

WESTERN INDIAN OCEAN

# MARINE PROTECTED AREAS OUTLOOK

Towards achievement of the Sustainable Development Goals



## COUNTRY CHAPTER: MOZAMBIQUE



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Nairobi Convention Secretariat  
United Nations Environment Programme  
United Nations Avenue, Gigiri  
PO Box 47074  
Nairobi, Kenya  
Tel: +254 (0)20 7621250/2025/1270  
Fax: +254 (0)20 7623203  
Email: [nairobi.convention@unep.org](mailto:nairobi.convention@unep.org)

**Coordinators for the preparation of the MPA Outlook:** Jared Bosire, Timothy Andrew, Dixon Waruinge and Julius Francis

**Editors:** Lawrence Sisitka and Matthew D. Richmond

**Layout:** Desiré Pelsler | Earth & Oceans Developments

**Cover:** Rocky shores, KwaZulu-Natal Province, South Africa © Judy Mann. Insets (left to right): Great White Pelican watches a purse-seine trawler, Dassen Island, South Africa © Peter Chadwick; Coral garden, Mnazi Bay, Tanzania © Jennifer O’Leary; Landing site, Kipini, Kenya © Remy Odenyo.

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## FOREWORD

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It is indeed an honour to launch the *Western Indian Ocean (WIO) Marine Protected Areas (MPA) Outlook* in my capacity as the Minister for Agriculture, Climate Change & Environment in the government of Seychelles. I commend the Contracting Parties to the Convention for this excellent example of regional collaboration in documenting the progress made towards the attainment of the SDG 14.5 Target of 10 percent protected area of each country's EEZ.

The WIO region has a coastline stretching for more than 15 000km, a continental shelf area of some 450 000km<sup>2</sup> from Somalia in the north to South Africa in the south and covers ten countries (Comoros, France, Kenya, Madagascar, Republic of Mauritius, Mozambique, Seychelles, Somalia, South Africa and the United Republic of Tanzania) five of which are island States. The combined population for the WIO region is 244 million, and the ten countries in the region are Contracting Parties to the Nairobi Convention for the protection, management and development of the coastal and marine environment of the WIO region.

The combined economic value of the WIO ecosystems goods and services is estimated at over USD 20 billion Gross Marine Product per annum and a total asset base of over USD 333.8 billion. With over 30 percent of the WIO population (about 60 million people) living within 100km of the coastline, the coastal and marine ecosystems provide essential sources of livelihoods and income to coastal communities and significantly contribute to national economies.

However, the WIO is threatened by ecosystem degradation from rapid urbanization, increased population growth, coastal development, land reclamation and conversion. Impacts of climate change and variability have led to coral bleaching, sea-level rise, flooding and other effects. In response to the emerging natural and anthropogenic challenges, Contracting Parties to the Nairobi Convention are adopting an integrated approach in the management of ocean resources to maintain a balance between conservation and development. The approach aligns with the 2030 Global Agenda for Sustainable Development with Sustainable Development Goal (SDG) 14 focusing on the need to mobilize global effort to conserve and sustainably use the oceans, seas and marine resources for sustainable development.

The *MPA Outlook* outlines the significant strides made in the region in promoting the protection of critical coastal

and marine resources. The *MPA Outlook* prepared by the Contracting Parties to the Convention documents the progress made in the WIO region towards achieving MPA targets based on the Convention of Biological Diversity (CBD)'s Aichi Target 11/SDG 14.5 and provides a baseline for the post 2020 Global Biodiversity Framework.

The region has established 143 MPAs (or equivalent), covering a total of 555 436.68km<sup>2</sup>, representing 7 percent of the total combined exclusive economic zone (EEZ) of the nine countries covered in the *MPA Outlook*. Most of the MPAs predominantly protect coastal habitats. Notably, a few MPAs have been proclaimed over very large areas of deep-sea habitats contributing to a larger proportion of the 7 percent.

By March 2020, Seychelles had designated 30 percent of its EEZ as protected marine areas, tripling the UN CBD Target 11 for 10 percent marine protection by 2020, and the UN SDG-14.5 for 10 percent coastal and marine protection. Seychelles with an EEZ of 1 374 000km<sup>2</sup> and a land mass area of 455km<sup>2</sup> achieved this milestone through the debt for nature swap spearheaded by The Nature Conservancy (TNC). Promising initiatives on trans-boundary MPAs are being developed between Kenya and Tanzania and between Mozambique and South Africa.

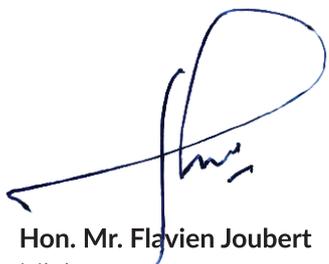
The establishment of MPAs has a long history in the region. South Africa declared the first MPA in 1964, the Tsitsikamma MPA, which was the first MPA in the region and since then South Africa has steadily increased the number and coverage of its marine conservation estate. By 2019, South Africa had 42 MPAs raising the total MPAs cover from <0.5 percent to 5.4 percent of the EEZ.

The *MPA Outlook* comes at a time when the region has embarked on large-scale socio-economic developments that are equally exerting pressure on MPAs. The *MPA Outlook* thus provides some answers and innovative approaches to minimize the scale of negative impacts on MPAs.

The *MPA Outlook* is the best form of experience sharing, and documenting best practices in MPA management across the WIO.

On behalf of the Contracting Parties, I wish to acknowledge and thank the Nairobi Convention Secretariat for the overall coordination of the process; the Western Indian Ocean Marine Sciences Association (WIOMSA) for technical and financial support through the Marine Science for Management (MASMA) Programme and the Global Environment Facility for funding the preparation and production of the *MPA Outlook* under the GEF funded

Project on the Implementation of the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources and activities (WIO-SAP) executed by the Secretariat.

A handwritten signature in blue ink, consisting of a large, stylized loop at the top and a series of smaller, connected strokes below it.

**Hon. Mr. Flavien Joubert**

Minister

Ministry of Agriculture, Climate Change & Environment

Republic of Seychelles

## EXECUTIVE SUMMARY

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The Western Indian Ocean (WIO) is renowned for the richness of its marine biodiversity, especially that associated with the region's widespread coral reef systems. The mangroves, seagrasses, rocky and sandy shorelines with associated dune systems and coastal forests, and the deep-sea features such as seamounts, ridges and abyssal plains also contribute substantially to the biodiversity of the region. The innumerable islets and atolls scattered across the WIO also support extraordinary biodiversity, including vast numbers of often rare, endemic and endangered marine species.

