



THE UNITED REPUBLIC OF TANZANIA
NATIONAL AUDIT OFFICE



**PERFORMANCE AUDIT REPORT ON MARINE PROTECTED AREAS
MANAGEMENT**

**Marine Parks and Reserves Unit under the Ministry of
Livestock and Fisheries Development**



A REPORT OF THE CONTROLLER AND AUDITOR GENERAL

March 2018

THE UNITED REPUBLIC OF TANZANIA



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PREFACE

Section 28 of the Public Audit Act No. 11 of 2008, authorizes the Controller and Auditor General to carry out Performance Audit (Value-for-Money Audit) for the purposes of establishing the economy, efficiency and effectiveness of any public expenditure or use of public resources in the MDAs, Local Government Authorities (LGAs) and Public Authorities and other Bodies which involves enquiring, examining, investigating and reporting, as deemed necessary under the circumstances.

I have the honour to submit the Performance Audit Report on the sustainable Management of marine resources in marine protected area in Tanzania to His Excellency the President of the United Republic of Tanzania, Dr. John Pombe Magufuli and through him to the Parliament of the United Republic of Tanzania.

The report contains conclusions and recommendations that have focused mainly on sustainable conservation focusing on access control to marine resources in marine protected areas, resource monitoring and coordination of stakeholders for participatory conservation.

The management of the Ministry of Livestock and Fisheries Development (MLFD) and that of the Marine Park and Reserve Unit (MPRU) have been given the opportunity to scrutinize the factual contents of the report and come up with comments on it.

I wish to acknowledge that the discussions with the audited entities have been very useful and constructive in achieving the objectives of the study. My office intends to carry out a follow-up at an appropriate time regarding actions taken by the audited entities in relation to the recommendations in this report.

In completion of the assignment, the office subjected the report to the critical reviews of the following experts namely, Dr. Julius Frances from The University of Dar-Es Salaam and Dr. Abdillah Chande who is a retired official from the Ministry of Livestock and Fisheries Development who came up with useful inputs on improving the output of this report.

This report has been prepared by Mr Adam Mniko (Team Leader), Mr Elisante Mshana and Mr Abel Mchami (Team Members) under the supervision of the Team Supervisor Michael Malabeja. The whole team was under supervision of Assistant Auditor General -Specialized Audit, Eng. James Pilly and the Deputy Auditor General - Performance and Specialized Audit, Ms. Wendy W. Massoy.

I would like to thank my staff for their valuable inputs in the preparation of this report. My thanks should also be extended to the audited entities for their cooperation during the audit and their fruitful comments on the draft report.

A handwritten signature in black ink, appearing to read 'Mussa Juma Assad', with a stylized flourish extending from the end.

**Prof. Mussa Juma Assad,
Controller and Auditor General,
Dar es Salaam.
28th March 2018**

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ABBREVIATIONS

CAG	Controller and Auditor General
CC	City Council
DAG	Deputy Auditor General
DC	District Council
HRs	Honorary Rangers
LGAs	Local Government Authorities
NGOs	Non-Government Organizations
PO-RALG	President's Office-Regional Administration and Local Government
IUCN	International Union for Conservation of Nature
MPA	Marine Protected Area
MPRU	Marine Parks and Reserves Unit
MLF	Ministry of Livestock and Fisheries
TACMP	Tanga Coelacanth Marine Park
MIMP	Mafia Island Marine Park
DMRS	Dar Es Salaam Marine Reserve System
MDA's	Ministry Department and Agencies

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EXECUTIVE SUMMARY

Conservation of coastal areas is one among global agendas. Goal number 14 of Sustainable Development Goals (SDG-2015-2030) highlights the importance of sustainable conservation of marine and coastal resources. Tanzania is renowned for the attractiveness of its coastal and marine environments, high marine biodiversity and coastal resources. However, Tanzanian coastlines have been vulnerable to destruction due to malpractices like illegal fishing, and ineffective management.

This audit was motivated by several factors including the deterioration of coastal marine area as indicated by the marine sector expert opinions and further exemplified in the budget speech 2016/2017 calling for improvement in coastal environments. On top of that a report by Wildlife Conservation Society (WCS, 2015), reveals coastal environment in Tanzania being largely destroyed by numerous malpractices; few among them are the use of dynamite for fishing, pollution and encroachment of protected areas. These deficiencies created a public outcry among environmental experts, coastal communities, NGO and parliament requiring proactive measures to be taken in conserving the deteriorating coastal environment.

Because of that, the National Audit Office decided to conduct a performance audit on management of Marine Protected Areas (MPA) to assess whether Marine Parks and Reserves Unit(MPRU) effectively protects and conserves marine resources within Marine Protected Areas to ensure sustainability. Focus was on access control, monitoring and coordination of stakeholders in management of Marine Protected Areas.

The main audited entity was Marine Parks and Reserves Unit (MPRU), which is a semi-autonomous body under the Ministry of Livestock, and Fisheries (MLF). MPRU is responsible for overall management of Marine Protected Areas (MPAs). The audit covered a period of three (3) financial years from 2014/15 to 2016/17. Data were collected from four (4) MPRU centers namely Mnazi Bay Ruvuma Estuary Marine Park (MBREMP), Tanga Coelacanth Marine Park (TACMP), Mafia Island Marine Park (MIMP) and Dar es Salaam Marine Reserve System (DMRS).

Audit Main Findings

MPRU did not adequately control access to marine resources in Marine Protected Areas. Access control in MPAs are manifested in three major areas, which are issuance of permits or permit system, control of investment activities within protected areas and installation of physical demarcation within protected areas.

1. Permit system for resource use activities ineffectively operates

Two out of three parks did not adhere to required regulations in issuance of, Local Residence User Certificates (LRUC) to residents and Resource User Certificate for non-residents to control and regulate utilization of marine resources within protected areas.

Inadequate control of investment and recreational activities within protected areas

The audit found that hotels and other investments presents in MPAs were inadequately scrutinized either through EIA or environmental audits as per requirements. Out of 54 investments available in all parks, it is only 1 Project (i.e. Hotel at Shungimbili) in MIMP that went through the EIA process.

2. Ineffective monitoring of marine resources and control systems

Ineffective monitoring of marine resources and control systems was observed in all parks. In MIMP, no inspection was carried out on hotels and recreational activities that took place within their area. MIMP had more than nine (9) hotels; however, in all three years there was no evidence of any environmental compliance inspection that was carried out.

MBERP managed to conduct an inspection visit to a gas plant within their vicinity and discovered improper discharge of effluents to the sea without proper treatments and procedures as per regulations. This was reported to NEMC for further actions.

Ineffective patrol activities

Only MIMP consistently exceeded the set target of 52 patrols per year. The remaining Patrol performance of other parks ranged between 10.5% to 43.6%.The low patrol performance provided room for increased illegal uncontrolled, unreported and unregulated activities in Marine Protected Areas. Example, over 240 fishers have camped in Nyororo Island in Mafia which is a protected area.

Resource monitoring

None of the MPAs monitors the condition of all parameters of biophysical and marine resources. MPAs concentrated on monitoring fish catch and coral reef leaving aside other key important aspects such as water and sediment quality, sea grass bed, invertebrates' density and indicator species such as coelacanth, and sea turtle.

3. Ineffective coordination for participatory conservation and protection of marine resources

Activities related to protection of marine resource were not well coordinated between MPAs and other stakeholders. Village Liaison committees were not timely re-established after the expiry of their three years tenure. As result their involvements in conservation activities were limited.

Only 20% of villages that are within visited Marine Protected areas have Village Liaison Committees (VLC). In addition to that there were no Advisory committee in TACMP and MBREMP.

Audit conclusions

MPRU through MPAs has not adequately controlled access to protected areas using its permit system. In addition, MPRU has not ensured proper monitoring of marine resources. Besides that, MPRU has not adequately coordinated stakeholders involvement in marine protection and conservation. The current access control system in marine protected areas does not guarantee protection of the resources found within these protected areas and provides loopholes for unauthorized people to enter and harvest resources from protected areas.

MPAs do not monitor the resources constitutently as there are no scheduled timelines for resource monitoring in all protected areas. Additionally, monitoring is more concentrated on fish catch data and status of coral reefs neglecting other important aspects like nesting sites, hotspot and other marine resources habitats. Coordination between MPAs and other stakeholders is not adequate and therefore, provides loopholes for a variety of weaknesses in conservation of the protected areas.

Audit Recommendations

Access control

1. MPRU should establish a system that will integrate license applicant information with information given by VLC.
2. MPRU should ensure that MPAs prioritize installation of instruction signs/billboards and physical boundaries to demarcate protected areas in their plans and budget.

Marine resource monitoring

1. MPRU should develop key performance indicators to enable the performance assessment of the state of marine resources.
2. MPRU should review and establish criteria for allocation of materials and equipment, and provide clear and detailed direction on allocation in line with operational needs.
3. MPRU should develop practical guidance on how parks are to assess economic opportunities to determine their compatibility with the conservation objectives of the MPAs. A number of economic activities are taking place in Marine Parks and Reserves including gas exploitation in MBREMP and tourism infrastructure in MIMP and DMRS. It is important that these activities are compatible with the conservation objectives of the MPAs.

Coordination of stakeholders

1. The Ministry (MLF) should support MPRU to institute legal working tools like regulations and establishment of Advisory Committees to ensure that MPRU can effectively operate and achieve effective operations of co-management within protected areas.
2. MPRU should ensure that each MPA conducts needs assessment to understand the status of environmental awareness among the stakeholders and implement the awareness programs.

CHAPTER ONE

INTRODUCTION

1.1 Background

Conservation of coastal areas is one among global agendas. Goal number 14 of Sustainable Development Goals (SDG-2015-2030) highlights about the importance of sustainable conservation of marine and coastal resources. The ocean at large serves as the heart of the world as it regulates temperature in the world, provides oxygen and accommodates carbon dioxide, which altogether makes life possible in this planet

According to United Nations, the oceans and seas are essential for social well-being. Over 40 per cent, or 3.1 billion, of the world's population lives within 100 kilometres of the ocean or sea in about 150 coastal and island nations¹. Tanzania is renowned for the attractiveness of its coastal and marine environments, high marine biodiversity and coastal resources.

The coastal and marine environments include among others: major estuaries, mangrove forests, coral reefs, sandy beaches, cliffs, sea grass beds and muddy tidal flats. Marine resources in Tanzania specifically in Marine Protected Areas (MPAs) are under risk and pressure from human activities such as illegal fishing, cutting of mangroves for boats building, establishments of human settlements, and other domestic use.

1.2 Motivation

Marine protected areas (MPAs) are a key tool that Tanzania has committed in protecting and conserving its coastal and marine biodiversity. Tanzania is a signatory to various global and regional environmental instruments such as the United Nations Convention on Biological Diversity (1992).

In September 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development with 17 Sustainable Development Goals (SDGs) and 169 underlying targets, including SDG 14 *'to conserve and sustainably use the oceans, seas and marine resources for sustainable development'*.

The inclusion of SDG 14 as a stand-alone goal is a confirmation of the importance of conservation and sustainable use of the coastal and

¹Transforming Our World: The 2030 Agenda for Sustainable Development; Goal no 14

marine resources for sustainable economic growth, food security and poverty alleviation, and provides impetus and opportunity to develop solutions to current and emerging threats across sectors such as fisheries and conservation of biodiversity.

The increased interest in advocacy for MPAs since 1994 when the Marine Parks and Reserves Act was enacted has contributed to establishment of MPAs in Tanzania. Some of the MPAs are more than ten years old since their establishment, it is therefore essential to determine whether they are achieving their intended objectives or not.

