs or services from the ocean.[3] Put simply, the Seychelles BE Roadmap aims to increase the contribution of such activities to economic growth and social, environmental, and cultural well-being. It attempts to shift the focus from the status quo—in which “oceans have been viewed as a means of free resource extraction” and a dump site for waste disposal—to one in which the ocean's value is recognized in decision-making and its benefits shared equitably.[4]

The roadmap is focused on four key pillars: 1) economic diversification and resilience; 2) shared prosperity (creating new jobs and investment opportunities in ocean sectors); 3) food security; and 4) integrity of habitats and ecosystem services, sustainable use, and climate resilience. Through the roadmap, the Seychelles hopes to reduce its economic and environmental vulnerability by increasing the diversity of ocean-related sectors. The roadmap will allow the country to prevent threats to its ocean, such as illegal fishing, marine pollution, and climate change effects. It will also enhance the capacity for effective ocean governance, so that these opportunities can be fully realized and these threats reduced.



However, implementing such an ambitious roadmap requires a sustainable funding stream. The Seychelles thus took their BE innovation one step further by launching a “sovereign blue bond” in October 2018. According to the World Bank, a blue bond is a debt instrument designed to raise capital to finance marine and ocean-based projects that have positive environmental, economic, and climate benefits. [5] The bond raised 15 million USD from international investors, which will go towards improved governance of fisheries, development of the BE, and expansion of Marine Protected Areas (MPAs, or areas set aside to protect marine ecosystems).

The Seychelles has also pioneered another innovative environmental financing system with The Nature Conservancy (TNC). In February 2018, the Seychelles designated two new MPAs covering a staggering 210,000 square kilometers—an area the size of Great Britain—in a new debt-for-conservation deal designed by TNC. Under the deal, the TNC raised \$21 million, allowing Seychelles to pay off its debt, in exchange for a commitment to increase its protected areas from .04% to 30 percent. These first new MPAs include a coral reef and UNESCO World Heritage Site around the islands of the Aldabra group. The area is home to the dugong and the only breeding ground for an endemic species of giant tortoises. [6] Recently, Seychelles has expanded these two MPAs even further, bringing the country’s total MPA coverage to an impressive 26%.

Through its willingness to capitalize on such ground-breaking financing opportunities, the Seychelles is underscoring its commitment to achieving its development potential without compromising its marine environment and heritage. Their successes prove that conservation does not have to come at the expense of economic growth—an important lesson for the entire globe.

*References on page 27.*

# SOUTH AFRICA

## OPERATIONALIZING OCEAN PROTECTION

South Africa is surrounded by ocean on three sides, amounting to 3,900 kilometers of coastline and an Exclusive Economic Zone (EEZ) of 1.5 million square kilometers. Despite being encircled by such rich resources, the country had been under-utilizing the vast potential economic opportunities offered by the ocean. In response, the South African government launched “Operation Phakisa” in 2014. The project, which means “hurry up” in Sesotho, strives to capitalize on ocean resources through a results-based, transparent development approach. The stakes are high—the ocean has the potential to create up to one million jobs and contribute 177 billion rand (12.2 billion USD) to South Africa’s Gross Domestic Product (GDP) [1].

The project focuses on six priority areas, or “work streams”: Marine Transport and Manufacturing; Offshore Oil and Gas Exploration; Aquaculture; Marine Protection Services and Ocean Governance; Small Harbors; and Coastal and Marine Tourism[2].

Work stream 4, Marine Protection Services and Ocean Governance, works to ensure that the economic benefits of Phakisa are captured in an equitable, environmentally-friendly manner. The country’s vast and complex EEZ means ocean governance is vital to ensuring equitable and effective use of marine and coastal resources. Under this work stream, the government developed an overarching governance plan which aims to protect the ocean environment from illegal activities and promote its socio-economic benefits. It has made significant progress in achieving this objective:

- The President of South Africa signed the Marine Spatial Planning (MSP) Act into law on 6 May 2019. MSP is a process that brings together various “users” of the ocean—such as industries, energy sectors, conservationists, etc.—to make coordinated decisions on how they can use marine resources sustainably. The new act will facilitate the development, implementation, and monitoring of all MSPs.
- The Minister of Environmental Affairs has proposed 22 new Marine Protected Areas (MPAs) covering an area of 68,578 square kilometers. MPAs are areas set aside for the long-term protection of marine ecosystems, and South Africa’s cabinet formally approved 20 of the 22 MPAs in October 2018. These new MPAs increase ocean protection in South Africa’s EEZ, allowing South Africa to climb significantly closer to its Sustainable Development Goal (SDG) 14.5 target (which states that by 2020, countries shall conserve at least ten per cent of coastal and marine areas).