This rich marine biodiversity supports burgeoning coastal populations both directly, through the provision of a variety of marine resources and vital ecosystem services such as coastal protection, and indirectly, through the opportunities it provides for economic growth through sectors such as fisheries, tourism, infrastructure development and others. However, the marine resources are coming under increasing pressure in the coastal areas through the escalating needs of the local populations, exacerbated by the use of illegal fishing techniques, such as "blast" or dynamite fishing and the use of poisons, and in deeper waters from the legal and illegal harvesting of vast quantities of resources by international commercial fishing fleets. The tourism sector that brings benefits to coastal communities is in many places damaging the very resources the tourists wish to enjoy. In addition, interest in mineral resources including oil and gas reserves, found under the seabed, is exacerbating pressure on coastal ecosystems. Developing coastal nations in the WIO region, particularly those faced with financial constraints, are keen to exploit mineral resources for the benefit of their populations, leading to an exponential increase in the issuing of prospecting and extraction rights.

To these pressures are added increased levels of land and sea-based pollution, sedimentation from silt-laden rivers, and extensive coastal development; together with the increasingly evident impacts of climate change including sea-level rise, ocean warming and acidification, and increased frequency and intensity of storm events. If the twin threat from coastal development and climate-related pressure, is left unmitigated, with no protection afforded to the marine and coastal systems, there is every likelihood that the marine biodiversity of the WIO region would be irreversibly compromised. The consequential impacts on the livelihoods of coastal communities, and the well-being of the populations across the region, are likely to have long-term and negative ramifications on the national economies of the coastal states.

Aware of the global threat from both human-caused and climate change-related stressors, the global community in 2015 committed to achieving the United Nations Sustainable Development Goals (SDG). With particular relevance for the marine environment is SDG 14, "Life below Water".

The SDG 14 has several targets including Targets 14.2 on sustainable management and protection of marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans by 2020; and 14.5 that aimed at all countries conserving at least 10 percent of coastal and marine areas, essentially their exclusive economic zones (EEZs), consistent with national and international law and based on the best available scientific information by 2020. Target 14.5 was aligned to the Convention on Biological Diversity (CBD) Strategic Plan for Biodiversity 2011–2020 Aichi Target 11, which encouraged all signatory nations to ensure that:

"By 2020, at least 17 percent of terrestrial and inland waters, and 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes." (Secretariat of the Convention on Biological Diversity, 2010).

This *MPA Outlook* reviews the commitment by governments to achieve 10 percent protection of important marine and coastal areas through effectively and equitably managed MPAs and other effective area-based management measures (Aichi Target 11 and SDG 14). The review takes into account the formulation of the CBD's post 2020 biodiversity framework, that proposes, among other goals a zero net biodiversity loss by 2030, as well as providing a baseline for the post 2020 framework.

The declaration of marine protected areas (MPAs), has long been considered a key tool in the fight to conserve the world's marine biodiversity, and the WIO countries have played their part, by identifying and declaring MPAs; from Tsitsikamma, the first MPA in Africa, proclaimed by the Government of the Republic of South Africa in 1964, to the MPAs proclaimed in 2019 by the Governments of Seychelles and the Republic of South Africa, and those proposed for imminent declaration by the government of Comoros. It is also evidently clear that the mere proclamation of an MPA is no guarantee of effective protection. An assessment on MPA management effectiveness showed

that many MPAs in the region lack human resources, skills, equipment, and institutional commitment to fulfil their functions adequately. The assessment also revealed serious declines in conservation funding. The COVID-19 pandemic led many countries to adopt lockdown measures, affecting tourism revenues on which many MPAs in the WIO depend to finance MPA operations. Marine conservation in the WIO region needs a post-COVID recovery plan and marine conservation efforts must now be funded not only at the level that they were at before the pandemic but at an even higher amount that reflects the severity of the unprecedented threats to biodiversity and associated economic sectors.

Madagascar has pioneered an interesting approach to protecting marine areas through a rapid increase in the number of Locally Managed Marine Areas (LMMAs), where coastal communities work in collaboration with government and other stakeholders to protect their coastal resources. A similar approach has been recorded under a variety of names in different countries, across the region. Over three hundred LMMAs have been established across the region in the last ten years. While most of these do not, as yet, provide the levels of protection afforded by the more established formal and effectively managed MPAs, they have great potential to increase the coastal areas under conservation management in the region quite substantially.



Prime targets (prawns and fish) from inshore beach seining off Malindi, Kenya. © Peter Chadwick

At a transnational scale, the moves to initiate trans-boundary MPAs, such as between Kenya and mainland Tanzania, and Mozambique and South Africa, must be lauded and supported. Coastal states are also taking a large-scale approach to marine conservation, often within “Blue Economy” initiatives such as the Blue Economy Roadmap developed by the Government of Seychelles and Operation Phakisa in South Africa. In both cases, these initiatives have involved thorough and complex marine spatial planning processes, identifying areas suitable for different uses and activities, including for conservation.

In Seychelles, two new MPAs covering an area of 208 365km<sup>2</sup> were declared as a result of this process. In South Africa, 20, mostly offshore MPAs covering an area of 54 214km<sup>2</sup>, have been proclaimed under Operation Phakisa following an intense consultation process with all stakeholders. The Seychelles and South African experiences provide excellent models for other WIO countries for the planning, identification and declaration of offshore MPAs. These two experiences were underpinned by strong policy support, evidence-based decision making and requisite financing. These are key lessons in any successful MPA establishment and eventual operationalization and management programmes.

The Republic of Mauritius, Kenya, Tanzania, and other countries have embarked on Blue Economy initiatives and adopted the application of area-based planning tools such as marine spatial planning processes, underpinned by scientific information and understanding of the marine environment. The WIO region is fortunate to be home to some highly productive and effective marine science institutions and scientists, all linked to the Western Indian Ocean Marine Science Association (WIOMSA), which has partnered with the Nairobi Convention Secretariat in the production of this *MPA Outlook*. It is the science emanating from these institutions which provides the evidence required firstly to identify and assess the threats to marine ecosystems and species, and then secondly to identify the areas and habitats most in need of protection and the forms of protection most appropriate to them. However, while the scientific understanding of the coastal and inshore environments is solid, this is not necessarily the case with the offshore deep-sea environments, which have only recently been the focus of concerted scientific attention and research. The value of such research is shown in the proclamation of the South African offshore MPAs.

To achieve its prime purpose of assessing progress towards meeting the SDG and Aichi targets, this *MPA Outlook* set out to document and celebrate the

achievements up to 2020 in the establishment of MPAs, or equivalent levels of protection, across the WIO region. It also documents the exciting move towards more community-based coastal conservation initiatives as represented by the LMMAs and other sites managed collaboratively with coastal communities. In addition to this documentation, there are elements of assessment and analysis to guide the expansion and strengthening of marine conservation in the region, particularly towards the achievement of the post-2020 Global Biodiversity Framework (GBF).