This audit was therefore motivated by several factors which are; first, the deterioration of coastal marine area as indicated by the marine sector expert opinions and further exemplified in the budget speech 2016/2017 calling for improvement in coastal environments. On top of that a report by Wild Life Conservation Society (WCS, 2015)², showed that coastal environment in Tanzania particularly Marine Protected Areas are largely destroyed by numerous malpractices; few among them are the use of dynamite for fishing, pollution and encroachment of protected areas.

The second motivation is the government commitments to international conservation treaties. The adoption of the Convention on Biological Diversity of 1992 (CBD) calls for on-site protection³. Tanzania agreed to an international target of conserving 10 percent of marine areas by 2020 through networks of protected areas and other conservation measures.

1.3 Significance of Marine Protected Areas (MPA)

Marine Protected Areas have several importance in the marine ecosystem and livelihood of coastal communities, these includes;

First Globally, MPAs have shown to increase fish size, density, biomass as well as species richness (Lester et al. 2009)⁴. These increases are also seen beyond the boundaries of the protected areas through the spill over effect. This spill over effect applies to larvae, juvenile and adult fish moving beyond Marine Protected Areas boundaries (Halpern, 2003; Lester et al., 2009; Harrison et al., 2012)⁵.

The community composition outside the protected area becomes like

² Wildlife Conservation Society Report on Fishing with explosives in Tanzania: Spatial distribution and hotspots, page 5

³ On-site conservation or the conservation of genetic resources in natural position

⁴ Biological effects within no-take marine reserves: a global synthesis. Marine Ecology Progress Series 384:33-46.

⁵ A global map of human impact on marine ecosystems. *Science* 319: 948-95

that inside, essentially exporting recovery beyond the protected zone (Russ & Alcala, 2010). As such, MPAs are an important tool in stock replenishment, long-term food security and fishing-related livelihoods.

Secondly, increasingly, coastal ecosystems are recognized for their important role in fighting climate change through carbon sequestration - and, conversely, their potential to become sources of carbon emissions when degraded (Crooks et al., 2011).⁶ Coastal vegetation - such as seabed, mangroves and salt marshes - stores and sequesters carbon very effectively (Murray et al., 2011). The protection and restoration of coastal vegetation could provide coastal and island communities with important economic opportunities on the carbon offset market (Hastings et al., 2014).

Thirdly, MPAs can support livelihoods for families and communities. They can also create jobs for managers and researchers (Balmford et al., 2004). MPAs are known to attract and sustain coastal tourism and recreation, supporting growth of employment and commerce associated with these sectors at the local, regional and national level.

Lastly, MPAs provide important cultural services - aesthetic, artistic, educational, recreational, scientific and spiritual values. MPAs can protect critical habitats, including migration corridors, refuges against predators, spawning grounds and nursery area.

1.4 Audit design

1.4.1 Main Audit Objective

The objective of this audit was to assess whether MPRU effectively protects and conserves marine resources within Marine Protected Areas (MPA) to ensure sustainability.

To address the set audit objective, the audit was guided by three audit Specific objective as follows:

The specific objectives of this audit were to:

1. Determine whether MPRU adequately control access to marine resources for sustainable use in the Marine Protected Areas
2. Assess effectiveness of MPRU to monitor available resources and control systems in the MPAs; and

⁶ Mitigating Climate Change through Restoration and Management of Coastal Wetlands and Nearshore Marine Ecosystems:

3. Determine whether MPRU adequately coordinates with other stakeholders in conservation and protection of MPAs.

1.4.2 Audit Scope and Methodology

The main audited entity was Marine Parks and Reserves Unit (MPRU), which is a semi-autonomous body under the Ministry of Livestock, and Fisheries (MALF). MPRU is responsible for overall management of Marine Protected Areas (MPAs). The audit covered a period of three (3) financial years from 2014/15 to 2016/17.

Data were collected from four (4) MPRU; MPAs namely Mnazi Bay Ruvuma Estuary Marine Park (MBREMP), Tanga Coelacanth Marine Park (TACMP), Mafia Island Marine Park (MIMP) and Dar es Salaam Marine Reserves System (DMRs).

As overseer of the matter pertaining to fisheries and environment, Ministry of Livestock and Fisheries (MLF), and Vice-President's Office (Division of Environment), respectively were involved in data collection.

1.4.3 Methods for data collection and analysis

The audit team employed the following methods during data collection:

Interviews

The audit team interviewed officials from MPRU, MLFD, officials responsible for management of protected areas and fisheries related activities.

Leaders of Village Liaison Committee (VLC) were also interviewed for clarity of issues more related to conservation at village levels Marine Protected Areas authorities.

Documentary review

Various documents were reviewed to collect information to respond to the audit objective. These are such as:

- Inter-agency correspondence;
- Budgets allocated and expenditures records, Strategic Plans, Annual work plan and Implementation reports;
- Permit and licensing files;

- Annual work plan and budget;
- Annual progress reports (performance reports) for financial years 2012 to 2016;
- MPAs Management plans; and

Physical observations

The team visited Mnazi Bay Ruvuma Estuary Marine Park (MBREMP) in the southern coast, Mafia Island Marine Park (MIMP), Tanga Coelacanth Marine Park (TACMP) in the northern coast and small marine reserves within Dar es Salaam in the eastern coast. The aim of the visit was to get information that provides answers to the audit questions from each MPA.

1.4.4 Data Analysis

The team developed audit evidence by presenting data collected from different sources, and analysed by different methods. Information from different types of data sources⁷ was combined to gain information and knowledge about the actual conditions on ground, and compare with criteria.

1.5 Assessment Criteria

The audit assessed management of MPA against the criteria drawn from the legislation, regulations, policies and guidelines particularly from Marine Parks and Reserves Act of 1994, together with its regulations, MPRU strategic plan, and management plans of respective MPAs. Additionally good practices on MPA management were used for answering the above audit objectives.

1.5.1 Access control system

Section 20 (b) of the Marine Parks and Reserves Act requires MPRU to restrict, regulate, control, and prohibit entry or residence in the protected areas. According to section 13 of the Marine Parks and Reserve Act no. 29 of 1994, no activity shall be permitted, in any area that has been declared as a marine park or marine reserve unless there is an express permission of the Warden.

Marine Parks and Reserves Act of 1994 (Section 17-20) provides specified access limits to marine resources including establishing specific zones in which activities to be allowed or disallowed are specifically described depending on the zone.

⁷Interviews, documentary review and physical observation

1.5.2 Resource condition and use Monitoring

Every Marine Protected Area's authority is responsible to conduct monitoring of resources and usage to ascertain their conditions. This is in line with one of the purposes of Marine Parks and Reserves as stipulated in the Act, i.e. to facilitate research and to monitor resource conditions and uses within the marine park and reserves.

MIMP, TACMP and MBREMP's Management plans require them to conduct periodical monitoring to ascertain the status of the protected resources. Section 20 (b) of the Marine Park and Reserve Act requires MPRU to restrict, regulate and control access in the protected area.

Section 33 (1) of the Marine Parks and Reserves Act no 29 of 1994 require MPRU to arrest any person found committing an offence whom he reasonably suspects or believes of having committed, or is about to commit such an offence.

MPRU is conferred with Powers of seizure and forfeiture of items involved in committing offence in the protected areas.⁸

1.5.3 Coordination and involvement of Stakeholders

Fisheries regulation 12 (4) and Specific parks regulations require MPRU through respective MPA, to involve local communities in developing management plans, designing control systems and monitoring of all activities within protected areas.

MPRU should ensure that each village, which is near the marine park/reserves, participates in all aspects of conservation including planning of zones.

MPRU is required to provide supportive supervision and training to enforcement agencies to improve management of the protected areas while it needs to collaborate with government agencies operating in the marine protected areas to ascertain the impact of activities of such agencies.

1.6 Data Validation Process

Marine Parks and Reserves Unit (MPRU), and the Ministry of livestock and fisheries development (MLFD) will be given an opportunity to

⁸ Section 33 of the Marine and Reserve Act no 29 of 1994

read a draft version of the report for a factual clearance when the report will be ready.

1.7 Auditing Standards

The audit was done in accordance with INTOSAI standards. The standards require that the auditing is planned and performed to obtain sufficient and appropriate evidence to provide a reasonable basis for the findings and conclusions based on audit objectives.

1.8 Structure of the Report

The remaining part of this report is structured as follows: *Chapter Two* presents systems for managing marine protected area; *Three* presents the findings of the audit; *Four* provides conclusion; while Chapter Five provides recommendations directed to different actors.

CHAPTER TWO

SYSTEM FOR MANAGING MARINE PROTECTED AREAS

2.1 Introduction

This chapter provides an overview of the audit area. It gives a description of systems, processes and actors involved in conservation of MPAs.

2.2 Key definitions

Marine protected area

According to International Union for Conservation of Nature (IUCN), Marine Protected Area is an area of land and/or sea especially dedicated to the protection of biological diversity, and of natural and associated cultural resources, managed through effective legal means.

Marine reserve

A marine reserve is a protected area that is strictly set aside to protect biodiversity and also always a small area where human residence is not allowed. Use of resources are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.

Marine Park

A Marine Park is a specialised version of a marine reserve where various community users and habitation is encouraged through a strict zonation scheme, and emphasis on education, recreation and sustainable conservation is highly recommended through participatory management approaches.

2.3 Marine Protected Areas Management System

2.3.1 Management of Zoning Schemes under MPAs

Zoning is a primary management tool of multiple-use in marine protected areas. Its aim is to harmonize conflicting conservation and livelihood objectives by spatially separating extractive resource use areas from sensitive habitats. The regulations in zones permitting resource use also ensure that such activities are productive and sustainable.

There are three zones established under each MPA to simplify management approach. These zones are core zone; specified use zone and general use zone (refer to **Appendix 1 and 2**).

Core Zone

Extractive resource use is prohibited entirely within core zone. Recreational activities such as scuba diving, snookering and scientific research activities may be allowed with special consideration and permit from the MPRU management.

Specified Use Zone

It constitutes of an intermediately level of protection within the park for areas that warrant primary conservation status but are also important to local resource users. Some resource extraction activities including gas extraction are permitted but only to designated beneficiaries.

General Use Zone

General use zones are intended to allow sustainable resource use by residents while relieving resource use pressure from zones with higher level of protection. Only legal resource use is permitted example fishing with legal gears etc.

2.3.2 Permit System

There are two types of permits that are issued by park management for resources use within the park. The first is called Local Residence User Certificate (LRUC). These are identity cards issued to all people who have permanent residence within the boundaries of the marine protected areas. These identity cards specify what kind of resources and areas that people can fish and other important regulations.

These certificates are issued by marine parks authority after scrutiny of the names of all residents done by village council, Village Liaison Committee⁹ and confirm registration and status of residents in a permanent village registry.

Secondly, there is User Permits (UP). These are special permits issued to non-residents applicants who express interest or apply to fish or

⁹ A specified group of people elected by villagers to support all activities related to Marine Protected Areas.

conduct any resource use activity within protected areas.

The application goes through scrutiny of Village Liaison Committee (VLC) to ascertain the kind of fishing gear they use and other important information for conservation purposes. After the approval by VLC, Marine Park management runs a background check to verify information received from VLC before issuing the permits, which among other key conditions, the permit specifies number of days allowed, fishing gear and type of marine resources allowed to use.

The activities allowed in different zones are described in the **Table 1**.