Looking ahead, South Africa is working on developing its first Marine Area Plan. These steps will allow South Africa to balance the economic opportunities afforded by its ocean while protecting it as a resource—and to ensure that the benefits of Operation Phakisa are enjoyed by generations to come.

*References on page 27.*



# SOMALIA

## RICH COASTAL AND MARINE RESOURCES

Somalia's 3,333 kilometer coastline is the largest in mainland Africa and endows the country with considerable marine resources. Its maritime zone possesses one of the most important large marine ecosystems—the Somali Current Marine Ecosystems—in the Indian Ocean. The country is also home to numerous endemic species—i.e., species that can be found nowhere else in the world—including six types of birds, mammals, and reptiles.

However, Somalia's treasures are under threat from the same dangers found elsewhere in the region: overfishing, climate change, mangrove destruction, and hazardous waste. Yet the extent and nature of these threats need to be better understood before they can be addressed, which is why UN Environment (UNEP) embarked upon a desk study of the state of Somalia's environment in 2005 at the request of the Somali government. The UN Secretary-General released another study in 2011 at the request of the Security Council on the protection of Somali natural resources and waters.

The UNEP report reiterated the potential benefits to be found in Somalia's waters—conservative estimates put the annual yield of marine fishery resources to be between 180,000 and 200,000 tons. Its coastline, home to important coral reefs, seabird colonies and turtle nesting beaches could potentially be the least spoiled in Africa.

The report further noted that protecting such treasures would require strengthening environmental governance. In recognition of this need, in June 2018 the Somali Government joined the Nairobi Convention's SAPPHERE project in June 2018. The project aims to improve ocean governance and build capacity and engagement of governments, the private sector, and local communities in sustainable resources management. The project will result in reformed policies, legislation, and institutions for the management of large marine ecosystems and the integration of ecosystem-based management approaches in selected community development plans. Artisan and subsistence fisheries will also be supported through ecosystem-based practices to reduce over-exploitation of natural resources.

# TANZANIA

## TAKING THE LEAD ON TRANSBOUNDARY PROTECTION WITH KENYA

Marine Protected Areas (MPAs) are areas set aside to protect marine ecosystems, in which human activities are more regulated than in non-protected areas. According to UN Environment, they are one of the world's best options to maintain ocean health and avoid further degradation. Effective MPAs can bring both ecological and sustainable economic benefits.

Typically, individual countries declare MPAs and are responsible for their management. Tanzania, for example, has proclaimed 18 MPAs on its mainland (three marine parks and 15 reserves) as well as several others on the island of Zanzibar [1]. However, physical borders between countries are less applicable in the ocean, where ecosystems, weather patterns, and pollution cross human-defined boundaries. In recognition of the need to spur cross-country management of protected areas, the eighth Conference of Parties of the Nairobi Convention adopted a decision requesting support for a transboundary MPA between Kenya and Tanzania. This initiative was supported by the Biodiversity program implemented by the Indian Ocean Commission (IOC) and the European Union, in collaboration with the Wildlife Conservation Society. Its objective was to study the institutional and legal Instruments required to establish a transboundary MPA, as well as to build stakeholder engagement.

The proposed Transboundary Conservation Area (TBCA), from the northern boundary of the Diani-Chale Marine National Reserve in Kenya to the southern boundary of Mkinga District in Tanzania, share a common ecosystem, weather patterns and oceanographic conditions. The biodiversity found in the proposed TBCA, moreover, supports local coastal communities in both countries, namely in the tourism and fisheries sectors.

However, deforestation, coastal flooding, salt water intrusion, pollution, and several other threats have put this key ecosystem in danger. Managing the proposed TBCA together would allow Tanzania and Kenya to mitigate these joint threats and continue enjoying the ecological services and economic benefits this area provides.

The TBCA would thus also help Kenya and Tanzania make steps towards fulfilling the 2018 Nairobi Statement of Intent on Advancing the Global Sustainable Blue Economy, which highlights countries' collective determination to "intensify investments and harness the full potential of the oceans, seas, lakes and rivers to accelerate economic growth, create jobs, and fight poverty." The proposed TBCA also aims at mainstreaming ecosystem management objectives into economic sectors that use the area. Another objective of the project is to reduce pressure on the area through building capacity in sustainable water management, spatial planning, and agricultural practices, among others.