More specifically, the body of the *MPA Outlook* is structured as follows:

#### **Part I**

Outlines the purposes for the development of the publication, the key methodologies employed in gathering and documenting the information, and some of the challenges faced in compiling the *MPA Outlook*. The specific purpose of the *MPA Outlook* was to provide a baseline assessment of existing coastal and marine conservation efforts in the region. This involved not only a quantitative assessment of the areas and habitats under protection, but also a qualitative assessment. In addition to the primary technical purposes of this *MPA Outlook*, it was intended to document and celebrate the achievements of governments in furthering the conservation of their marine and coastal environments. It also provides the opportunity to encourage and motivate governments, supported by the scientific community, in increasing efforts towards long-term conservation of vital marine resources, species and ecosystems, including those in the deep-sea.

#### **Part II**

Describes the international and regional marine conservation contexts in which the *MPA Outlook* is located. This *MPA Outlook* was not developed in isolation; rather it is embedded in, and is intended to contribute significantly to, the increasing momentum of initiatives aimed at securing the biodiversity and productivity of coastal and marine areas. These initiatives operate from the global to the local levels, with increasing emphasis on the synergies between them as exemplified by the “think globally act locally” environmental mantra.

#### **Part III**

Provides detailed descriptions of the MPAs (and equivalents) in each WIO country, together with information on proposed MPAs and areas such as LMMAs under less formal forms of protection. The

data revealed that there are 143 MPAs (or equivalents) in the WIO region, covering a total of 555 436.68km<sup>2</sup>, representing 7 percent of the total combined EEZ of the nine countries included in this analysis. The numerical majority of MPAs in the region protect predominantly coastal habitats. However, the few MPAs proclaimed over large areas of deep-sea habitats (by France, Seychelles and South Africa) contribute by far the largest proportion of the total area under protection, and make the greatest quantitative contribution (6.2 percent of the 7 percent) to the percentage of total EEZ protected. To strengthen the emerging LMMAs as an approach to community level protection, an enabling policy environment and capacity building of both communities and their supporting agencies will be key for the effective establishment and management of these community managed areas.

#### **Part IV**

Provides an assessment of the management effectiveness of MPAs across the region, and makes initial recommendations for improving levels of management effectiveness. The key finding was that legislative and institutional frameworks that support the establishment and management of MPAs exist in every country, suggesting that there is the political will to meet the global and regional marine conservation objectives and targets. However, widespread failure to implement legislation, and in many countries, the ineffective functioning of mandated institutions was observed. Among the challenges identified, those that are cross-cutting throughout the region include shortfalls in financial and personnel capacity, insufficient clarity on MPA boundaries, leading to compliance challenges, and management decision support systems that are only weakly guided by science.

#### **Part V**

Draws on the information provided to analyse the current situation regarding marine conservation in the WIO region, in particular in relation to the achievement of the SDG and Aichi targets. Part V also makes initial recommendations on where future marine conservation efforts, particularly the siting of MPAs, might be concentrated as countries work towards the Targets in the post-2020 GBF.

The key findings of this *MPA Outlook* indicate that there are 143 sites across the WIO region that are considered as MPAs or as having equivalent legal status and levels of protection. The vast majority of these are coastal and/or inshore, however the largest, covering by far the greatest extents of the ocean are the few MPAs with considerable offshore deep-sea elements. These include the MPAs

declared in Seychelles and South Africa's 20 MPAs, of which 14 are offshore sites, proclaimed in 2019. Since it is not practically feasible for the SDG or GBF target to be achieved through the declaration of only coastal and inshore MPAs, as this would require the protection of entire national coastlines extending 37km offshore, or equivalent (i.e. half the coastline extending 74km offshore), identification, declaration and management of offshore MPAs by regional countries remains the most viable option of achieving this target.

A further finding is that the majority of existing MPAs across the region are not managed as effectively as they could and should be, due primarily to lack of funding for essential staff, equipment and capacity development, and weak institutional support and commitment. The question is raised whether the immediate priority should be for governments to firstly ensure effective management of their existing MPA estate, before embarking on expansion of this estate. A balance between establishment of new MPAs and effective management of existing sites is a critical decision, which each country will need to continuously consider.

A very positive finding is that there is every indication of the willingness and commitment of the Nairobi Convention contracting parties to strengthen marine conservation in areas within their jurisdiction. This is evidenced by improvements in legislation, including the development of new MPA-specific legislation, such

as in Comoros, and the declaration of new MPAs in Mozambique, Seychelles, Comoros and South Africa.

There is also a good reason to be optimistic about the potential for coastal communities, with the support of governments and other stakeholders in LMMAs (or equivalents) to take on the mantle of coastal and inshore conservation, while the governments themselves focus on the offshore areas. Ongoing efforts on the development of the post-2020 GBF provide a basis for the WIO region to work towards a no-net loss of biodiversity by 2030. This may include exploring the immense opportunities for better recognizing and supporting conservation by local communities and private actors and adopting new models for Ocean Stewardship that reward sustainable actions by stakeholders.

The expansion of the MPA estate by 2030 and by 2050 is also among the goals of the post-2020 Framework. From a regional perspective, configuring an effective post-2020 regional network of effectively managed MPAs would require concerted efforts towards implementing the proposed theory of change that assumes transformative actions are taken to (a) put in place tools and solutions for implementation and mainstreaming, (b) reduce the threats to biodiversity and (c) ensure that biodiversity is used sustainably to meet people's needs and that these actions are supported by (i) enabling conditions, and (ii) adequate means of implementation, including financial resources, capacity and technology.

**Lawrence Sisitka**

Co-editor

MARINE & COASTAL AREAS  
UNDER PROTECTION

# MOZAMBIQUE

Marcos A. M. Pereira



## COUNTRY OVERVIEW

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Mozambique is located along the southeastern coast of Africa between 12°30'S and 26°51'S. The 2470km long coastline and a diverse and productive continental shelf area of about 104 300km<sup>2</sup> are of paramount importance for the country (Pereira *et al.*, 2014). The coastline is characterized by a wide diversity of habitats including sandy and rocky beaches, coastal dunes, coral reefs, estuaries, bays, seagrass beds, mangrove forests and offshore islands, which support pristine ecosystems, high biological diversity and productivity, as well as endangered species (Hoguane and Pereira, 2003; Pereira *et al.*, 2014).

Following Tinley (1971), the coastline can broadly be classified into three regions from north to south, each supporting a variety of marine ecosystems:

- coral coast
- swamp coast
- parabolic dune coast

In addition to these three main coastal regions, the deep-water pelagic and seabed ecosystems contribute to the majority of the country's exclusive economic zone (EEZ), which covers about 571 452km<sup>2</sup> (Doherty *et al.*, 2015). The tides of the coast of Mozambique are semi-diurnal (i.e. the two highs and the two lows are about the same height), with a tidal range of about 2m in the south, 3.1m in the north and about 6.4m in the central part of the country.

Pereira *et al.* (2014), have recently reviewed the marine ecosystems of Mozambique and highlighted its biodiversity: almost 900 species of reef-associated fishes have been recorded; 122 species of sharks and rays; 400 species of molluscs; 27 species of marine mammals, including arguably the last viable population of dugongs in the western Indian Ocean (WIO); five species of marine turtles; 270 species of hard and soft corals; 13 species of seagrasses; and nine species of mangroves.