Table 1: Description of Permitted Activities in each Zone

Activity	Core Zones	Specified-use Zone		General-use Zone	
	All users	Residents	Non-residents	Residents	Non-residents
Hand lines, basket traps, fence traps	X	LRUC	X	LRUC	UP
Loglines	X	LRUC	X	LRUC	UP
Pull nets (mesh size less than 2.5)	X	X	X	LRUC	X
Set-net/ shark nets (mesh size 2.5-7)	X	LRUC	X	LRUC	UP
Shark net (mesh size)	X	X	X	LRUC	UP
Sport fishing	X	X	X	LRUC	UP
Octopus collection	X	LRUC	X	LRUC	UP
Sea cucumber, lobster, crab, shell (for food)	X	LRUC	X	LRUC	UP
Shell collection for trade	X	X	X	X	X
Aquarium collection (all organisms incl. coral)	X	X	X	X	X
Developments of Hotels, recreational and social economic activities	EIA/EAR	EIA	EIA	EIA	EIA

Source: MPAs management plans

KEY

X=	Not Permitted
LRUC=	Resident User Certificate required
UP=	User Permit required
EIA=	Environmental Impact Assessment
EAR=	Environmental Audit Report

2.4 Monitoring

Each marine parks and reserves have management goals and in order to assess whether these goals are met, it is necessary to look at changes in relevant biophysical (such as habitats, critical species) and socioeconomic (such as livelihood options, investments taking place in the park) parameters, which will provide indicators that can be monitored and measured.

The monitoring programmes include parameters that fall within the Park boundaries as well as those that are outside. If changes occur outside the boundaries of the Park but have an impact inside the Park, they need to be aware of these changes so that they can modify their management strategies to address them.

In conservation perspective monitoring is primarily defined in two major ways.

First, it is a systemic periodic evaluation to determine long-term trends in abundance of marine resources, benthic cover, and trend in rate of growth and survival of randomly selected coral colonies.

Secondly, monitoring refers to checking on activities and intervention imposed in the protected area and see whether activities are conducted in conformity with the permits conditions and zoning schemes.

2.5 Statutory Mandate and Role of Key Players

The Government's mandate regarding MPAs is anchored in the Marine Parks and Reserves Act, 1994, which provide for the establishment, management and monitoring of marine parks and reserves, and to establish a park and marine reserves unit.

The Act provides the marine parks and reserves unit with the mandate to establish and management marine protected areas:

- i) To protect, conserve and restore the species and genetic diversity of living and non-living marine resources and the ecosystem processes of marine and coastal areas;
- ii) To stimulate the rational development of underutilized natural resources;
- iii) To manage marine and coastal areas so as to promote sustainability of existing resource use and the recovery of areas and resources that have been over exploited or otherwise damaged;
- iv) To ensure that villages and other local resident users in the vicinity of marine park or marine reserve are involved in all phases of the planning development and management of that marine park or marine reserve, share in the benefits of the operation of the protected area, and have priority in the resource use and economic opportunity afforded by the establishment of the marine park or reserve;
- v) To promote community-oriented education and dissemination of information concerning conservation and sustainable use of the marine parks and reserves; and
- vi) To facilitate research and to monitor resource conditions and uses within the marine park and reserves.

2.5.1 Department of fisheries

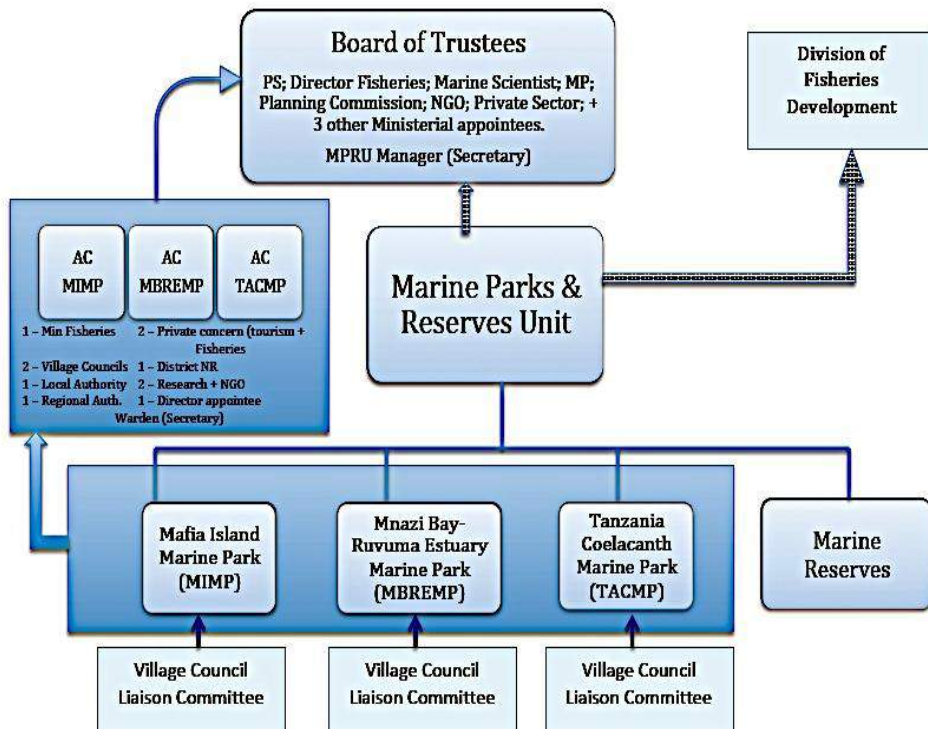
This is the department responsible for development of fisheries under the Ministry of Livestock and Fisheries. Fisheries Act, 2003 and Marine Parks and Reserves Act No. 29 of 1994 apparently give the ministry the responsibility to oversee fishing and other fishery related activities in all coastal areas as well as to establish, manage and oversee all marine protected areas (MPAs) through Marine Parks and Reserves Unit (MPRU) in mainland Tanzania to ensure sustainable use of the marine resources.¹⁰ The department also provides policy directives over fishing on all coastal areas.

2.5.2 Marine parks and reserves unit (MPRU)

The unit exercises semi-autonomous authority under the department of fisheries development in the Ministry of Livestock and Fisheries Development.

¹⁰ Marine Parks and Reserves Act no 29 of 1994, Section I

Figure 1: MPRU Organizational Structure



Source: MPRU strategic plan document

Mandate

The mandate of MPRU is derived from Marine Park and Reserve Act no 29 of 1994 and Tanzania Fisheries Act no 22 of 2003, which empowers it to protect and conserve marine protected areas. The Act empowers MPRU to maintain and monitor permit system, resources and coordinate stakeholders for sustainable conservation. Likewise, the Act empowers MPRU to facilitate public participation on MPAs decision making, exercise general supervision and coordination on all matters related to MPAs.

Roles and responsibilities of MPRU

The following are among other objectives of Marine Park and Reserve Unit (MPRU)

- Manage marine and coastal areas to promote sustainable use, and recovery of areas and resources that have been over exploited or otherwise damaged.
- Ensure that communities and other residents near the Marine

protected areas who depend on the marine resources for their livelihood are involved in management of the protected areas (Co management).

- Protect, conserve and restore the species and genetic diversity of living and non-living organisms.

2.5.3 Board of Trustees

The Minister for Fisheries upon the advice of the Principal Secretary appoints Board of Trustees for marine parks and reserves unit.

The functions of the Board are to

- Formulate policies on marine parks and related facilities and activities;
- To oversee the use of the Marine Parks and Reserves Revolving Fund;
- Advise the Director on management of marine reserves;
- Advises the Minister on approval, revision and amendment of general management plan of any marine parks.
- The Board also advises and directs the Unit Manager on the designation of specified marine and coastal areas as marine parks, marine reserves or buffer zones and drafting and implementation of regulations, and other matters affecting marine parks and reserves.

MPRU specific park/reserve offices

MPRU have three marine parks, which are Tanga Coelacanth Marine Park (TACMP), Mnazi Bay Ruvuma Estuary Parks (MBREMP) and Mafia Island Marine Park (MIMPS).

Additionally, there are areas which are designated as marine reserves most of which are in eastern side of the coastline particularly in Dar es Salaam and are under the custody of Dar es Salaam marine reserves system management. Other reserves are in Mafia and Tanga that are currently under the custody of MIMP and TACMP.

Tanga Coelacanth Marine Park (TACMP)

TACMP is unique nationally and internationally for the presence and high abundance of the coelacanth, *Latimeria chalumnae*. The rare 'living fossil' fish was re-discovered in the coastal waters of Tanzania in 2003, and since then has been sighted frequently within the TACMP area. Coelacanth and other marine species like sea turtles are now

icons for the rich coastal resources and provide opportunities for eco-tourism.

Mnazi Bay Ruvuma Estuary Marine Park (MBREMP)

The Park is based in Msimbati- Mtwara and support varied ecosystems of great diversity of marine life like mangrove forests along the Ruvuma Estuary which serve as reproductive and nursery grounds for many fish and crustacean species. Biological surveys have found over 250 species of hard coral, 400 species of fish, and 100 species of echinoderms within the Park's reefs.

Mafia Island Marine Park (MIMP)

The marine park area at Mafia Island extends across some 822km², more than 75% of it lies below the high-water mark. The area hosts an outstanding mosaic of tropic marine habitats including coral reefs, sea grass beds, mangroves, and inter- tidal flats. Two species of sea turtle use Mafia's beaches as nesting grounds and the area has been recognized internationally as a critical site for biodiversity. Several sites of historic ruins lie within the marine park area, some dating back to the 13th Century.

Dar es Salaam Marine Reserves System (DMRs)

Dar es Salaam Marine Reserves System (DMRS) comprises of several islands of Bongoyo, Pangavini, FunguYasin, MbudyaSinda, Makatobe, and Kendwa. Marine Parks and Reserves Unit (MPRU) through Marine Parks and Reserves Act No. 29 of 1994 manage these reserves.

2.6 Roles and Responsibilities of Other Key Players (Stakeholders)

2.6.1 Local Government Authorities

The Local Government Authorities (LGAs) have a major role in access control in MPRU through Beach Management Unit and LGA committees. The following are the functions related to access control:

- Collaborate in the collection of fisheries catch, effort and value information;
- Engage in monitoring, control and surveillance in a way that reduces the incidence of illegal gears, fishing and fish trading practices within the BMU area;
- Ensure hygienic, health and safe conditions at the landing stations within the BMU area, in accordance with standards set

- by the Government; and
- Participate in selection processes for the issue of fishing vessels license and fishing permits within the BMU jurisdictional area to ensure equitable access to resources by BMU members.

2.6.2 Non-Government Organizations (NGOs)

The major role of the non-governmental organizations is lobbying and advocacy. They have the role of raising voices of citizens to the Government with focus on low cost and environmental friendly technologies. Advocacy is done through educating the society on their rights, awareness on how the environment and community is likely to be impacted by a given project. Lobbying is done through communication with legislators or government officials to raise their views on specific projects or environmental issues.

2.6.3 Public

The public is required to participate in the access control activities in parks and reserve through the appointed honorary rangers. The public living in marine parks is required to have residential permits allowing them to use resources available in the general and specified user zone.