Tanzania and Kenya registered establishing the TBCA as a commitment at the 2017 United Nations Ocean Conference. Progress on the proposed TBCA continues, with discussions anticipated at the upcoming Western Indian Ocean Marine Science Association (WIOMSA) symposium in July 2019.

*References on page 27.*

## Green Port Development in the WIO Region

Robert Kiplimo, Shem Otoi Onyango and Anne Wanjiru Njonjo

Port cities and authorities are starting to recognize the call to enhance sustainability and environmental protection in their jurisdictions. Increasingly, maritime organizations and the industry must themselves adapt to the same regulations and goals as nations, such as stringent sulphur limits in fuel and greenhouse gas reduction (GHG) goals. As such—through voluntary initiatives and specialized forums—ports are enhancing their commitments towards achieving more efficient operations, reducing GHG and exchanging knowledge and best practices [1].

Going green has become a trend for seaports all over the world, with environmental management becoming a critical concern in port operations. Several pollution sources, such as wastewater, solid waste, noise and air pollution, and energy wastage are associated with port operations. For a port to be considered a green port, however, management needs to establish measures to both reduce the port's pollution and optimize its energy usage. These measures can be highlighted in a "Green Port Policy" (GPP). A GPP can be evaluated by several measurable environmental and social indicators. Environment performance indicators (EPI), such as water consumption, water quality, carbon footprints, energy consumption, energy management, air quality, soil and sediment quality, waste generation, waste recycling, waste management, noise control, health and safety, pollution emission, etc. can be assessed [2]. Social indicators—such as quality of life in the communities or the level of training and communication—can also be used [2].

The WIO region consists of Comoros, Kenya, Mauritius, Madagascar, Mozambique, Seychelles, Somalia, United Republic of Tanzania and Republic of South Africa. Several ports in the WIO region have already started going green:

- The Kenya Ports Authority has adopted a GPP aimed at enhancing environmental conservation. One element contained in the plan is a future requirement for ships calling at the Port of Mombasa to switch off their diesel engines and use electric power while docked instead [3].
- The Tanzania Port Authorities (TPA), in conjunction with Deltares, developed a GPP in Dar es Salaam, in line with the 'Green Growth' concept of the World Bank [4]. The Tanzania Ports Authority is also currently undertaking the Dar es Salaam Maritime Gateway Project with the World Bank [5], which includes "a climate-smart design for the port's expansion and improvement programme."
- In South Africa, the Port of Ngqura maintains its green status (a mark given by the state-owned Transnet National Ports Authority) through a number of measures including unique biodiversity conservation programmes [6]. Other ports are at different levels in the greening initiative. In addition, the Port Management Association East and Southern Africa (PMAESA) and the Maritime Technology Cooperation Centre-Africa are in consultation to sign an MOU to carry out a baseline energy audit survey and establish to what extent ports in East and Southern Africa have embraced the green port policy in the region.

Such efforts should be encouraged and strengthened across the WIO region, as ports will play a large role in achieving sustainable environmental protection of marine and coastal resources.

# CORDIO E.A.

## Supporting coral reefs resilience in the Western Indian Ocean

David Obura

Coral reefs in the Western Indian Ocean (WIO) are showing intriguing patterns of change in response to climate change. Understanding these changes is critical to ensuring the ongoing survival of corals, whose healthy ecosystems help support the millions of people living along the coastlines.

The WIO was one of the regions hardest hit by the first global coral bleaching event in 1997-98. At that time, reports put the mortality of corals at 50-90% at individual sites and 30% average reduction in coral cover across the region. Since then, the WIO has experienced multiple smaller bleaching events, with more widespread events in 2010 and 2016. Nevertheless, though 2016 was hotter than 1998, there were fewer coral deaths after bleaching. What is happening?

We know that all species adapt or change due to environmental pressures – and the stronger the pressure, the stronger the direction of adaptation. Because the more temperature-sensitive corals had died off in the repeated events since 1998, the stronger, surviving corals have been left to do the majority of reproducing. They and the offspring are thus continually exposed to warmer conditions to which they acclimate and adapt over time. Therefore, we are now seeing less bleaching and mortality in response to progressively warmer conditions.

But we should not be complacent, as to date the world has gotten just 1°C warmer—only part of the predicted eventual change, which may rise to as much as 6°C in the next 100 years.

Most scientists are confident that the innate ability of coral individuals and species to adapt to warming conditions will not be enough to withstand even half of this range.

So what are the things that must be done to give coral reefs in the WIO the best chance of surviving?