### Legal framework

Mozambique has a comprehensive legal framework for fisheries and environmental management, and is signatory to a number of international conventions and agreements, which are widely recognized as sufficient and progressive. The most relevant legislation pertaining to marine conservation includes the recently gazetted Law for the Protection, Conservation and Sustainable Use of Biological Diversity (known as the Conservation Law, Law 5/2017 of 11 May) and the Fisheries Law (Law

22/2013 of 1 November), which deals specifically with fisheries conservation areas and closed seasons. These provide the general framework in terms of categories of conservation areas, function and articulation of different agencies as well as biodiversity conservation in general. The actual proclamation of individual conservation areas in the country is achieved through specific decrees sanctioned by the Council of Ministers. Within each specific decree, the overarching reason for the proclamation and general restrictions to be imposed on fisheries and marine resources-related activities are stated, although these are further detailed in the specific management plans.

## MPA OVERVIEW

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The current network of marine protected areas (MPAs) is comprised of seven conservation areas: two national parks, three reserves, one total protection zone, and one environmental protection area. The Inhaca and Portuguese Islands reserves represent the first MPA in Mozambique. Proclaimed in 1965, this constituted the second MPA in the WIO region, after the Tsitsikama National Park in South Africa, which was proclaimed in 1964. In 1971 the first marine national park was proclaimed, and included three of the five islands of the Bazaruto Archipelago. More than 30 years later, the Quirimbas National Park was proclaimed as the "People's Park", in what was claimed to be a bottom-up driven process. This marked the beginning of a new era in marine conservation in Mozambique with a few more MPAs proclaimed in recent years as well as more interest and investment in MPAs, and the introduction of different co-management agreements.

Currently, formally proclaimed conservation areas, which include both marine and terrestrial environments cover a total area of about 23 695km<sup>2</sup>, of which about 11 999km<sup>2</sup> encompass marine ecosystems. This represents approximately 2 percent of the country's EEZ. One further area has been proposed for protection (Bilene Special Reserve – documentation submitted in 2008), but few advance have been made in realizing this. Another mainly terrestrial reserve (Marromeu National Reserve), encompasses a relatively large area of coastal ecosystems (mangroves, dunes, estuaries) along its circa 30km coastline, and has thus been included in the calculation of the percentage coverage of conservation areas within the EEZ.

Conservation areas in general and MPAs in particular, are inadequately resourced in terms of staff, infrastructure and financing (Louro *et al.*, 2017). Also lacking in most MPAs, are management procedures and tools (including

# 6. MOZAMBIQUE

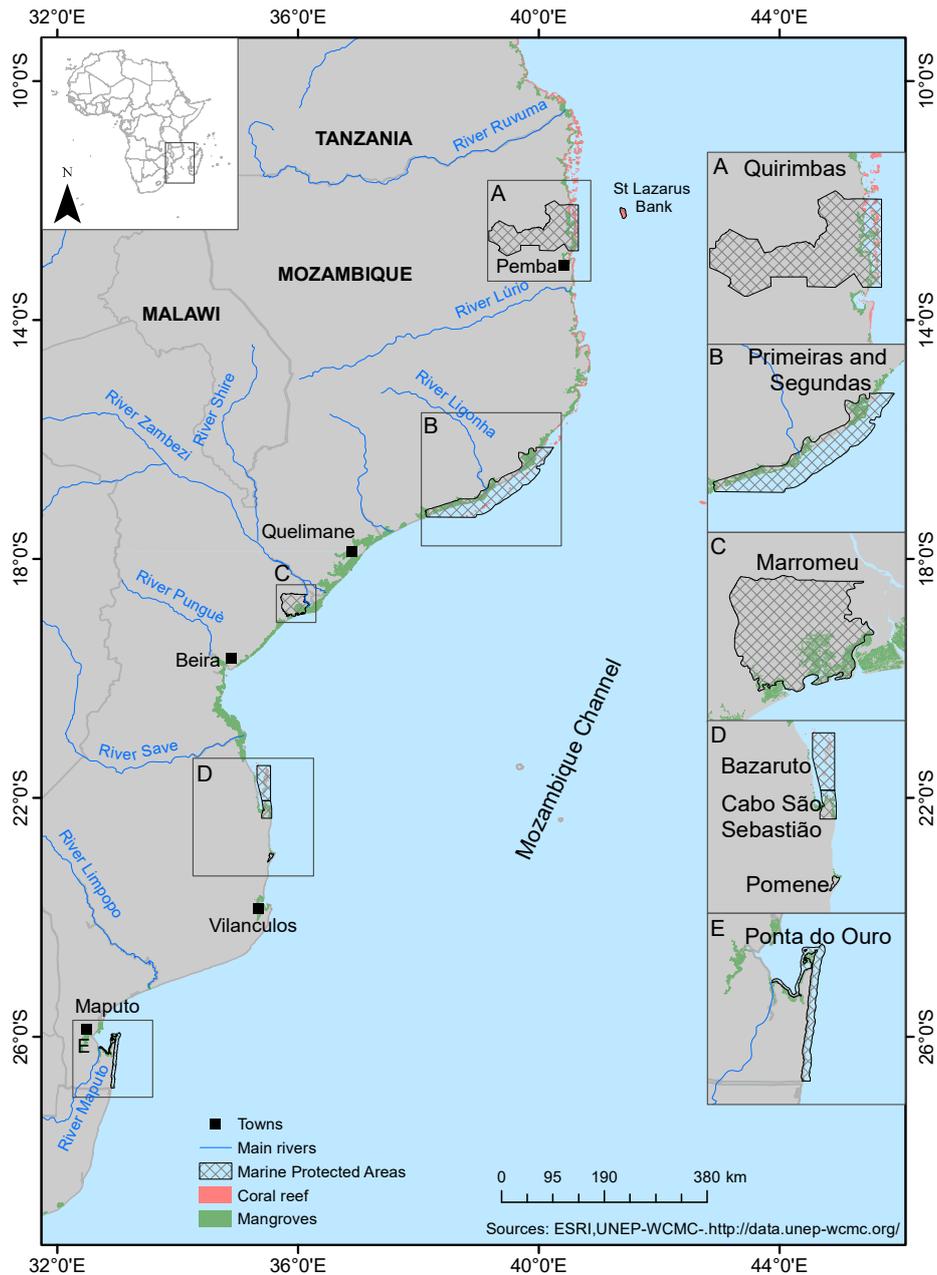


Figure 1: Mozambique Marine Protected Areas.

management, monitoring and research, communications and business plans), as well as adequate science to support them (Pereira and Fernandes, 2014). Several ecosystems and species (e.g. seagrass beds, mangroves, dugongs, manta rays and whale sharks) are still poorly represented and protected under the current MPA network in Mozambique.