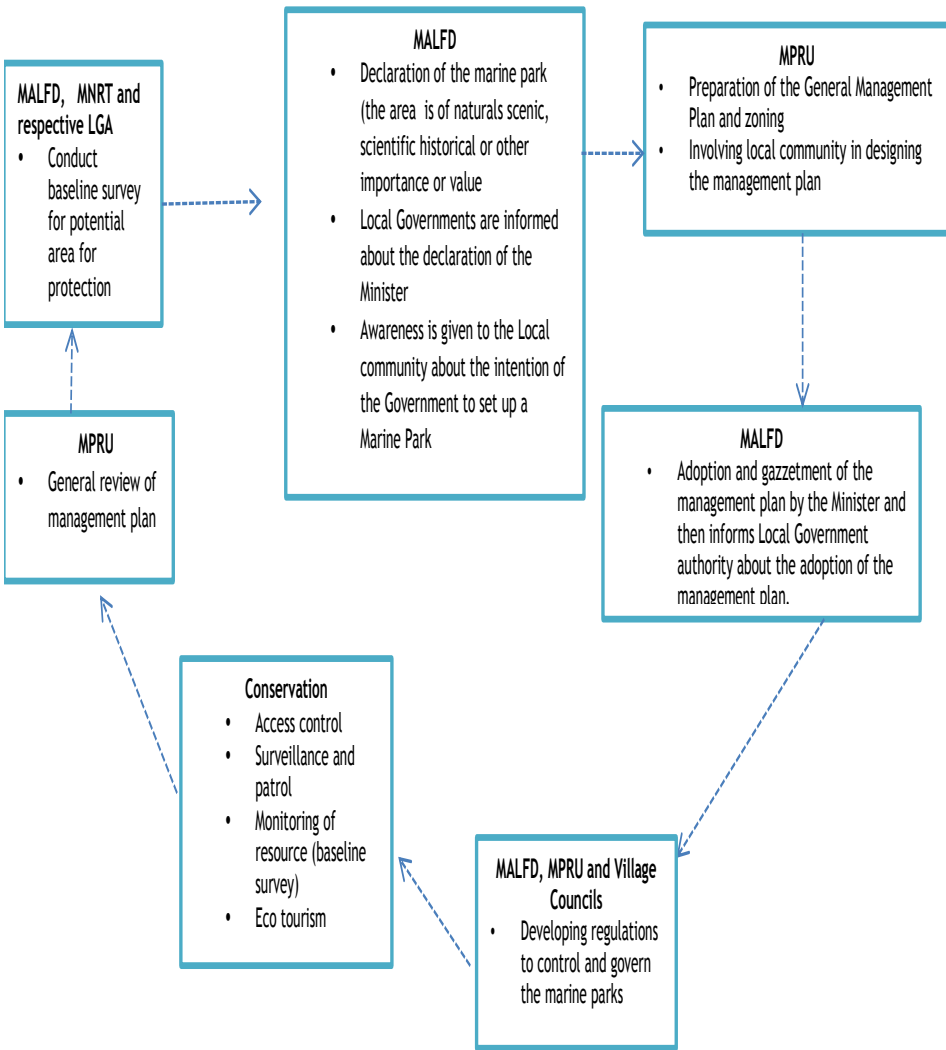
2.6.4 Research and academic institutions

Research and academic institutions from within and outside Tanzania such as the University of Dar es Salaam and Frontiers have conducted a number of research and short-term monitoring programmes within the parks and reserves. Research from these institutions contributed to providing the basis for the establishment of these parks and reserves.

2.7 MPA establishment and management

The processes and actors involved in establishment and management of MPAs are summarised in **Figure 2**.

Figure 2 Government structure responsible for fisheries and coastal management



Source: Auditors analysis

CHAPTER THREE

FINDINGS

3.1 Introduction

This chapter provides audit findings relating to sustainable management of marine resources in Marine Protected Areas (MPAs). Findings arrangement will be as follows; Item 3.2 will cover access control system while 3.3 will cover resource monitoring and 3.4 deals with coordination of stakeholders for protection and conservation of MPAs as related to management of marine protected areas (MPAs).

3.2 MPRU did not adequately control access to marine resources in marine protected areas

Generally MPRU did not adequately control access to marine resources in marine protected areas. Access control in MPAs is manifested in three major areas, which are issuance of permits or permit system, control of investment activities within protected areas and installation of physical demarcation within protected areas.

3.2.1 Permit System for Resource use activities does not operate effectively

The audit found that permit system for resources use activities does not operate effectively. Section 19 (1) (b) of Marine Park and Reserve Act No 29 1994 requires MPRU and Village Liaison Committee to issue residents user certificate to residents and non-resident to provide them access to marine resources. Also, Section 13 of the Marine Parks and Reserves Act no 29 of 1994 prohibits some activities, in an area that has been declared as a marine park or marine reserve unless there is an express permission of the Warden.

For an effective operation of permit system within marine protected areas, four major processes are to be followed in issuing permits to both residents and non-residents. However two out of three parks did not adhere to the required regulations in issuance of, Local Residence User Certificates (LRUC) to residents and Resource User Certificate for non-residents to control and regulate utilization of marine resources within protected areas as shown in Table 2.

Table 2: Inconsistency process for issuance of user permits for residence and non-residence

Process to be followed	Level of Implementation			
	TCMP	MBREMP	DMRS	MIMP
Registration of Residents	No	No	NA	Yes
Approval by VLC	No	No	NA	Yes
Approval by MPA	No	No	NA	Yes
Issuance of Permits	No	No	NA	Yes

NOTE: DMRS consists of various marine reserves, which do not allow resources harvest.

The finding shows that only MIMP complied with the procedures for issuances of permits. Even though MIMPS adhered to the process in issuing permits and certificates MIMP management solely relied on the information from Village Liaison Committee to confirm whether one is a resident or not.

According to interview with MIMP officials, mechanisms to collaborate information given by VLC on the authenticity of applicants are not effective. Although parks have confidential informants, the system to identify, reward and work with them was not clearly stated.

The effect of absence of these permits is connected to impairing the conservation interventions such as enforcement. As a consequence of absence of user certificates park officials cannot clearly identify residents from non-residents during patrols. Additionally, absence of residents user certificates may result into over exploitation of marine resources since the permits and certificate are the control mechanisms to regulate resources within protected areas.

3.2.2 Inadequate control of investment and recreational activities within protected areas

Sections 13 and 16 of Marine Park and Reserves Unit Act No 29 of 1994 requires that within protected areas and the buffer zone of a marine protected areas, no land may be allocated for, or put to, new use without first undertaking an EIA.

In addition, Section 46 of Environmental Audit Regulations 2005 and specific regulations for the MPAs require that environmental audits be carried out on the development activities or on on-going projects that commenced prior to the existence of the park which are likely to have

adverse environmental impacts. The audit found that hotels and other investments found in MPAs were inadequately scrutinized either through EIA or environmental audits as per requirements as shown in Table 3.

Table 3: Investments with and without EIA

MPA	No of investment	Investment with EIA	Investment without EIA
MIMP	11	1	10
TACMP	38	0	38
MBREMP	5	0	5

Source: Auditors analysis

Table 3 shows that out of the 54 investments available in all parks, it is only 1 Project (i.e. Hotel at Shungimbili) in MIMP who went through the EIA process. Other than that, MPAs neither subjected the investments into EIA nor acquire environmental audit reports.

Even though a hotel at Shungimbili went through EIAs, it was still reported several times in progress reports from MIMP that its operations and development were compromising environmental conservation conditions through excavation of land using large tractor, which apparently destroyed habitats of marine species.

Absence of EIA and/or environmental audits on existing investments such as gas plants, and hotels within marine protected areas might result in failure of MPAs to identify, and evaluate positive or negative impacts, of these activities on conserved protected areas, and come up with mitigation measures, to improve or minimize negative impacts.

3.2.3 Inadequate installation of mooring buoys

Interviews with wardens in the visited MPA indicated that marine parks failed to install mooring buoys for demarcation of protected areas in the sea. MBREP and TCMP did not install any mooring buoy in the areas in all three years under audit.

Non- installation of physical demarcation exposes protected areas to resources users and makes them more vulnerable for encroachment and uncontrolled use of marine resources within protected areas.

Table 4: Number of required versus installed demarcation buoys

Name of the MPA	2013/14		2014/15		2015/16		2016/17	
	Number required	Installed	Number required	Installed	Number required	Installed	Number required	Installed
TCMP	25	0	25	0	25	0	25	0
MBREMP	10	0	10	0	10	0	10	0
MIMP	76	23	76	23	76	29	76	34
DMRS	10	2	15	3	20	0	22	0

Source: Auditors analysis

Based on Table 4, TACMP and MBREMP did not install any buoy during the period of three years. DMRs installed only five buoys. MIMP, whose requirement for the whole period was 76 buoys managed to install about 30-45% of the buoys. In total the coverage was less than 25% of the requirements.

MPAs were supposed to ensure that all core zones in the parks were demarcated to control the extraction of resources from these areas. However, in all MPAs only one core zone that is basically a marine reserve in MIMP was demarcated with mooring buoys. The rest of the core zones were not demarcated as shown in Table 5.

Table 5 Statistics of core zone with no demarcation

MPA	No of core zones and reserve	No of core zone not Demarcated	Percentage
MIMP	9	8	89
TACMP	10	10	100
MBREMP	6	6	100
DMRS	7	7	100

Source: MPAs management plans and auditor's analysis

3.2.4 Reasons for inadequate and non-installation of demarcation and mooring buoys

The following were the reasons for inadequate installation of buoys in protected areas

i. Inefficiencies in installation of mooring buoys

Physical observation at visited parks found about 70 uninstalled mooring buoys waiting to be installed. Interviews with officials in the visited marine parks revealed that the grounded buoys were there for

more than two years. Table 6 indicates uninstalled buoys have been grounded for over 2 years in all MPAs. Some of the uninstalled buoys were found in the office premise at MBREMP, MIMP and TACMP as shown on **Photo 1**.

Table 6 Number of grounded mooring buoys at the visited parks

Park	Number of grounded mooring buoys	Duration on ground ¹¹
TCMP	8	More than 2 years
MBREMP	22	More than 2 years
MIMP	24	More than 2 years
DMRS	16	More than 2 years

Source: Auditors analysis

ii. Sabotage of the installed mooring buoys

Interviews with marine parks and reserves officials at MIMP and reviewed MPRU annual reports 2014/15-2016/17 portrayed that, sabotage of the installed mooring buoys by illegal fishers and users of marine resources contributed to the removal of the installed buoys. For example, in Mafia specifically at Mbarakuni, illegal fishers encroached the protected area destroyed five buoys. As a result, the demarcations of boundaries are no longer clear and visible on the core zone.

Photo 1: Picture of mooring buoys kept uninstalled



Source: Photo taken by Auditors at MBREMP

¹¹ The difference between date of purchase and date of observation

3.2.5 Lack of analysis of demand and installation costs on mooring buoys

MPRU did not conduct any comprehensive analysis of the required mooring buoys considering geographical location of the park, biophysical and values or potentiality of specific zones within the parks. The review of action plans, budgets and annual reports in the visited MPAs showed that none of the marine protected areas planned for the installation of the mooring buoys in the last four years.

In addition, despite of the importance of mooring buoys in governance and enforcement of the marine park as stipulated in Marine Protected Area Management Plans, interviews with officials from the visited MPAs revealed that none of the Marine Parks has analysed the cost for installation of mooring buoys.

3.2.6 Inadequately installed instruction signs/billboards

For clarity of what is allowed and not allowed in protected areas particularly for visitors or non-residents, signboards and/or instructions must be placed in different areas to inform people of do(s) and don't(s).

There were few physical marks and written instructions that provide prohibitions or instructions for users who enter the protected zones describing basic do(s) and don't(s) in MIMP and at Mbudya and Bongoyo in DMRS. However there were no image representations for those who cannot read and signboards are only written in English, which make it impossible for a non-English speaking person to understand.

For instance, the single available signboard with instructions was placed at one of the entrances in these MPAs. Considering that there is multiple entrance points in these MPAs, the signboards are not visible to other users who go through other entrances (Refer **Table 7**). Generally the installed instruction sign/billboards were inadequate.

Table 7: Status on availability of physical demarcations and signboard

SN	Reserve	Sign Board	Demarcation	Instruction Order
1.	Bongoyo	✓	X	X
2.	Mbudya	✓	X	X
3.	Mafia island Marine park (Chole Bay)	✓	X	X
4.	Shungimbili	X	✓	X
5	Mbarakuni	X	X	X
6	Nyororo	X	X	X

Source: Observations-from visited Marine Reserves

Based on **Table 7**, there are insufficient instruction boards in protected areas. Out of 8 MPAs, it was only at Chole Bay in Mafia, Bongoyo and Mbudya where there were signboards. Demarcations were found at Shungimbili only, whereas no instructions were found in all the MPAs. This indicates little attention and priority given by the MPAs.