- Of course, reduce global greenhouse gas emissions and increase the uptake of carbon through all reasonable means (such as via forestry and changing land/sea use practices). It is also important that WIO countries don't add to the global CO<sub>2</sub> burden through high-carbon practices in energy, agriculture, fishery, transport, tourism and all other sectors.
- Maximize natural opportunities for corals to adapt to warming conditions and enhance their abilities to acclimate, reproduce, adapt and survive. There are multiple ways to approach this, but it is important to reduce all other threats to coral to the lowest levels possible, especially those that decrease the physiological health of corals – for example, chemical and other water-borne pollution, potential disease agents, and invasion by alien species.
- Maximize the area of reefs under strong protection regimes that reduce threats such as those mentioned above. Additionally, increase the number of reefs in use/management areas whose primary activities (e.g. fishing) can proceed without damaging ecosystem health. Current targets aim for 10% of marine areas to be under “good” management, but to give reefs a real chance 100% of reef areas must be under effective management. Key factors supporting the resilience of coral reefs should be incorporated into protection and management regimes,

and these in turn embedded in Marine Spatial Plans, which should eventually cover 100% of Exclusive Economic Zones across the WIO.

- Supporting innovation that sustains coral reefs may be the most effective way to focus protection efforts. There are many stakeholders whose incomes revolve around coral reefs, meaning that they should be engaged in their protection. This could mean supporting local fisheries overseeing locally managed marine areas; private businesses operating protected areas; local governments building area-management authorities; and formal designation of marine protected areas. Innovations are also needed from scientists, research centres and universities, generating new knowledge and capacities to sustain and restore reefs, such as through selective breeding, enhancing the temperature tolerance of corals, and others.

Perhaps a key motivation for sustaining WIO coral reefs is the finding from a recent study stating that there are several reef regions along the mainland coast, Madagascar, and the Comoros that possess the best 'climate-futures' for corals. In other words, among all reef areas globally, these regions may experience the least amount of climate change that is damaging to corals. This is not only important for coral reefs globally (to ensure corals do in fact survive in a hotter world), but also to local stakeholders and economies. If parts of the WIO region have among the best chances for sustaining coral reefs in the future, all the more reason the region should invest now in the actions that will maximize their chances of surviving and providing their much-needed benefits for generations to come.

# UNIVERSITY OF NAIROBI

## **Key Milestone Achieved in the Development of Integrated Coastal Zone Management in the Western Indian Ocean Region**

**Akunga Momanyi**

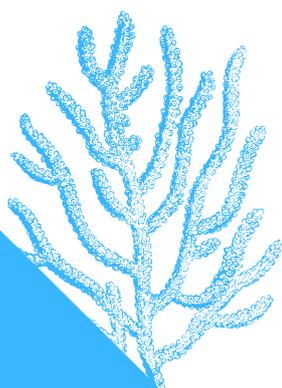
On 27 March 2019, a key milestone was achieved in the evolution of a legal framework for integrated coastal zone management (ICZM) in the Western Indian Ocean (WIO) region. The Contracting Parties to the Nairobi Convention, during the fourth round of negotiations at a meeting held in Dar es Salaam, Tanzania, finally agreed on the text of the Protocol on Integrated Coastal Zone Management in the WIO, paving the way for a conference of plenipotentiaries to formally adopt the ICZM Protocol. Its development was formally mandated through Decision CP6/3.3 of the Sixth Conference of Parties of the Nairobi Convention (COP6) as part of efforts to strengthen the legal framework of the Nairobi Convention for a more effective management of marine and coastal ecosystems across sectors and national boundaries to achieve sustainable development. It is noteworthy that the WIO region is one among very few regional seas programmes that have developed an ICZM Protocol.

The Agreed Text of the ICZM Protocol defines "Integrated coastal zone management" as "a dynamic and participatory process that involves all relevant stakeholders aimed at planning, managing, conserving and protecting coastal and marine ecosystems and resources; taking into account their fragility and sensitivity, interactions, the nature of uses as well as their impacts with a view to ensuring sustainable development" (Article 1).

Although it took years to negotiate, the ICZM Protocol could not have been concluded at a better time, especially because of the increasing interest in the Blue Economy and the anticipated benefits for the countries and communities in the region. The coastal zones constitute important components of the natural and cultural heritage of the WIO region. However, increased pressures have already taken their toll on the otherwise pristine coastal and marine environment, resulting in biodiversity loss, pollution, degradation, unsustainable socio-economic activities, natural disasters, climate change (including sea level rise, affecting especially low lying areas both in the mainland and island states). The impacts of some of these threats, such as climate change and natural disasters, cut across different sectors, both at the national and regional level. Effective mitigation thus requires integrated frameworks.