The concept and implementation of non-formal protection of marine areas, by local communities and/or authorities is still in its infancy in Mozambique (Rocliffe *et al.*, 2014). Only very recently, a conducive and appropriate legal and institutional framework was put in place (which includes the Biodiversity and Fisheries Laws as

well as the Sea Policy), and as a result of decreasing catches and habitat degradation at local level, about 17 locally managed areas have been established in Cabo Delgado, Nampula and Inhambane Provinces. These are generally very small areas and incorporate either temporary or permanent zones (sometimes both) and in total cover an approximate area of 79km<sup>2</sup> and aim at replenishing stocks and habitat restoration through closed seasons, gear and effort restriction, and protecting endangered marine resources (Marques da Silva *et al.*, 2015).

## MARINE AREAS UNDER PROTECTION

There are six recognized MPAs in Mozambique (Figure 1). These are: Ponta do Ouro Partial Marine Reserve, Pomene National Reserve, Cabo de São Sebastião Total Protection Zone, Bazaruto Archipelago National Park, Primeiras and Segundas Islands Environmental Protection Area and Quirimbas National Park. The Marromeu National Reserve has been included in the description, given its coastal location with mangroves, estuaries and coastal dunes, however, this conservation area is widely regarded in the country as a terrestrial reserve.

### Quirimbas National Park

The Quirimbas National Park is located in the Cabo Delgado Province, about 150km from the border with Tanzania. The park has a diverse array of habitats including sandy beaches, mangroves, seagrass beds, coral and biogenic reefs, rocky shores, deep sea and offshore pelagic, estuaries, seamounts and ridges, coastal forests, and islands and atolls (11 islands). The most iconic species are marine mammals (dolphins, whales and the regionally highly threatened dugong), turtles, the coconut crab and seabirds. Proclaimed in 2002 (Decree 14/2002 of 6 June) and with an IUCN Category V, it has multiple zones which include: total protection, specific use, community development and a buffer zone. The park was designated in July 2018 as a Biosphere Reserve by UNESCO, the first in the country. Covering a total area of 9130km<sup>2</sup>, the park is largely terrestrial (7945km<sup>2</sup>), but also includes coastal and epipelagic components. The marine environment covers 1185km<sup>2</sup>. The park was created to protect and conserve natural resources, ensure the maintenance of ecological processes and preservation of natural values.

#### *Legally mandated institution*

Management is undertaken by the *Ministério da Terra, Ambiente e Desenvolvimento Rural* (MITADER), [or Ministry of Land, Environment and Rural Development] through its *Administração Nacional das Áreas de Conservação* (ANAC) [or National Administration of Conservation Areas]. There is an advisory management committee, *Comité de Desenvolvimento das Quirimbas* (COMDEQ) [or Quirimbas Development Committee], which includes district administrators, representatives of the provincial government, local communities and civil society.

#### *Management partners*

These include government agencies (e.g. Fisheries, Police), NGOs [notably WWF, Oikos – *Cooperação e Des-*

*envolvimento* (a Portuguese NGO), AMA – *Associação do Meio Ambiente* (a Mozambican NGO)], local communities and private sector. The daily management of the park is conducted by ANAC, and given the technical, operational and financial interventions from partners and stakeholders, the park is considered to be under “consultative co-management”, as described in the management plan.

#### *Management plan*

Currently (2012–2021), that includes a tourism development plan.

#### *Management objectives*

- Protect and conserve the park's biodiversity.
- Promote the sustainable development of the resident population.
- Ensure and improve the collaboration of all stakeholders in the management of the park.
- Harmonize the plans and management actions from the park and district governments.
- Ensure the implementations of instruments for the proper management of the park.
- Stimulate tourism growth in the park.
- Improve the economic and financial capacity of the park.
- Share the park's potentialities at local, national and international levels.

#### *Risks and threats*

The most significant risks and threats to the marine environment are overfishing and use of illegal and/or destructive fishing gear, poaching, and climate change (sea level rise).

### Primeiras and Segundas Islands Environmental Protection Area

The Primeiras and Segundas Islands Environmental Protection Area is partially located in Zambezia and Nampula provinces. Several habitats are included within the area: sandy beaches and coastal dunes; mangroves; seagrass beds; coral and biogenic reefs; deep sea and offshore pelagic; estuaries; seamounts and ridges; coastal forests; islands and atolls (12 islands). The most iconic species are marine mammals (dolphins, whales and the regionally highly threatened dugong), turtles and seabirds. It was proclaimed in 2012 (Decree 42/2012 of 12 December) under the umbrella of the Environmental Law (Law 20/97 of 1 October) and currently it is classified as IUCN Category V. It has multiple zones which include: marine nature reserves, sanctuaries, community conservation areas, tourism investment zones and marine multiple use zones. Covering a total area of 10 409.3km<sup>2</sup>,

Primeiras and Segundas includes terrestrial, coastal and epipelagic components. The marine environment covers 8357.3km<sup>2</sup>. The area was proclaimed to preserve and protect marine and coastal species and their habitats, as well as to contribute to the restoration of ecological processes and fishery resources and to maintain biological diversity in the Primeiras and Segundas Islands.

### **Legally mandated institution**

MITADER, through ANAC, however no management staff/structure has been appointed, apart from a warden who was appointed in early 2019.

### **Management partners**

Although lacking management staff, local partners including government agencies (e.g. Fisheries, Police), NGOs (notably CARE International and WWF), local communities and artisanal fishers, have been working towards the establishment of locally managed reserves, mangrove restoration and other conservation issues.

### **Management plan**

Current plan (2017–2027), but its implementation has yet to begin.

### **Management objectives**

- Ensure the protection and preservation of environmental components, as well as the maintenance and improvement of ecosystems of recognized ecological and socio-economic value.
- Maintain a harmonious relationship between nature and culture, protect the landscape and ensure traditional land uses and settlements, as well as the expression of socio-cultural values and sustainable socio-economic activities.
- Maintain the landscape and habitat diversity, as well as associated species and ecosystems, ensuring the continuity of key ecosystems.
- Promote compatibility between economic interests of different stakeholders, by preventing and eliminating land uses and incompatible activities that by their dimension can jeopardize the conservation objectives.
- Provide outdoor and leisure spaces to citizens, while respecting the essential qualities of the conservation area.
- Ensure the sustainability of the reserve, by appropriate funding mechanisms, efficient management operational systems, and development of partnerships with other stakeholders and relevant research institutions.
- Undertake research and monitoring of ecosystems and key ecological processes and ensure their conservation.

- Regulate the different exploitation uses of economic sectors within the reserve, or that might cause environmental impacts on key ecosystems, in order to guarantee economic, environmental and social sustainability.
- Ensure the balanced access of local communities to the resources, especially marine and fishery resources, and their involvement in conservation activities.

### **Risks and threats**

The most significant risks and threats to the marine environment are overfishing, deforestation and unsustainable use of coastal forest and mangrove resources, and poaching of protected species.