3.3 Ineffective Monitoring of Marine Resources and control systems

Resources monitoring in a marine protected areas is a periodic evaluation to determine conditions and trends of habitats. Monitoring is meant to inform MPAs management on functioning of conservation interventions activities for further actions. In the last three years resource monitoring in all MPAs was not satisfactorily conducted as manifested in the subsequent sections.

3.3.1 Inadequate compliance inspection of investments in marine protected areas

According to Marine Parks and Reserves Act Regulations, under Section 22-24, Part III on regulated activities, MPAs are mandated to monitor and regulate activities through inspection and other means. Inspection of activities that take place in the marine protected areas are vital in ensuring that there is no loss of biodiversity due to over-exploitation or unsustainable use of Marine resource and environmental degradation resulting from social economic investment in these areas.

Review of the MPAs annual reports and interviews with MPRU officials showed that, MPAs were not conducting compliance inspection of activities that took place within MPAs. Therefore the audit team

observed that compliance inspection of investments in marine protected areas was quite inadequate.

In MIMP, no inspection was carried out on hotels and recreational activities that took place within their area. MIMP had more than nine (9) hotels. However, in all three years there was no evidence of any environmental compliance inspection that was carried out. Similar situation prevails in TACMP, which extend to Tanga City where several development projects such as hotels, port and human settlements are located.

The main reason cited during interviews with MPRU officials in Tanga was lack of regulations for implementation of TACMP management plans. In MBREMP the main development projects that are available are oil and gas plants. Review of MBREMP plans and annual reports indicated that in the last three years there were no planned compliance inspections.

Despite lack of plan, MBERP managed to conduct an ad-hoc inspection visit to a gas plant within their vicinity and discovered improper discharge of effluents to the sea without proper treatments, contrary to the laid down procedures as per regulations. This was reported to National Environmental Management Council for further actions. Lack of compliance inspections on investment in marine parks is likely to result in imbalance of the marine ecosystem due to addition of untreated effluents.

3.3.2 Ineffective of patrol activities

Patrols are conducted as a response to MPRU strategic key result area No. 2 that aims to maintain biodiversity and critical habitats of marine parks and reserves. Successful patrols ought to reduce illegal activities, improve security and reduce the use of illegal methods for marine resources utilization.

According to MPRU strategic plan, every park was required to conduct a total of 104 land and sea based patrols as mechanism to reduce illegal activities in protected areas and their buffer zones. Generally patrol activities were ineffective. Weaknesses that were noted during the audit regarding effectiveness of patrol activities are presented in the next sections.

i. Insufficient number of patrols conducted

The review of consolidated and individual marine parks and reserves reports showed that MPAs did not always reach the number of planned

patrols as shown in **Table 8**.

Table 8 Implementation of annual planned patrols

SN	MPA	Target Number of patrol	Number of planned patrol	Actual Number of Patrol conducted		
				2014/15	2015/16	2016/17
1.	MIMP	104	52	56	84	175
2.	DMRS	104	52	11	33	58
3.	MBREMP	104	52	19	30	37
4.	TACMP	104	52	18	45	76

Source: Consolidated MPRU reports 2014/15 -2016/17

Based on **Table 8**, only MIMP reached the planned threshold of 104 patrols once in 2016/2017. The rest of the MPAs never reached the planned number of patrols. However, number of patrols in all the four MPAs was increasing over years.

Furthermore, it was found that all the four MPAs set a target of 52 patrols per annum contrary to the MPRU Strategic plan. Based on **Table 8**, MIMP consistently exceeded the set target of 52 patrols per year. However, the MPREMP never reached the target during the three years whereas DMRs and TACMP managed to achieve the new target in 2016/2017.

ii. Lack of Risk Based Patrols

Interviews with park officials and review of progress and implementation reports suggested that there was no risk analysis conducted to support planning for patrol. The analysis would have provided areas with high degree of vulnerability for encroachment or other threats on resources, potential time to patrol and other intelligence information.

MPA officials, upon enquiries, did not provide justifiable reasons for selection of areas to conduct patrols. In TACMP patrols were more reactive and relying on the information received from local informers.

According to parks officials, there were breaches of patrol confidentiality such that when surveillance plans are made and patrols are planned somehow culprits were able to find prior information. This resulted in failing to capture them in action and, in most cases they fled and abandoned their gears.

In addition, review of patrol reports pointed out that MPA conducted

patrols mostly during the day and rarely at night as presented in **Table 9**. That provides a safe opportunity for illegal fishers to fish within the protected areas unnoticed.

Table 9: Percentage of day-time patrols conducted

MPA	Percentage of day time Patrols			
	2013/14	2014/15	2015/16	2016/17
TCMP	97	98	98	97
MBREMP	n/a	100	100	100
MIMP	100	100	99	99
DMRS	91	100	97	100

Source: Auditors analysis

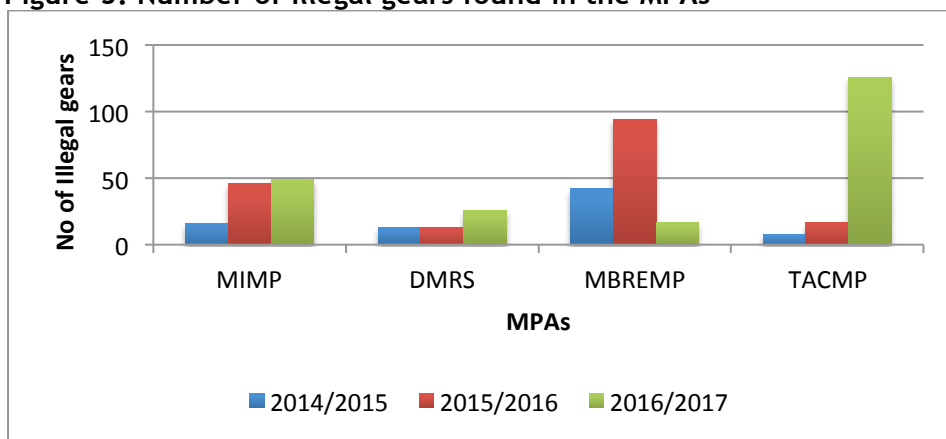
iii. Lack of indicators to measure impact of patrols

MPRU did not establish key performance indicators (KPI) to enable them measure impacts from patrol activities. Patrols were therefore, conducted without clear output targets.

Review of records showed that the number of patrol activities conducted had an impact on the number of reported illegal activities (trampling and encroachment) within protected areas in all MPAs. In the past three years, (2014/15-2016/17) within protected areas a total of 537 people were apprehended conducting illegal activities while 309 illegal gears were reported.

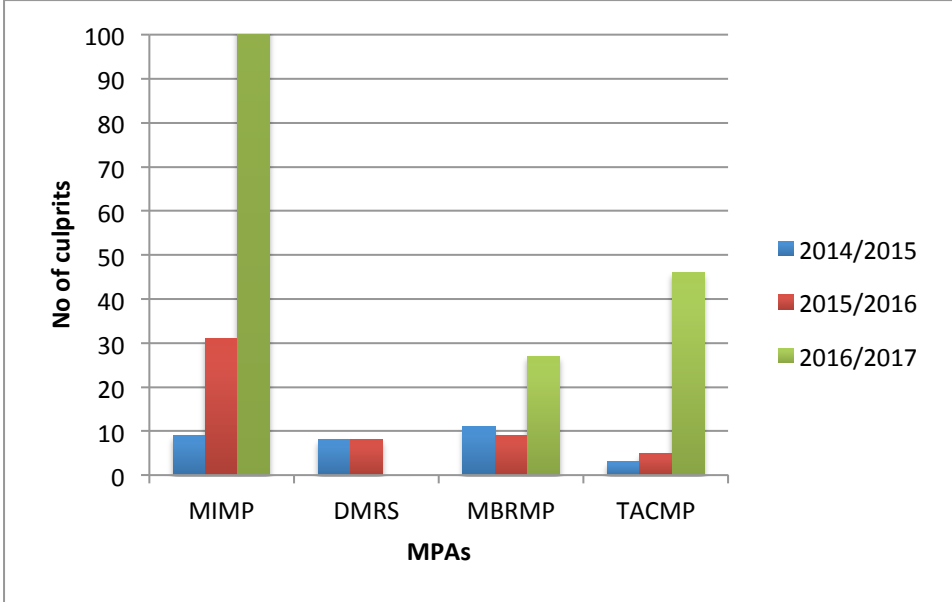
Figure 3 and 4, provides representation and number of offenders trespassing, and number of illegal gears caught in protected areas over the years for the four MPAs respectively.

Figure 3: Number of illegal gears found in the MPAs



Source: MPRU Annual Progress Reports 2014/15-2016/17

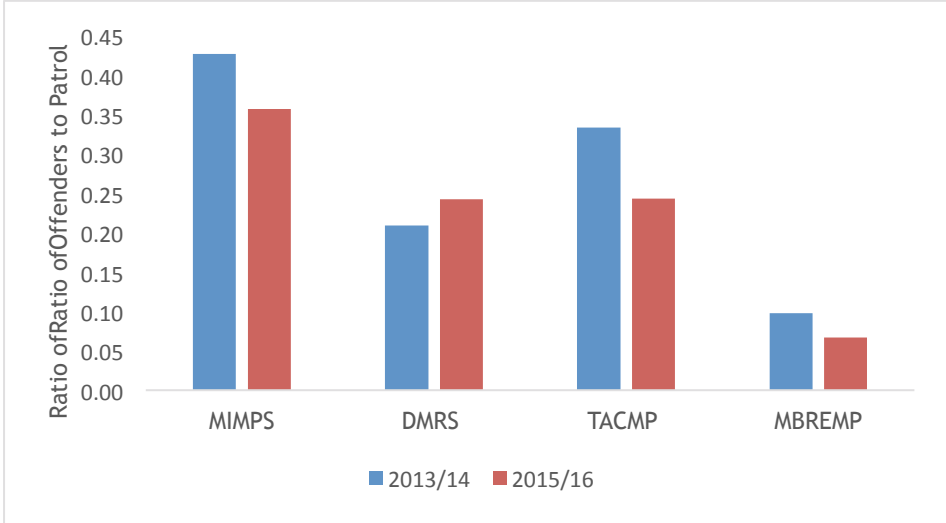
Figure 4: Number of culprits apprehended in the MPAs



Source: MPRU Annual Progress Reports

According to Figure 3, MIMP, DMRS, and TACMP experienced an increasing trend in the number of illegal gears caught. In MBREMP there were an increased number of illegal gears for one year followed by decreasing trend. The trend at MBREMP could be linked with relatively low investment in number of patrols conducted as explained in (i) above and illustrated in Figure 5. The opposite is likely to be true for the remaining MPAs.

Figure 5: Ratio of Culprits Apprehended during Patrols



Source: Analysis of records from inspection reports

Based on **Figure 5**, MIMP's success rate in apprehending illegal fishers is higher than MBRMP; this is due to facts presented in sections 1 and 2 above.

Meanwhile, **Figure 5** show the increasing trend in the number of offenders caught for MIMP and TACMP. MBREMP experienced a decline that was followed by an increase in number of culprits whereas there were declines in DMRs. In both, **Figures 5 and 6**, MIMP and TACMP recorded a higher number of culprits and illegal gears in which MIMP had an annual average of 138 culprits during the last three years while TACMP had an average of 50 illegal gears.

According to MPAs officials, unusual high number of culprits at MIMP is caused by lack of mutual understanding between the park and the community, which have resulted to strained relationship in some areas.

3.3.4 Inadequate monitoring of marine resources

Resource monitoring is one of the means to ensure effective conservation of marine resources in marine protected areas since it provides information for management decision over conservation matters.

According to MPRU strategic plan 2014-2019, MPRU and respective parks are supposed to conduct monitoring to assess biophysical conditions of marine resources like corals reefs, sea grass bed, and mangrove to ascertain whether there are development patterns of the resources being conserved.