Moreover, for years the WIO region has had inadequate coordination or integration of various sector activities, programmes and plans affecting the coastal and marine areas, often leading to duplication, confusion, and low-impact interventions.

The breakthrough in the ICZM Protocol negotiations is a culmination of many years' worth of effort, including previous positive developments in regional ICZM, particularly the 1993 Arusha Declaration and subsequent processes.



The drafting processes of the ICZM Protocol in the WIO began in earnest in September 2010 on the strength of a decision of the Contracting Parties mandating the development of the protocol. The negotiations phase started in 2013 in Cape Town South Africa and culminated in March 2019 in Dar es Salaam after four sessions.

The important principles on which ICZM is founded include equity, justice, good governance, right to information, right of access to coastal and marine resources, regional cooperation, polluter-pays and precautionary principles, ecosystem based management and conservation of biodiversity.

The key provisions in the Agreed Text of the ICZM Protocol in the WIO include: definitions, geographical coverage, general obligations of the contracting parties, purpose and objectives, principles of ICZM, frameworks, instruments and tools including coastal setback lines and economic and financial tools. Others include information sharing, participation and access to justice; awareness, education and capacity building; monitoring and evaluation; conservation and rehabilitation of coastal ecosystems; climate change and variability; and regional cooperation in disaster risk management, research and innovation, and bilateral and multilateral cooperation.

The finalization of the ICZM Protocol text is certainly an important milestone that is set to contribute to protecting our ocean and the WIO region as a whole. Upon adoption, it is anticipated that the Protocol could motivate international partnerships in ICZM issues across the WIO region, including support for implementation of the instrument. Ultimately, a more integrated approach will yield better governance and result in the protection of the coastal and marine environment. At the same time, such an approach will promote the livelihoods and well being of communities who are dependent on the oceans and coastal zones across the WIO region.

# BIRDLIFE INTERNATIONAL

## ***Seabirds of the marine and coastal environments of the West Indian Ocean***

**Tammy Davies**



Seabirds spend the majority of their lives at sea. They are the most threatened group of birds, and face threats both when breeding on land and foraging at sea. The main threats to seabirds within the Western Indian Ocean (WIO) are primarily land-based, including invasive alien species and the harvesting of seabirds and their eggs. Threats from fisheries – including unintended death on fishing gear (bycatch) and overfishing of food resources – continue to pose dangers to many seabirds, particularly in the southern Indian Ocean. Such declines in many populations of seabirds are worrying, particularly because seabirds are top predators and they an important role in the ecosystem, including by providing an important connection between land and sea that can help maintain coral reef productivity (Graham et al. 2018) and even increase coral growth rates (Savage 2019).

The Western Indian Ocean ranges from warm, unproductive tropical waters in the north to cooler and more productive temperate and sub-Antarctic waters in the south. Across these different waters there are different types of seabirds, including several that are only found in this region, and 20 globally-threatened seabirds.

Seabirds of the tropical waters include boobies, tropicbirds, frigatebirds, and terns. It is estimated that there are more than 7 million pairs of breeding seabirds in this tropical region, with most seabirds breeding on remote oceanic islands in the Seychelles area, Mozambique Channel, and the Mascarene Archipelago (Le Corre et al. 2012). The Mozambique Channel is a region of exceptionally abundant and diversified seabird communities, with the southern part of the channel and the highly productive South African continental shelf an important over-wintering area for many sub-Antarctic species, including endangered albatrosses and petrels. Many of the birds using these waters breed outside of the Indian Ocean but travel many thousands of kilometres to these waters to feed, including the Cory's Shearwater that travels all the way from islands off Portugal.

Identifying important areas for seabirds can help target conservation efforts, providing a focus for conservation action, planning and advocacy. Important Bird and Biodiversity Areas (IBAs) are areas of global significance for birds that are based on a set of standardised and objective criteria. To qualify as an IBA, a site must hold a regular presence of threatened species or a threshold number of birds (e.g.,  $\geq 1$  per cent of global population). See more details at here:

<http://datazone.birdlife.org/site/ibacriteria>. The network of IBAs is the most extensive site-based, spatially explicit, systematically rigorous biodiversity dataset yet compiled (Donald et al. 2018).

Marine IBAs can be seabird colonies, the adjacent waters around a colony, and important foraging areas that can be located far from land. Identifying important foraging areas for seabirds has been facilitated by advances in remote tracking technology, which has enabled us to learn more about where seabirds go once they leave land and where they are at greatest risk of interacting with fisheries, pollution or offshore development.

Marine IBAs have been identified for most of the key seabird species breeding colonies and important foraging areas, including in all countries and in the high seas of the WIO.