## **Marromeu National Reserve**

As stated above, the Marromeu National Reserve located in Sofala Province, is primarily a terrestrial reserve, with a coastal component. The coast is relatively short (*circa* 30km), and includes the following habitats: mangroves, seagrass beds, estuaries and coastal forests. It was initially proclaimed in 1959 (Portaria 13:186 of 20 June), to protect the African buffalo (*Syncerus caffer*) and other wildlife. Its limits were, however, extended in 1961 (Legislative Decree 2070 of 4 March) and the area has been proclaimed a Ramsar site, ratified in 2003 (Resolution 43/2003 of 5 November), in order to include vulnerable wetlands and mangroves as part of the larger Zambezi Delta. It is currently classified as IUCN Category II and has been zoned into a total protection zone, tourism amenities zone and a community development zone. The reserve covers a total area of 1558.8km<sup>2</sup> of which, 170.3km<sup>2</sup> include coastal ecosystems (mangroves, estuaries and coastal dunes).

### **Legally mandated institution**

MITADER, through ANAC.

### **Management partners**

The reserve is solely managed by ANAC, with no partners apart from local government agencies or local communities identified.

### **Management plan**

Current plan (2016–2025).

### **Management objectives**

- Conserve the plant diversity and wetlands.
- Protect and conserve the wildlife populations and their habitats.
- Stimulate the development of sustainable tourism.

- Promote and improve the livelihoods of the resident population.
- Ensure decentralized management and collaboration of all stakeholders for improved governance and management.

#### **Risks and threats**

The most significant risks and threats to the coastal environment are degraded hydrology and inundation cycle, and climate change (droughts, sea level rise, floods).

### **Bazaruto Archipelago National Park**

The Bazaruto Archipelago National Park is located in the Inhambane Province, adjacent to the Cabo de São Sebastião Total Protection Zone, and is primarily coastal and epipelagic. Habitats include sandy beaches, coastal dunes and coastal lakes, mangroves, seagrass beds, coral and biogenic reefs, deep sea and offshore pelagic (including deep-sea canyons), and five islands. The most iconic species is the dugong, arguably the only viable population in the WIO (Findlay *et al.*, 2011), marine turtles, whales and dolphins, billfish, and the sand oyster (*Pinctada* spp.). Initially proclaimed in 1971 (Legislative Decree 46/71 of 25 May), it was extended to its current limits in 2001 (Decree 39/2001 of 25 May). Classified as IUCN Category V, the National Park has multiple zones, which include: total protection zones, local communities use only, multiple use zones and a buffer zone. Covering a total area of 1430km<sup>2</sup>, the park was proclaimed to protect endangered species such as the dugong and marine turtles.

#### **Legally mandated institution**

MITADER, through ANAC.

#### **Management partners**

A management agreement as recently been signed with African Parks, an international non-profit conservation organisation (effective March 2018), which will manage the park for 25 years.

#### **Management plan**

Current plan (2016–2025), with further plans to be determined under the new management agreement.

#### **Management objectives**

- Protect critical and species-rich habitats.
- Ensure the use and benefit sharing of natural resources within the park.
- Develop the park as a vibrant tourism destination.
- Improve the livelihoods of the local communities.

#### **Risks and threats**

Although the Management Plan does identify threats and/or risk, some of the most important issues have been identified as overfishing, illegal/unregulated/unreported fishing, poaching of protected species and climate change (sea level rise, erosion).

### **Cabo de São Sebastião Total Protection Zone**

Located in Inhambane Province, adjacent to the Bazaruto Archipelago National Park, Cabo de São Sebastião Total Protection Zone has terrestrial, coastal and epipelagic components which include the following habitats: sandy beaches and coastal dunes, mangroves, seagrass beds, coral and biogenic reefs, deep sea and offshore pelagic (including deep-sea canyons), coastal forests, and three islands. The most iconic species is the dugong, marine turtles, whales and dolphins and billfish.

The area was proclaimed in 2003 (Decree 18/2003 of 18 April) and is currently classified as IUCN Category VI. The zoning includes two no-take zones, where fishing and other extractive uses are not allowed. It covers a total area of 439.3km<sup>2</sup>, of which 175.7km<sup>2</sup> incorporate marine ecosystems and 263.6km<sup>2</sup> cover the terrestrial component. The area was proclaimed to ensure the integrated management and conservation of natural resources of the São Sebastião Peninsula, as well as expand the network of marine protected areas in the country.

#### **Legally mandated institution**

MITADER, through ANAC.

#### **Management partners**

The area is solely managed by a private entity (Sanctuário Bravio de Vilanculos Limited). Legally however, this entity has a concession for only 300km<sup>2</sup>, valid for 25 years until 2028.

#### **Management plan**

Current plan (2015–2020).

#### **Management objectives**

- Provide efficient and strategic protection of threatened species and the promotion of adequate and sustainable use of marine and terrestrial resources.
- Initiate restoration of marine and terrestrial biodiversity as well as ecological processes.
- Ensure the active involvement of local communities in the management of and benefit from, the natural resources and biodiversity.

- Promote development of low impact ecotourism infrastructures, and activities to finance the management of the area and community development.

### **Risks and threats**

Those identified include: increased fishing pressure from migrant fishers from the mainland; conflicts between local fishers and those from the mainland; night fishing and use of destructive gear; and climate change (erosion, sea level rise).

### **Ponta do Ouro Partial Marine Reserve**

Ponta do Ouro is located at the border with South Africa, in Maputo Province. This coastal and epipelagic MPA, incorporates the marine reserves at Inhaca and Portuguese Islands that were proclaimed in 1965, and encompasses the following habitats: sandy beaches, coastal dunes, mangroves, seagrass beds, rocky reefs and estuaries. Key species include marine mammals (whales, dolphins and dugong), marine turtles, sharks, the Potato grouper (*Epinephelus tukula*) and Brindle grouper (*E. lanceolatus*), as well as the largest aggregation of the Giant trevally (*Caranx ignobilis*) ever reported (Daly *et al.*, in press). Adjacent to the Maputo Special Reserve (terrestrial) and to the iSimangaliso Wetland Park (marine and terrestrial), in South Africa, the reserve was proclaimed in 2009 (Decree 42/2009 of 21 August) and is currently classified as IUCN Category V. With a total area of 678km<sup>2</sup>, the reserve has a zoning plan that includes sanctuary zones, restricted use zone and multiple use zones.

### **Legally mandated institution**

The MITADER, through ANAC.

### **Management partners**

The reserve is solely managed by the government. The Peace Parks Foundation has been providing technical and financial support since the proclamation of the reserve, in addition to a warden who was appointed in early 2019.

### **Management plan**

The current plan (2011–2016) has expired but is still in use. A coastal and marine resources use plan is currently being finalized and should be approved soon. A tourism development plan is also being drafted.

### **Management objectives**

- Ensure the protection, conservation, management and control of marine ecosystems and marine species.
- Promote sustainable ecotourism opportunities.