However, analysis of the MPRU semi-annual and annual reports showed that none of the MPAs monitors all parameters of biophysical and marine resources as indicated in Table 10. In most cases MPAs concentrated on monitoring fish catch and coral reef ignoring other key aspects in conservation of marine resource such as water and sediment quality, sea grass bed, invertebrates density and indicator species such as coelacanth, and sea turtle.

Table 10: Analysis of monitoring of marine resources in MPAs

Issue/species supposed to be monitored	Frequency of monitoring ¹²			
	MBREMP	MIMP	TCMP	DMRS
Fish catch				

¹² Frequency of monitoring: frequent >80% of required number; rarely=20-80% of required number; and not done if not monitored at all.

Issue/species	Frequency of monitoring ¹²			
• Fisheries data collection	Frequent	Frequent	Frequent	Frequent
• Fish reports and vessels	Frequent	Frequent	Frequent	Frequent
• Fishing gears	Frequent	Frequent	Frequent	Frequent
Benthic				
• Coral reefs	Rarely	Frequent	Rarely	Rarely
• Coral cover health status	Not at all	Frequent	Rarely	Rarely
• Sea grass bed	Rarely	Rarely	Rarely	Rarely
Water and sediment quality	Not done	Not done	Not done	Not done
Invertebrates density	Not done	Not done	Not done	Once
Sea mammals/shark and whales	Frequent	Rarely	Rarely	Rarely
Indicators species/Target species				
• Coelacanth	n/a	n/a	Not done	n/a
• Sea turtles	Rarely	Rarely	Rarely	Rarely
• Dugongs	Rarely	Rarely	Rarely	Rarely
Mangrove species	Not done	Rarely	Not done	Not done

Source: Auditors analysis of MPA's annual performance report (2014/15-2016/17)

The following were the reasons that directly or indirectly impeded monitoring of marine resources by the Marine Park Authorities.

3.3.5 Lack of Resource Monitoring Guidelines and plans

According to MPRU strategic plan (2014-19) the guideline for monitoring and evaluation of marine resources was supposed to be developed by the end of 2014. However, interviews with officials from the MPRU HQ and in the visited parks pointed out that MPRU lack guideline for monitoring and evaluation of marine resources.

Further, reviews of the MPRU annual plans and reports showed that MPRU is yet to start developing this guideline, which is essential for consistent and harmonised resource monitoring in marine park authorities.

In addition, interviews with officials both at MPRU Headquarter and in the visited MPAs indicated that none of the visited MPAs had developed comprehensive monitoring plans for monitoring of marine resources.

Furthermore, the audit team could not find any monitoring plan which indicated number of monitoring activities, reasons, goals, resources, objectives, targets and milestone required to implement monitoring activities in all visited Marine Parks.

Interviews with officials in the visited MPAs revealed that the main reason for not having resource monitoring plans was lack of comprehensive baseline data to inform planning of resources monitoring.

3.3.6 Lack of targets and performance indicators for monitoring of marine resources

To constitute an effective system of performance measurement it is very important to have defined and standardized processes within the organization.¹³ The ability to measure results against stated objectives and targets is important in understanding the impact of marine park activities in enhancing conservation and protection.

Review of the MPAs annual performance reports indicated that MPA reported on progress of mainly biophysical condition. However, there were no established key performance indicators for monitoring of marine resources both at the MPRU headquarters and at MPA levels to be used as benchmark against progress made.

According to an interview with officials from the visited marine protected areas, the main reason for lack of reliable performance indicators is lack of baseline data¹⁴. Performance indicators are important in establishing whether conservation objectives are being met or whether management actions are effective.

3.3.7 Lack of species Management Plans

The MPRU strategic plan (2014/15-2019) requires all MPAs to put in place species management plans especially for target and indicator species. The species management plans address conservation concerns for specific species in marine parks.

During establishment of these MPAs, each one of them identified important species within their area of designation. However, interviews with officials of the visited MPAs revealed that there are no developed species management plans. The development of specific

¹³Role And Importance Of Key Performance Indicators Measurement by Dragon Velimirović

¹⁴Baseline data is data that provides some background environmental information for the system to be monitored, and how that system behaves (CSIRO, 1998).

species management plans in MPAs could provide the MPRU with targets, objectives and performance indicators for conservation of targeted, endangered and indicators species and use them to measure the dynamics of both fauna and flora within the marine parks and reserves.

3.3.8 Inadequate selection of sites for habitats monitoring

Based on the MPRU strategic plan, each park is required to select 10 habitats for monitoring of marine resources. However, review of annual performance reports revealed that, none of the MPA managed to select the required number of habitats for monitoring of marine resources in the last four years under audit. As indicated in Table 11, the number of sites selected in each MPA ranged from 3 to 6. The audit found that few sites were selected for habitat monitoring

Table 11: Comparisons of number of sites selected for monitoring of Marine Resources

MPA	2014/15		2015/16		2016/17	
	Required number of sites for monitoring	Number of selected sites	Number of required sites	Number of selected sites	Number required sites	Number of selected sites
MBREMP	10	3	10	3	10	2
TCMP	10	0	10	3	10	4
MIMP	10	6	10	6	10	6
DMRS	10	0	10	0	10	3

Source: MPRU strategic Plan and MPA's annual performance reports. (2013/14-2016/17)

The main reasons for having few sites for selection was lack of a risk based plans for monitoring of marine resources as explained in preceding sections.

3.3.9 Lack of risk based plans for monitoring of marine resources

Risk assessment for monitoring of MPAs activities is important for the achievement of its objectives. Interviews with officials from the four visited marine protected areas and the MPRU Headquarter showed that marine parks lacked risk based plans for monitoring of resources.

The audit team found that there were no systematic risk analyses done during site selection for monitoring of marine resources. The practices for selection of habitat monitoring site varied from one marine park to the other. Failure to select site based on systematic risk assessments

could potentially results in MPRU directing their efforts to areas that are not significant to the health of marine ecosystem.

3.3.10 Storage and Sharing of Information

Information required for national performance management is to be identified and recorded in appropriate systems, and that procedures are in place to ensure the integrity of this data. Information and data management is a critical component of ensuring effective oversight of marine resources.

However, interviews with MPRU officials indicated that, MPRU lacked a reliable system for storage of information of Marine resource. Marine parks currently document marine resources information on paper files and other computer based formats like excel sheets etc. However, they are not centrally connected for easy analysis by the MPRU headquarter or for another park to see what others do in a way that achievements of one MPA can be used for another.

Reliable system for storing marine resource information across MPA could simplify analysis of trends and performance data on protection and conservation of Marine resources in Marine Park Authorities in achieving planned results and to determine whether MPAs are having any impact on conservation.

3.3.11 Uneven distribution of marine resources monitoring tools

One of the reasons that came up during interview with officials in MPAs for not conducting adequate monitoring of marine resources was lack of adequate tools. However, interviews with officials from MPRU indicated that, there are no established risk based criteria for allocation of tools for monitoring of marine resources.

An example, there are powerful boats at both TACMP and DMRS, which are often unused for over a year while MIMP, which is apparently the biggest park, does not have the same. Most of these tools were given by donors; therefore the distribution of tools was to some extent based on the interest and demand of the donor-funded project.

3.3.12 MPRU has not measured the effectiveness of MPAs in conservation activities

The MPRU strategic plan stipulates that for resource management, effective and efficiency measurement are supposed to be conducted after every 2.5 years from July 2014. Nevertheless, interviews with

officials from the visited MPAs and MPRU HQ showed that MPRU had not conducted any independent assessment on the effectiveness of marine parks activities in enhancing conservation.

Review of documents showed that MPRU used the compiled quarterly, semi-annual and annual reports from MPAs to gauge their performance. However, none of these comprehensively measures the biophysical and socioeconomic impact of marine park activities in their respective areas. As an overseer of all MPAs, measuring effectiveness of each MPA could have informed the MPRU on the impact of marine parks and reserves activities on conservation and protection of marine resources.

3.4 Ineffective coordination for participatory conservation and protection of marine resources

To ensure effective participatory conservation and protection of marine resources, marine parks are supposed to have in place an effective coordination mechanism for stakeholders ranging from local community, government organization and non-governmental organization. The interviews and analysis of MPRU annual plans, reports and correspondence revealed several shortcomings on coordination for participatory marine conservation and protection as discussed below:

3.4.1 Inadequate establishment of village liaison committee

According to Marine Parks and Reserves Act of 1994, Village Liaison Committees are critical for information flow between villagers and marine parks. Review of documents and through interview, it was shown that only 20% of the villages that are within visited Marine Protected areas have Village Liaison Committees (VLC).

MIMP managed to establish village liaison committees in 11 out of 13 villages while there are no established VLC in both TCMP and MBERP (refer **Table 12**). Based on interview, the main reason for not establishing VLC for MBREMP in Mtwara was lack of participation and awareness from the local communities while in TACMP the main reason was lack of regulations. Apart from those reasons, the expiry of three-year tenure for members of Village Liaison Committees also contributed to the non-existence of the committees during the audit.

Table 12: Establishment of village liaison committees (VLC¹⁵)

Name of the Park	Number of villages	Number of village with VLC	Percentage
MBREMP	23	0	0
TCMP	19	0	0
MIMP	13	11	85
Total	55	11	20

Source: Analysis of Interviews (2013/14-2016/17)

3.4.2 Inadequate Involvement of Village Liaison Committees in park activities

According to Marine Parks and Reserves Act of 1994 the VLC are supposed to participate in the conservation and protection of the marine resources. The VLC are supposed to be involved in issuance of permits, implementation of patrols and monitoring of resources.

However, VLC were not adequately involved in patrol activities in marine parks. The review of a sample of patrol reports in Mafia Island indicated that in more than 90 % of the sampled patrols there was no involvement of the VLCs.

According to the interviews with officials in MIMP the main reason for not involving VLC in joint patrols was to prevent leakage of information to culprits. Review of the permit allocation registers, forms and correspondence in Mafia Island Marine Park revealed that, in all four years under audit VLC were involved, in which 194 local resident user certificates for fishing and 244 resource use permits for non-residents were issued. Inadequate involvement of VLCs in park activities hampers the participation of local communities in conservation and protection of Marine resources.

3.4.3 Inconsistencies and unreliable revenue sharing with local communities and districts

The MPRU's regulations indicate that Marine Parks should share 20 percent of their revenues with local communities. Analysis of the Marine Parks revenue's and expenditure reports show that two parks had not allocated 20% of their revenue to Local Communities in all years under audit. As indicated on Table 13. MBERP and TACMP failed to share revenue collected from the marine resources with local communities while MIMP shared revenue with local communities in the last three years but allocations were not disbursed on time to the communities and LGA.

¹⁵ In DMRS there are no village committees as the park is not boarded with villages

Table 13: Revenue Disbursement to the LGA in MIMP

	2013/14		2014/15		2015/16	
	Amount (Million Tsh)	Date remitted	Amount (Million Tsh)	Date remitted	Amount (Million Tsh)	Date remitted
	18.4	21/09/2016	14.9	21/09/2016	17.1	19/02/2018
	14.0	4/5/2015	58.0	18/05/2017	12.0	3/1/2018
	36.8	18/05/2017			60.0	20/11/2017
Total	69.3		72.9		89.2	

Source: Analysis of Interviews (2013/14-2016/17); MPRU Performance Reports (2013/14-2016/17)

Interviews with Wardens in charge in these parks indicated that the main reason for failure to remit the funds to local government authorities was that, MBREMP and TACMP direct all revenue accrued to daily operations of the marine parks.

Unreliable sharing of revenue with local government authorities likely jeopardizes participatory protection and conservation of marine resource in marine park authorities.

3.4.4 Insufficient implementation of planned stakeholders awareness trainings

Interview with officials in the marine parks indicated that MPAs provides awareness training to different stakeholders using several platforms such as campaigns, seminars, and informal and formal village meetings.