Many of these sites are important for more than one seabird species, and also overlap with other taxa and species of conservation concern (Butchart et al. 2012). For example, marine IBAs in the Western Indian Ocean include:

- The islands and waters around Saint Brandon, 350 km north-north-east of Mauritius (Cargados Carajos shoals; Mauritius) is important for breeding populations of species such as the Brown Noddy, Lesser Noddy, Common White Tern, Roseate Tern, and Sooty Tern.
- The Barren Islands MPA (Madagascar), located 10–30 km offshore of Maintirano, including the Iles Barren archipelago and the island of Nosy Marify. This site is an IBA for the Roseate Tern, but also contains 20 additional species, including the endemic Madagascar heron. Seabirds at the site are threatened by the harvesting of their eggs.
- Algoa Bay Islands: Addo Elephant National Park (South Africa), located to the east of Port Elizabeth, in the large arc of Algoa Bay, is home to 8 species of breeding seabirds, including large populations of both the endangered and endemic African Penguin and Cape Cormorant. It is also an important winter roost for the Antarctic Tern and is estimated to hold 10-20% of the of the Afrotropical non-breeding population.

Marine IBAs can and have been used to influence international conservation policies, national site protection and marine-spatial planning, and action at individual sites. Much of this work can be attributed to the strong partnership of organisations around the world who work tirelessly in promoting and conserving IBAs at the national and international level. In the Western Indian Ocean, the BirdLife partners are: Asity Madagascar, BirdLife South Africa, Mauritius Wildlife Foundation, Nature Kenya, and Nature Seychelles.

A woman in traditional Mozambican attire, including a headwrap and a patterned wrap, is shown from the waist up. She is holding a large prawn in her right hand. The background is a blurred outdoor setting with trees and a body of water.

**NORTHERN  
MOZAMBIQUE  
CHANNEL - ONE OF  
THE MOST  
IMPORTANT  
MARINE  
BIODIVERSITY  
CENTRES ON THE  
PLANET.**

## **Integrated Management of the Marine and Coastal Resources of the Northern Mozambique Channel**

Harifidy Ralison, World Wide Fund for Nature; David Obura, Coastal Oceans Research and Development in the Indian Ocean; Hugo Rainey, Wildlife Conservation Society; and Theuri Mwangi, Nairobi Convention Secretariat

The Northern Mozambique Channel (NMC) comprises the marine and coastal area located between Northern Madagascar and Mozambique, Southern Tanzania, a small part of the Seychelles and the Comoros Archipelago. It is one of the most important marine biodiversity centres on the planet. With more than 400 species of hard corals, it is second only to the Coral Triangle in marine biodiversity and has especially high levels of endemism, or species that can be found nowhere else on the planet. The region is also an important breeding and foraging area for flagship marine and migratory species, including tuna. It provides critical habitats for many marine species, but all of these

resources are vulnerable to over-exploitation and future climate change. The region is important for fisheries, with extensive artisanal and small-scale fisheries supporting people along its coastlines for income and food security. Many believe that this region also holds key oil and gas reserves.

However, the region's ecosystems are in decline from the combined impacts of local use and global threats, including growing pressures from coastal infrastructure development, extractive industries (in particular, recently discovered natural gas and oil), population growth, and climate change.

In order to safeguard the ecosystems and the services they provide, joint actions between key stakeholders (Governments, local communities, private sectors and civil society organizations) in the NMC area are necessary. In response to such need, actors working on marine resource management – notably the Nairobi Convention Secretariat, Coastal Oceans Research and Development in Indian Ocean (CORDIO) East Africa, and the World Wide Fund for Nature (WWF) – crafted an idea that can engender collaboration between the countries and the main partners involved in resource use of the NMC area.

A long process of consultations took place among the NMC countries (Comoros, Madagascar, Mozambique, and Tanzania) between 2013 and 2015. It was decided that an initiative, called the Northern Mozambique Channel initiative (or NMCi) would be set up to operationalize the key objectives identified during the consultations. The objectives included (i) laying the foundation for an integrated management of marine resources as well as for Marine Spatial Planning; (ii) planning and adoption of environmental and social best practices in the oil & gas sector to reduce impacts on biodiversity and ecosystem services; and (iii) improving and sharing successful models and practices for resource management by local communities.

To reach the three objectives, several Nairobi Convention member states stepped up and came together to find ways to support the conservation and management of the Northern Mozambique Channel area. Their first action was to issue important decisions during their most important marine conservation gathering in the region (the Nairobi Convention Conference of Parties) through Decision CP8/6(b) and Decision CP9/7(b) on the Northern Mozambique Channel integrated ocean management approach.