- Ensure benefits to the region and its people and that the value of conservation of the reserve is understood by all stakeholders.
- Ensure through appropriate institutional and financial management arrangements and legal framework the effective and efficient conservation of the reserve.

### **Risks and threats**

Those identified include a dramatic increase in coastal development in the area, often within the primary dunes, impacting turtle nesting and the integrity of the dune system. A deep-water port development at Ponta Techobanine, has been proposed and constitutes the single most serious threat to the integrity and functioning of the reserve. Other threats include illegal commercial fishing, uncontrolled recreational activities (SCUBA diving, fishing), unsustainable extractive use by the local communities, and climate change (erosion, sea level rise).



Young shellfish harvesters on the tidal flats. © José Paula

## CASE STUDY

### Transboundary MPAs in the Western Indian Ocean: The Ponta do Ouro-Kosi Bay Transfrontier Conservation Area

Marcos A. M. Pereira

The Ponta do Ouro-Kosi Bay TFCA, established in June 2000, is the first marine TFCA in Africa, and integrates the Ponta do Ouro Partial Marine Reserve and the iSimangaliso Wetland Park. It forms part of the larger Lubombo TFCA, which encompasses a complex system of conservation areas between Mozambique, South Africa and Swaziland, covering a total area of 11 169km<sup>2</sup>. The marine area encompasses regionally important nesting grounds for loggerhead and leatherback turtles, some of the most southerly coral communities, incredible marine life, and along with their adjacent terrestrial conservation areas, highly diverse ecosystems (vegetated parabolic dunes, grasslands, floodplains, coastal barrier lakes), with biodiversity and endemism. More than 600 000 people benefit directly or indirectly from opportunities arising from the TCFA, either through involvement in the tourism and associated industries, community-based development projects or sustainable use of natural resources.

Several activities have been developed to streamline integration and the achievement of the TFCA objectives, including constant communication at all levels, training, harmonization of rules and regulations, patrol and enforcement, community-based development projects, and data sharing, advocacy and research and monitoring. The collaborative marine turtle monitoring and conservation program has been very successful and a good example of the critical issues that the TFCA is addressing. Joint fundraising initiatives and mutual support are other collaborative activities. While this has been essentially a governmental led initiative, the Peace Parks Foundation has been instrumental in their support, working closely with the managing authorities, local governments, partners from the civil society and academia, donors and local communities.

All these activities have inspired the two governments to pursue the nomination of the Ponta do Ouro Partial Marine Reserve and the adjacent Maputo Special Reserve, as a UNESCO World Heritage Site, thus extending the iSimangaliso Wetland Park World Heritage Site, and strengthening the protection and conservation of the whole system. This represents an exciting opportunity, which will certainly enhance marine and coastal conservation, as well as cementing the relationship between the two countries. The main challenges include sovereignty issues especially pertaining to enforcement. Coastal and high-seas hot pursuits across national boundaries need proper permitting and communication. Lack of these have on several occasions hindered proper prosecution and imposition of penalties. Future collaborations will include joint tourism planning and operations and marketing, border and migration procedures as well as addressing safety, security and immigration issues. While these may present considerable challenges, the political will and commitment, as well as the passionate and collaborative work of the people on the ground will be paramount to its success.

The establishment and operation of the Ponta do Ouro-Kosi Bay TFCA has brought out important lessons and experiences to share in terms of marine and coastal conservation in the region. Several aspects (including political and cultural differences and availability of and access to resources) need to come together and this takes time to materialize. Perhaps one of the most important lessons is that such collaboration does not happen overnight.



Aerial view of Ponta Dobela and Lake Piti, Ponta do Ouro Partial Marine Reserve and Maputo Especial Reserve – a typical landscape within the Ponta do Ouro-Kosi Bay TFCA. © Thomas Peschak

## Management opportunities

The main opportunity identified for the reserve is the partnership agreement with the Peace Parks Foundation signed in June 2018, which constitutes a valuable opportunity for improved fund-raising and management. Additionally, a dossier for submission to the UNESCO World Heritage Site List is being prepared as an extension of the iSimangaliso Wetland Park. This will increase the marketing and conservation “value” of the reserve and validate the biodiversity rationale for its protection.

## Pomene National Reserve

The Pomene National Reserve is located in Inhambane Province and is mainly terrestrial with a very small coastal component, which includes the following habitats: coastal forests, estuaries and mangroves. No iconic marine species have been identified.

The reserve was proclaimed in 1972 (Legislative Decree 109/72 of 16 November) and is currently classified as IUCN Category V. The proposed zoning includes a special protection zone, resource management zone, community use zone, tourism development zone and a buffer zone. The reserve was initially proclaimed as a hunting concession although no game was introduced. Pomene is the smallest conservation area in the country covering only 50km<sup>2</sup> in total area of which about 1.6km<sup>2</sup> incorporates mangroves, estuaries and coastal forests.

## Legally mandated institution

MITADER, through ANAC.

## Management partners

The reserve is solely managed by ANAC. No partners apart from local government agencies or local communities have been identified.

## Management plan

The plan was drafted as part of the extension process of the reserve (see section on Areas Under Consideration), but has not been approved.

## Management objectives

To conserve and maintain the ecological integrity of the terrestrial, estuarine and marine ecosystems, in order to provide opportunities for sustainable development of ecotourism in Inhambane Province.

## Risks and threats

Those identified include: human settlement and unregulated subsistence activities; disregard for the value of critical habitats; and arbitrary attribution of land.

## Management opportunities

The area has been identified as a premium tourism development area, but no significant conservation opportunities have been identified. Very recently however, in July 2018, a 12-month Memorandum of Understanding (MoU) with a private company (Farquhar LCC) was signed and included activities such as co-funding, ecotourism development, as well as infrastructural development of the reserve, and monitoring and research.

## PROPOSED MPAs

Several areas have been proposed for some sort of protection throughout the years in Mozambique. Tinley (1971), recommended several areas, with many later proclaimed as either national parks or national reserves (Table 1).

**Table 1:** Proposed areas for conservation in Mozambique and their current status.

AREA PROPOSED BY TINLEY (1971)	CURRENT STATUS
Primeiras and Segundas Archipelago and mainland	Primeiras and Segundas Islands Environmental Protection Area
Between Ibo Island and Pemba point	Partially protected within the Quirimbas National Park
Between Nacala and Mossuril	Not protected
Between Missangage River and Ponta Mituasi	Not protected
Zambezi Delta and Cheringoma coast	Partially protected within the Marromeu National Reserve
São Sebastião Peninsula	Cabo de São Sebastião Total Protected Zone
Bazaruto Archipelago	Bazaruto Archipelago National Park
Between Cabo das Correntes and Limpopo River	Not protected
Maputo coast	Ponta do Ouro Partial Marine Reserve

The Eastern African Marine Ecoregion program spearheaded by the WWF listed several areas already suggested by Tinley (1971) as important at global, regional and sub-regional levels (Horrill, 2001), including the Sofala Bank, which was not previously identified. Other areas have also been suggested for some sort of protection, but no documentation and formal submission has been put forward. These include the Tofo (Inhambane Province; Obura *et al.*, 2012), and the Benguelene Island (within the Incomati estuary, Maputo Province – Siteo *et al.*, 1994).