However, review of MPRU action plan showed that none of the MPAs implemented all the awareness creation events planned during the period of four years. For instance, TACMP managed to implement eight out of 12 events whereas MBREM implemented one out of three and MIMP never implemented any event out of the six planned events as shown in **Table 14**. The results shows that there was little implementation of planned stakeholders awareness trainings.

Table 14: Execution of awareness trainings to stakeholders' 2013/14-2016/17

Name of the MPRU	Number of planned trainings	Number of executed trainings	Deviation in %
TCMP	12	8	67
MBREMP	3	1	33
MIMP	6	0	0
DMRS	N/A	N/A	N/A

Source: MPRU's action Plans and Annual reports (2014/15-2016/17)

Non-execution of awareness programs to the communities living in the protected areas reduces the rate of voluntary compliance.

3.4.5 MPRU lack a comprehensive extension program for stakeholders

The MPRU strategic plan stipulated that each park was supposed to have a comprehensive extension program for stakeholders by December 2015. The extension program for stakeholders is important in identifying specific trainings to each stakeholder, methods of delivery and performance indicators/measures.

However, interviews with officials in the visited Marine Parks showed that none of the marine parks developed any extension program for training its stakeholders. MPRU therefore lacks a comprehensive extension program for stakeholders.

The main reason for not developing a comprehensive education program, according to interviews with officials in marine parks, was that MPA had not conducted needs assessment to understand the status of environmental awareness among its stakeholders. The impact of not having a well-articulated and an integrated education program could result into ineffective awareness education and minimal involvement of the community in the conservation activities and programs. It may also contribute to lack of knowledge on importance of conservation and proper ways to use resources within protected areas.

3.4.6 Inadequate coordination between government agencies in the marine protected areas

MPAs are supposed to collaborate with government agencies operating within marine protected area to ensure smooth implementation of conservation activities such as patrols, monitoring of resources and issuance of permits. These government agencies include District Councils and Marine Police. Review of document has shown that there are weaknesses in marine park's collaborative plans with other government agencies on implementation of activities such as patrols, monitoring of resources and issuance of permits.

TCMP General Management Plan, for instance, stipulates that the mechanism for collaboration with government entities would be through a Memorandum of Understanding (MOU). However, interviews with officials in TCMP revealed that efforts to prepare memorandum of understanding to spearhead coordination with government agencies was initially established with Muheza District Council but it was never finished. It was noted that up to the time of the audit no MoU was

signed with any Government agency to help smooth operations.

Moreover, in MIMP and MBREP there were no formal collaborative mechanisms that were identified to guide sharing of information and implementation of strategic matters of common interest with government agencies. As a result, there were conflicting interests of government agencies such as marine police and District Councils, who operate within the jurisdiction of MPAs due to inadequate sharing of information on conservation and protection of marine resource. The conflict of interest is best illustrated in the Nyororo Island case presented here under.

Box 1: a special case of Nyororo Island which shows a lack of coordination among stake holders in Mafia.

Nyororo Island Case

Nyororo is a small island located in the western part of the main Mafia Island, and is designated as part of Protected Area in the zoning scheme of the MIMP. This small island of Nyororo is identified as Marine Reserve (no take zone). However, at the time of the audit, Mafia District Council issued 220 fishing licenses in this protected area. Fishers frequently accessed the island and established fishing camps within.

The two government authorities had conflicting objectives on management of this island, for Mafia District Council emphasis is more on reaching, and preferably exceeding, revenue collection targets through harvesting fisheries resources found in this island, even if that would mean destruction of protected areas and fish breeding sites. As a result, more, pressure was placed on fisheries officers to issue licenses to increase revenues to the district. On the other hand, MIMP focused on conservation of this island for which nothing was supposed to be harvested from this site according to MPRU Act.

Despite efforts to collect more revenue from fisheries in this island, Mafia District did not invest adequately to protect the island. The audit found that, the Marine Act and its regulations were not followed by this LGA. This created a misunderstanding between MIMP management and Mafia District Council.

As part of the enforcement procedures, MIMP was insisting on fishers to vacate the island. These differences created strained relationship between LGA, MIMP and the community. It inhibited MIMP to control the area to an extent that in one of the operations conducted to monitor situation and remove the trespassers and camping fishers in the area, MIMP officers were physically assaulted and injured by the local people at Nyororo. On other hand, based on the interview with MIMP officials, it was noted that, trespassing to this island was also attributed by failure of MIMP to prioritize control of entry point of the island in the early stage since the fish camps were a gradual development and not an overnight phenomenon.

In this conflict, the LGA is generally perceived as gaining power or resources at the expense of MIMP. The conflict has risen due to perceptions of unfairness by LGAs rather than actual inequity. This conflict may drive individuals and groups in different directions if not properly handled. Conflict resolution is required to both parties to provide an opportunity to develop new, better, and more comprehensive solutions. According to the interview with officials LGA and MIMP, the two organisations are in the process of drafting an MOU toward the management of this island. It should however be remembered that the proposed MOU will lead to compromising the MPA's legislation which clearly declares the island as a reserve zone.

3.4.7 Non-operating/non -functioning of advisory committee

According to Marine Parks and Reserves Act of 1994 the Advisory Committee is responsible for advising the Board on the management of regulations of marine parks, to oversee the operation of marine parks, to consult with the Warden on technical, scientific and operational matters concerning the marine parks. Advisory committee is made up of members from different stakeholders such as LGAs, NGOs, and investors in marine parks, community members and research institutions.

Advisory committees are supposed to meet quarterly each year (i.e. four meeting per year). However, it was noted that advisory committee meetings were rarely convened as shown in Table 15. This implies that Advisory committees were non-operational or non-functional.

Table 15: Meetings held by MPA advisory committee

Name of the MPA	Planned meetings 2014/15-2016/17	Meetings held
TCMP	12	1
MBREMP	12	2
MIMP	12	4

Source: Analysis of the MPA annual reports. (2014/15-2016/17)

Based on Table 15, the advisory committee meetings were inadequately done. Interviews with officials in TCMP revealed that the park had been operating for more than one year without an advisory committee because the processes to establish the committee were not timely completed by MLFD. Lack of a well-functioning advisory committee impairs decision making of the park since it is the supreme decision making body at the park.

CHAPTER FOUR

AUDIT CONCLUSIONS

Audit findings presented in the previous chapters gave us reasons to draw the following conclusions:

4.1 Overall Conclusion

MPRU has the responsibility to promote the protection and conservation of marine resources within Marine Protected Areas (MPAs) and ensure sustainability. However, MPRU has not fully achieved this objective. MPRU through MPAs has not adequately controlled access to protected areas using its permit system. In addition, MPRU has not ensured proper monitoring of marine resources. Besides that, MPRU has not adequately coordinated stakeholders in marine protection and conservation.

4.2 Specific conclusions

4.2.1 Access control

The current situation as it regards access control system in Marine Protected Areas does not guarantee protection of the resources found within these protected areas, and it provides loopholes for unauthorized people to enter the protected areas and harvest the resources. These resources are supposed to be provided high level protection.

This is because; Local Residents User Certificates or licenses are not issued due to delay in updating local resident's registers. This register is a tool to identify local users from non-locals.

Entry and exit points in Marine Protected Areas are not well controlled and MPRU do not have an effective system to control all activities and people going in and out of the protected areas.

In addition, there are no physical boundaries to demarcate protected areas from other areas. This has resulted in frequent encroachment of the protected areas by people performing various activities in the ocean.

Investment activities like hotels and recreational centres that operate within Marine parks are not adequately controlled because they were neither subjected to Environmental Impact assessment nor

environmental audit as per regulations.

4.2.2 Resource Monitoring

MPRU do monitor the resources in Marine Protected Areas as manifested in the following scenarios.

MPAs do not monitor the resources constitutently as there are no scheduled timelines for resource monitoring in all the protected areas. Therefore, monitoring is done when there are other activities to be done in the area. Additionally, monitoring is more concentrated on fish catch data and status of coral reefs leaving aside other important aspects like nesting sites, hotspot and other marine resources habitats.

There is unreliable intelligence system, which is based on lack of database of trustworthy informers, which could provide real time information on culprits and their techniques to combat their actions.

There is weak proactive surveillance and patrol system to reduce chances of illegal activities in protected areas. MPAs do not conduct night patrols at all; that provide undisturbed opportunity for illegal fishers to fish within the protected areas unnoticed.

Additionally, patrol teams do not have enough patrol equipment such as radio communications equipment, GPS, binoculars, vessel safety flares etc. Having this equipment could make patrols more efficient.

4.2.3 Coordination of stakeholders

Coordination between MPAs and other stakeholders is not adequate and therefore, provides loopholes for a variety of weaknesses in conservation of the protected areas.

In practice is common to find that LGAs issuing fishing licenses to people without any consultation with MPAs. For instance, in TACMP almost the whole area along the coast of Tanga City Council is under the protected zones; however, Tanga City Council continued to issue fishing licenses without specifying the conditions of fishing based on the Protected Areas.

CHAPTER FIVE

RECOMMENDATIONS

5.1 Introduction

This chapter presents recommendations to MPRU and MLFD, which, if implemented, will improve the protection and conservation of marine resources within MPAs and address weaknesses noted in the areas, these includes access control, monitoring of marine resources, and coordination of stakeholders.

5.2 Access Control

1. MPRU should establish a system that will integrate license applicant information with information given by VLC.
2. MPRU should ensure that MPAs prioritize installation of instruction signs/billboards and physical boundaries to demarcate protected areas in their plans and budget.
3. MPRU should conduct needs assessment and cost estimates to establish the requirements for installation and management of demarcation and mooring buoys in marine parks. The analysis has to consider required number of mooring buoys in relation to size and geographical location of the park.
4. MPRU through MPAs should strengthen systems to control the existing investment activities within parks and ensure that their activities abide with environment regulations.

5.3 Marine Resource Monitoring

1. MPRU should establish and document intelligence system for information gathering and use it for risk based planning and implementation of patrol activities.
2. MPRU should developKey Performance Indicators to enable the performance assessment of the state of marine resources.
3. MPRU should review allocation of materials and equipment, establish criteria for allocation and provide clear and detailed direction on allocation in line with operational needs.
4. MPRU should develop a comprehensive and integrated information management system for storage of information for use in monitoring and evaluation of marine resources.

5. MPRU should develop practical guidance on how parks are to assess economic opportunities to determine whether they are compatible with conservation objectives of the MPAs. A number of economic activities are taking place in Marine Parks and Reserves including gas exploitation in MBREMP and tourism infrastructure in MIMP and DMRS. It is important that these activities are compatible with the conservation objectives of the MPAs.

5.4 Coordination of Stakeholders

1. The Ministry (MLF) should support MPRU to institute legal working tools like regulations and establishment of Advisory Committees to ensure that MPRU can achieve effective operations of co-management within protected areas.
2. MPRU should ensure that each MPA conducts needs assessment to understand the status of environmental awareness among stakeholders and implement awareness programs.
3. The Ministry should develop programs with the aim of minimizing overdependence on marine resources to coastal and fisheries communities. The programs need to provide alternative solutions to coastal communities.