France, a contracting party to the Nairobi Convention, recently agreed to provide some financial resources to support the implementation of an ambitious project on the integrated management of the marine and coastal resources of the Northern Mozambique Channel. The Nairobi Convention Secretariat, CORDIO, WWF, the Wildlife Conservation Society (WCS), Blue Ventures (BV), the Fauna and Flora International (FFI), The Nature Conservancy (TNC), and Conservation International (CI) will implement the collaborative project. Key direct beneficiaries will be the governments and local communities of the NMC countries. Potential donors will also join the endeavor, including the Margaret A. Cargill Philanthropies (MACP), the Swedish International Development Agency (Sida) and the Norwegian Agency for Development Cooperation (Norad). Through this project, the precious resources provided by the NMC will be better protected and more sustainably managed.

## Indian Ocean Commission

***Education and awareness raising to improve living conditions of the populations and preserving the various natural resources in the islands of the Western Indian Ocean, by Gina Bonne***





The islands of the Western Indian Ocean (WIO) are home to a wide variety of plant and animal species. For the populations of these countries, these natural resources are sources and pillars of economic growth. In the face of globalisation and changes in the world economy, the national economic sectors of the islands have shifted from agriculture to mainly fisheries and tourism. Industrial fishing became an important activity in the region in the 1980s and has been growing ever since. Artisanal fishing continues to play an important role in the lives of many coastal populations, while agriculture has declined in Mauritius and Seychelles. The WIO is also an important maritime route for merchant ships, with more than 50% of oil and 40% of gas transiting this region. Cruise ships and yachting for tourism are continuously growing in popularity. Because of this increase in maritime traffic, there are growing concerns on the impact of noise pollution on the marine lives.

Challenges facing these islands are numerous. The ocean is regarded as the new frontier for economic growth.

Climate change-related threats affecting shorelines, the coastal habitats, and marine resources; a growing population with relatively high poverty rate; emerging environmental threats such as marine litter, invasive species, and maritime insecurity all put the achievement of the blue economy at risk. Maritime insecurity, shipping and climate change thus may be the major risks and challenges for these islands to tackle if they are to reconcile environment and economy.

Much effort and many resources have been put in trying to address some of these challenges to ensure sustainable fishing, protect marine ecosystems, and improve maritime safety and security, but much remains to be done. Experience from the WIO islands have shown that much can be achieved through partnership, education and awareness raising. Collective work through awareness raising and education to build a solid base to preserve the environment and the natural resources has been at the centre of the activities of the Indian Ocean Commission (IOC).

Building on past experiences, Education for Environment and Sustainability has gained momentum. Reinforcing the partnerships between government, Ministries of Education, and NGOs, the Ecoschool programme has raised awareness in the school communities in Comoros, Madagascar, Mauritius, Seychelles and Zanzibar. The programme has reached out to more than 90,000 children in over 180 schools across the six islands. This programme is expected to build generations of environmentally-educated citizens to sustain development in the long-term.

Working with local communities and non-state actors to build ownership of the coastal population to protect and manage the mangrove forest and to improve their livelihood are amongst the stories to be told from Madagascar. In the Beloni Tsiribihina, Eastern region of Madagascar, through awareness raising and hands-on training, the community has managed to reduce pressure on the mangrove forest. The community had been dependent on forest for their livelihood, with their main revenue derived from trading mangrove wood for building materials and the production of charcoal for cooking. Campaigns and training of the community have raised the awareness of the importance of the mangrove forest and the need for its conservation.

These men and women have now reduced their economic dependence on the mangrove forest by turning to alternative livelihood activities, such as fishing and agriculture.

The environment, coral reefs and its associated marine ecosystems in Mauritius and Seychelles contribute to the tourism and fisheries sectors. Awareness raising and engagement of non-state actors, the local community and private sector have been key to the success of coral farming and coral restoration. The story from the Seychelles narrates the importance of engaging the tourism industry to raise awareness to restore degraded reefs and protect the associated marine ecosystems. The Coral Restoration Project, implemented by Nature Seychelles, reported that more than 42,000 fragments of 38 species of coral were planted. Even if not all the species were able to grow, the NGO and its partners have been able to regenerate many corals and replanted about 1000. Meanwhile, in Mauritius turning local fishermen and women into coral gardeners is an approach that can be nurtured to reduce pressure on the coastal fishing and ensure that local communities continue to generate household revenue.