Presently, only one area has been proposed with supporting documentation submitted, the Bilene Special Reserve (Table 2). The effort was spearheaded by the then *Ministério para a Coordenação da Acção Ambiental* (MICOA) [or Co-ordination of Environmental Affairs Ministry], now MITADER, with strong support from the local private sector and operators. The main reason was the protection of coastal dunes and nesting marine turtles.

Table 2: Details of the proposed Bilene Marine Protected Area

BILENE SPECIAL RESERVE	
Type	Terrestrial, coastal and epipelagic
Likely date of proclamation/ establishment	Unknown (initial proposal was submitted in June 2008)
Umbrella legislation under which it is to be proclaimed/established	Biodiversity Conservation Law (Law 5/2017 of 11 May)
Legislative area/ region/province	Gaza Province, southern Mozambique
Extent (area)	140.2km <sup>2</sup>
Habitats	Sandy beaches, rocky shores, coastal dunes and barrier lakes, rocky reefs, coastal forests

## Summary of existing MPA and proposed MPA coverage

Table 3, below, summarises the areas covered by both existing MPAs and proposed MPAs, and indicates the proportion of EEZ that these represent.

Table 3: Summary of existing and proposed Mozambique MPAs

Mozambique's EEZ	571 452km <sup>2</sup>
EXISTING MPAs	
No. of MPAs	7
MPA area	11 998.9km <sup>2</sup>
% EEZ	2.10
PROPOSED MPAs	
No. of proposed MPAs	1
Proposed MPA area	140.2km <sup>2</sup>
Potential % EEZ	2.12

## NON-FORMAL PROTECTED AREAS

Non-formal protected areas (Figure 2) are established either as temporary or permanent zones (in certain cases these are established side by side), essentially to protect breeding stocks, replenish collapsed stocks and protect key habitats. The areas are usually management by community fishing councils in collaboration with the *Direcção Provincial do Mar, Águas Interiores e Pescas* [Provincial Directorate for Sea, Inland Waters and Fisheries], with technical support from local NGOs. No formal designation has been used and they are usually called "community sanctuaries" or similar terminology with the same effect. These suffer from poor financing, limited skilled human resources and lack of equipment.

An experimental reef sanctuary area was established in Tofo (Inhambane Province from 11 November 2016 to 11 May 2017) and deemed highly successful (Marine Megafauna Foundation, n.d.). It is uncertain if a more permanent area will be established. Two areas in the Nampula Province have been negotiated with the local communities, and closed: one in 2008 promoted by the Nuarro Lodge in Memba (I. Marques da Silva, *pers. comm.*) and another in 2012 in Nacala-Porto, promoted by Dive Libélula (n.d.). No further information is available for these areas.

With few exception, general information regarding management and governance, funding, mapping and other details, is poorly documented, as highlighted by Rocliffe *et al.* (2014). Table 4 summarises the information available for the non-formal protected areas.



Loggerhead turtle. © Marcos Pereira



EXTENT (km <sup>2</sup> )	Nsangué (temporary: 2.1; permanent: 17.3), Quifuque (temporary: 8.0; permanent: 1.9), Lalane (temporary: 2.1; permanent: 1.6), Malinde (temporary: 21.3; permanent: 0.3), Quiwia (temporary: not available)
HABITATS	Sandy beaches, mangroves, seagrass beds, coral and biogenic reefs
GOVERNANCE STRUCTURE	Managed by local fishing community councils supported by AMA (national NGO) and CORDIO
<b>VAMIZI ISLAND</b>	
TYPE	Coastal, epipelagic
DATE OF ESTABLISHMENT	2006
LEGISLATION UNDER WHICH ESTABLISHED	Not gazetted
LEGISLATIVE AREA/REGION/PROVINCE	Cabo Delgado Province, northern Mozambique
EXTENT (km <sup>2</sup> )	18
HABITATS	Sandy beaches, seagrass beds, coral and biogenic reefs
GOVERNANCE STRUCTURE	Managed by local fishing community councils supported by WWF
<b>INHAMBANE BAY</b> (group of nine small community sanctuaries: Marragane, Guindziwe, Ponte Cais, Guilalene, Guidzivane, Marambone, Mahigo Mbate, Mandzenika, Nha Dzi Sectori)	
TYPE	Coastal
DATE OF ESTABLISHMENT	2017
LEGISLATION UNDER WHICH ESTABLISHED	In the process of being gazetted under the Fisheries Law (Law 22/2013 of 1 November) and Conservation Biodiversity Law (Law 5/2017 of 11 May)
LEGISLATIVE AREA/REGION/PROVINCE	Inhambane Province, southern Mozambique
EXTENT (km <sup>2</sup> )	Marragane (3.40), Guindziwe (1.01), Ponte Cais (0.85), Guilalene (0.89), Guidzivane (0.32), Marambone (0.02), Mahigo Mbate (0.07), Mandzenika (0.10), Nha Dzi Sectori (0.04)
HABITATS	Seagrass beds, mangroves, estuaries
GOVERNANCE STRUCTURE	Co-management involving the Community Council for Fisheries Management, the Community Fisheries Council with technical support from Bitonga Divers and Ocean Revolution (local NGOs)

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This *MPA Outlook for the Western Indian Ocean (WIO)* is the first comprehensive regional analysis that provides a detailed update on the efforts by the Nairobi Convention countries to meet globally agreed marine conservation targets especially SDG14.5, which states that by 2020, to conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. This is also aligned to the Convention on Biological Diversity Strategic Plan for Biodiversity 2011–2020, Aichi Target 11. In 2019, the region had 143 proclaimed MPAs with several proposed across different countries.

A key purpose of this *MPA Outlook* was to establish baselines using appropriate indicators to assess the progress of the Contracting Parties to the Nairobi Convention in meeting these targets. Thirty authors contributed to the nine country chapters, the various case studies and other parts of this volume. Included are detailed descriptions of the MPAs in the countries of the region, the legal mandates under which they exist, the challenges they face and estimates of their management effectiveness. The main findings indicate that the vast majority of the sites across the WIO region, that are considered as MPAs or as having equivalent legal status and levels of protection, are coastal and/or inshore, however the largest, covering by far the greatest extents of the ocean, are those with considerable offshore elements. The assessment also established that the majority of existing MPAs across the region are not managed as effectively as they could and should be, due primarily to lack of funding for essential staff, equipment and capacity development, and commitment from relevant authorities. Recommendations are provided to support improved management of current MPAs and strengthen proposals from different countries for the establishment of further areas under protection, so as to reach conservation goals, including those being developed under the post-2020 Global Biodiversity Framework, while safeguarding coastal livelihoods and economies over the coming decades.