REFERENCES

1. Crooks, S., Herr, D., Tamelander, J., Laffoley, D. and J. Vandever. 2011. Mitigating Climate Change through Restoration and Management of Coastal Wetlands and Nearshore Marine Ecosystems: Challenges and Opportunities. Environment Department Paper 121, World Bank, Washington DC, USA.
2. Halpern, B.S. 2003. The impact of marine reserves: Do reserves work and does reserve size matter? *Ecological Applications* 13: 117-137.
3. Halpern, B.S., Walbridge, S., Selkoe, K.A., Kappel, C.V., Micheli, F., D'Agrosa, C., Bruno, J.F., Casey, K.S., Ebert, C., Fox, H.E., Fujita, R., Heinemann, D., Lenihan, H.S., Madin, E.M.P., Perry, M.T., Selig, E.R., Spalding, M., Steneck, R. and R. Watson. 2008. A global map of human impact on marine ecosystems. *Science* 319: 948-952.
4. Harrison, H.B., Williamson, D.H., Evans, R.D., Almany, G.R., Thorrold, S.R., Russ, G.R., Feldheim, K.A., van Herwerden, L., Planes, S., Srinivasan, M., Berumen, M.L. and G.P. Jones. 2012. Larval export from marine reserves and the recruitment benefit for fish and fisheries. *Current Biology* 22: 1023-1028.
5. Hastings, J., Thomas, S., Burgener, V., Gjerde, K., Laffoley, D., Salm, R., McCook, L., Pet- Soede, L., Eichbaum, W.M., Bottema, M., Hemley, G., Tanzer, J., Roberts, C.M., Govan, H. and H.E. Fox. 2012. Safeguarding the Blue Planet: Six Strategies for Accelerating Ocean Protection. *Parks* 18 (1): 13.
6. Lester, S.E., Halpern, B.S., Grorud-Colvert, K., Lubchenco, J., Ruttenberg, B.I., Gaines, S.D., Airamé, S. and R.R. Warner. 2009. Biological effects within no-take marine reserves: a global synthesis. *Marine Ecology Progress Series* 384:33-46.
7. Russ, G.R. and Alcala, A.C. 2010. Enhanced biodiversity beyond marine reserve boundaries: The cup spillover. *Ecological Applications* 21:241-250

APPENDICES

APPENDIX 1: Summary of Tourism Regulation by zones

Activity	Core Zone	Specified-use Zone	General-use Zone
SCUBA diving	P	P	P
Snorkelling/swimming	Freely allowed	Freely allowed	Freely allowed
Windsurfing/Sailing	Freely allowed	Freely allowed	Freely allowed
Construction ¹⁶	X	P	P
Sport-fishing	X	X	P
Overnight boat mooring	X	X	P
Camping	P	P	P
Sea plane	X	X	P

KEY

X=Not Permitted

P=Permit Required from MPA/villages

¹⁶ Specifically tourism related construction and structure providing utility function such as waste disposal, water and electricity

APPENDIX 2: Summary of Permitted Marine Resource Use

	Core Zones	Specified- Use Zones		General Use Zone	
Activity	All Users	Resident	Others	Residents	Others
Mangrove cutting (subsistence)	X	X	X	P	P
Other mangrove resources (leaves, fruits, barks, etc.)	X	X	X	LRUC	P
Sea weed/sea grass collection (wild)	X	X	X	LRUC	P
Mari culture	X	P	X	LRUC	P
Other marine bio-prospecting	X	X	X	P	P

KEY:

X= Not Permitted

LRUC= Local Residents User Certificates

P= MPA permit required

APPENDIX 3: Summary of Permitted Forest and Terrestrial Resource use by Zone

	Core Zones	Specified-Use ZONES		GENERAL USE ZONE	
Activity	All Users	Residents	Others	Residents	Others
Pole -cutting	X	P	X	LRUC	X
Cutting of reserve trees for timber	X	X	X	P	X
Agriculture and agro forestry	X	X	X	LRUC	X
Bee keeping	X	X	X	LRUC	X
Hunting	X	X	X	LRUC	X
Land based fossil	X	X	X	LRUC	X
Construction (non-tourism)	X	X	X	LRUC	P
Camping (fishermen)	P	P	P	LRUC	P

KEY

X= Not Permitted

LRUC= Local Residents User Certificates

P= MPA permit required

APPENDIX 4: RESPONSES ON COMMENTS FROM MPRU

A: Overall Responses

The Marine Parks and Reserves Unit (MPRU) is a public institution established by Act of parliament No. 29 of 1994 responsible for managing Marine Protected Area (MPAs) in Tanzania mainland. The Act provides for establishment of two categories of MPAs which are Marine Park or Marine Reserves. The MPRU operates under the Board of Trustees, which is charged with the responsibility of establishing, monitoring, controlling, management and administration of conservation areas gazetted as Marine Parks and Marine Reserves. The MPRU is guided by the national policies including Fisheries, Wildlife, Tourism, Antiquities, Environment, Water, Forestry and Beekeeping. In addition, MPRU is implementing its strategic Plan (2014 - 2019) which compliments existing policies, rules and regulations.

Currently, there are three (3) Marine Parks and fifteen 15 Marine Reserves namely;

- Mafia Island Marine Park (MIMP) located in Mafia District, with an area of 822 km² gazetted in 1995
- Mnazi Bay Ruvuma Estuary Marine Park (MBREMP) in Mtwara District with an area of 650 km² gazetted in 2000.
- Tanga Coelacanth Marine Park (TACMP) located in Tanga and Muheza Districts, with an area of 554 km² gazetted in 2009.
- Marine Reserves located in Dar es Salaam, Coast and Tanga Regions gazetted in 1975, 2007 and 2010, respectively.

Marine reserves located in Dar es Salaam are termed as Dar es Salaam Marine Reserve systems (DMRs) which include islands of Bongoyo, Mbudya, Pangavini, Kendwa, Inner and Outer Makatube and Inner and Outer Sinda as well as one sand dune of Funguyasini while those located at Coast region are known as Mafia Marine Reserves including islands of Nyororo, Shungimbili and Mbarakuni and those located in Tanga are known as Tanga Marine Reserve system (TMRs) including the islands of Ulenge located at Tanga Municipal Council, Kwale, Mwewe and Kirui all located at Mkinga district as well as Maziwe Marine Reserve located at Pangani district.

Despite the expansion of the area of operation, MPRU have a total number of sixty (60) staff out of one hundred and sixteen (116) required. This is seriously affecting the implementation of conservation activities within the MPAs.

The Management team of Marine Parks and Reserves Unit (MPRU) went through performance audit report and observed that some of the findings stipulated in the report were not reflecting the actual performance of the Unit on ground. However additional information was provided.

B: Specific Responses

SN	RECOMMENDATIONS	MPRU COMMENT(S)	ACTION (S) TO BE TAKEN	TIME LINE
1.	MPRU should establish a system that will integrate license applicant information with information given by VLC	The system is there, for example Non-Resident User Permits have been issued to outsider fishers who camp in the Park areas for fishing purposes. This activity has been implemented by the park in collaboration with VLC members. In practice Non-Residents are identified by village Government and verified by the Park through enforcement and monitoring department.	MPRU will strengthen the issuance of user permits and verification by documenting the process and keeping records.	By June 2019

2.	MPRU should ensure that MPAs prioritize installation of instruction signs/billboards and physical boundaries to demarcate protected areas in their plans and budget.	<p>This activity is ongoing and has been implemented based on availability of funds. MPRU has been placing signboards at strategic areas with intention of providing various information related to conservation priorities and attractions including; dos and don'ts. MPRU understand the importance of Installation of buoys indicating boundaries and user zones in its MPAs. This activity has been done in some parks particularly, Mafia Island Marine Park (MIMP), Shungimbili Island Marine Reserve and Mnazi Bay Ruvuma Estuary Marine Park. Marker buoys were installed to show the boundaries and designated user zones in waters and beacons were installed on terrestrial boundaries. Despite the efforts undertaken by MPRU, various challenges have been encountered including sabotage by illegal fishers, drifting of buoys by strong water waves and currents, water depths, and incompatibility of the supplied buoys with their accessories.</p>	<p>MPRU will continue to allocate funds in every year budget for installation and replacement of the old signs/billboards with new ones in strategic areas/places in its MPAs.</p> <p>Currently, the MPRU Board of Trustees in collaboration with the Management are looking for appropriate expertise and mechanism of installing marker buoys in its MPAs boundaries and user zones as well as mooring buoys for anchoring boats.</p>	<p>By 2019</p> <p>By June 2020</p>
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3.	MPRU should conduct needs assessment and cost estimates to establish the requirements for installation and management of mooring and demarcation buoys in Marine Parks. The analysis has to consider required number of mooring buoys in relation to size and geographical location of the park	MPRU carried out need assessment for marker buoys in its MPAs, which led to procurement of some buoys during MACEMP Project under the World Bank funding. However, only few buoys were installed prior to encountering a number of physical and technical challenges including, sabotage/theft , and environmental conditions such as ocean currents and waves, water depth which affected marker buoys installation exercise	MPRU will solicit funds and update the needs assessment and cost for installation and management of demarcation and mooring buoys within its MPAs.	By June 2020
4.	MPRU should establish and document intelligence system for information gathering and use it for risk based planning and implementation of patrol activities.	At present MPRU has been using VLCs, Honorary Rangers and other informers to get important information which assist in enforcement and patrols.	MPRU will formalize the system of gathering information for planning and implementation of patrol activities.	By June, 2019

5.	MPRU should develop Key Performance Indicators to enable the performance assessment of the state of marine resources.	MPRU understands the importance of monitoring its resources within the MPAs. Of recently, MPRU has been implementing Strategic Adaptive Management Project, among other things MPRU has been revising it is management objectives to be SMART (specific, measurable, adequate, reliable and time bound). Through the project monitoring indicators for every resource were developed and data collection methodology harmonized. In additional, Manual for coral reef monitoring was developed through SWIOFish Project funding.	MPRU will continue to conduct resource assessment to understand state of marine resources using harmonized methodologies and developed performance indicators.	On regular basis depending on needs
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6.	MPRU should review allocation of materials and equipment, establish criteria for allocation and provide clear and detailed direction on allocation in line with operational needs	MPRU has been assessing its requirements and needs of materials and equipment for MPAs operations during budget preparation and allocate the fund based on the budget ceiling. Also there are equipment and materials, which are provided by donor according to the requirement of the project.	MPRU will consider the requirements of materials and equipment based on availability of funds and donors support.	Annually
7.	MPRU should develop a comprehensive and integrated information management system for storage of information for use in monitoring and evaluation of marine resources.	MPRU has realized the need for having information management system so as to enable storage of information including resources monitoring. However the organization is facing w serious shortage of staff including the ICT staff. The position has been included in the proposed scheme of service and in PE budget for 2018/2019	MPRU is making close follow- ups that ensure that the scheme of service and salary approved and fill vacant positions including ICT staff.	By June 2019

8.	MPRU should develop practical guidance on how parks are to assess economic opportunities to determine whether they are compatible with the conservation objectives of the MPAs. A number of economic activities are taking place in marine parks and reserves including gas exploitation in MBREMP and tourism infrastructure in MIMP and DMRS, it is important are compatible with the conservation objectives of the MPAs.	MPRU is monitoring investment in the MPAs through patrols and other field trips during resource monitoring. In addition, MPRU have EIA and investment guidelines to guide new investment in the MPA.	MPRU will continue to monitor investment within its MPAs and communicate with NEMC for periodic monitoring. In addition, MPRU will continue to oversee, monitor, and document all investments in its jurisdictions.	On regular basis
9.	The Ministry (MLF) should ensure the advisory committees are established and operate in all MPAs to enable MPRU to have all instruments for effective operations of co-management within protected areas	Ministry has been appointing Members of Advisory Committees when the office tenure of particular Advisory Committee lapsed	Ministry	After three years of office tenure

10.	The Ministry (MLF) should support MPRU to institute legal working tools like regulations and establishment of Advisory Committees to ensure that MPRU can effectively operate and achieve effective operations of co-management within protected areas	Ministry	Ministry	Ministry
11.	MPRU should ensure that each MPA conducts needs assessment to understand the status of environmental awareness among the stakeholders and implement the awareness programs	MPRU has been conducting awareness program to the stakeholder within its MPAs through meetings, awareness raising campaigns, field visits. Also, Environmental education has been implemented in schools within the MPAs where number of environmental clubs has been formed.	MPRU to conduct need assessment, formalize and implement environmental awareness program for its stakeholders in the MPAs	June 2020