However, the questions that remain send a call to leaders to consider emerging challenges. How strong are the political commitments to reconcile environment and economy? How strong are the voices of the island States? Can we hear the voices of our children?

# NATURE CONSERVANCY

## Ocean Wealth in Western Indian Ocean

Joanna Smith, Robert Brumbaugh, and Jennifer O'Leary

A healthy ocean is important, especially along the coast where millions of people live worldwide. The ocean contains coral reefs and mangroves, and these key ecosystems benefit hundreds of millions of people, for example in tourism, fisheries, recreation, and local culture.

Coral reefs cover just 2 percent of the earth's surface yet are home to 25 percent of all marine species on the planet. In fact, the Western Indian Ocean has the second largest coral hotspot in the world. In addition to tourism and fisheries, coral species yield life-saving medicines from the sponges and other organisms that live within them. Sustainable coral reef fisheries also bring food security to local communities, while the reefs themselves break waves and protect people and property from flooding and storms. All of this value is provided for free. Unfortunately, corals are easily lost during coastal developments, destructive fishing, and bleaching events from extreme water temperatures.

Mangroves are another coastal ecosystem and these species thrive in the shallow, brackish waters where most other trees aren't able to grow. Their tangle of large roots provides shelter and food for many species, including fish and bivalves. An amazing fact is that mangroves currently occupy 13.8 million hectares around the world – an area that would cover half of the continent of New Zealand – and they used to occupy much, much more. Every part of the mangrove plant – branches, leaves and roots - stores carbon absorbed from the atmosphere, which means they play a significant role in reducing effects from greenhouse gases. Mangroves purify the water and also prevent coastal erosion by absorbing wave energy, similar to what coral reefs do. Around the world, mangroves have been removed to make way for coastal development, including poorly planned aquaculture, but these ecosystems can be restored pretty quickly if we protect the habitats and hydrology where they grow.

The Nature Conservancy (TNC) has an audacious idea to help island and coastal nations protect coral reefs, mangroves and other ocean ecosystems for now and future generations. A recently announced 2019 TED Audacious project is TNC's "Blue Bonds for Ocean Conservation". The idea is to convert some of a country's national debt in to long-term conservation of their ocean. This blue financing means that countries reinvest in their natural resources by refinancing some of their national debt in a way that secures funding for conservation and to benefit their economies. Leaders of these nations want to protect their ocean –but too often they are struggling to manage their debt, thus unable to invest in the conservation efforts that would make their environments and economies more resilient.

Science is key to making this audacious idea work, as it can help us determine the value of coral reef and mangrove ecosystems to nature and people. Using global and local data, maps, local knowledge and images, models for "ecosystem services" are being developed, tested and mapped by TNC staff and partners in several geographies to describe the benefits for coral reef tourism, mangrove soil carbon and other services. The state of Florida in the USA, for example, boasts a barrier reef system stretching nearly 580 km – equivalent to one third the length of Madagascar. The Conservancy's Mapping Ocean Wealth team has found that more than 3 million visitors spend at least \$1.1 billion every year on reef-related tourism activities here, supporting more than 70,000 jobs.

Expertise is also needed to identify possible areas for protecting corals, mangroves and other biodiversity, areas for sustainable economic activities, and improving ocean management. With more than 10 years in marine spatial planning and 25 years in marine protected areas, TNC is assisting government and communities around the world - including in the Western Indian Ocean – with science, planning, and guidance on how to increase Ocean Wealth.

In Seychelles, for example, the Government launched a Marine Spatial Plan (MSP) Initiative in 2014 to protect 30% of its oceans by using an award-winning debt conversion project led by government and designed by The Nature Conservancy. The marine planning is being facilitated by TNC and aims to incorporate Ocean Wealth values for biodiversity and sustainable uses zones. TNC is also supporting governments in Kenya, Tanzania and Mauritius as they begin marine spatial plans aimed at ocean conservation and sustainable development.

Celebrating World Oceans Day means celebrating all that the oceans provide for nature and people. In the Western Indian Ocean, more than 60 million people live along the coast including fishermen and women, tour operators, curio vendors, and hoteliers. Others benefit from living next to the sea by enjoying fresh seafood, beautiful beaches, swimming and snorkeling. Every step we take to care for the ocean is a step toward a future where people and nature thrive together.



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#### Seabirds of the marine and coastal environments of the West Indian Ocean

This work is supported by the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.

All IBA information from BirdLife International 2019 and available at: <http://datazone.birdlife.org/site/search>

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Photos: @Unsplash; Ethan Daniels; - Nature Conservancy; Echo Shoals Mada EPP Tsilazaina;