

# Kisite Mpunguti Marine Conservation Area Management Plan 2011-2021



**Towards Integrated Conservation and Management  
of Marine and Terrestrial Resources**



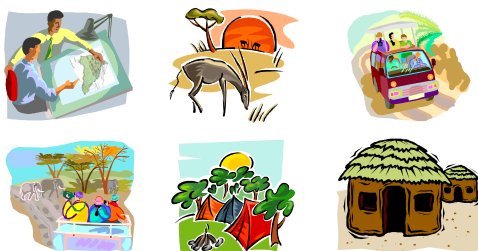
# Kisite Mpunguti Marine Conservation Area Management Plan 2012-2022

*Planning carried out by*

KMMCA Managers  
KMMCA Stakeholders

&

KWS Environmental Planning and Compliance  
Department





The Kisite Mpunguti Marine Conservation Area (KMMCA) Management Plan has been developed through a participatory planning process involving a cross section of KMMCA stakeholders, under the coordination of a Core Planning Team that was comprised of representatives from the marine protected area managers, KWS HQ planners and Coast Conservation Area Scientists.



Funding for the planning process has been provided by the Regional Programme for the Sustainable Management of the Coastal Zones of the Countries of the Indian Ocean (ReCoMap) with co-financing from KWS.



Planning technical assistance was provided by WCS through provision of planning resource information based on their rich marine research work and geo-data that was used in the development of the Zonation Scheme.

# Approval Page

The management of the Kenya Wildlife Service have approved the implementation of this management plan for the Kisite Mpunguti Marine Conservation Area.

*On behalf of the **KENYA  
WILDLIFE SERVICE***

A handwritten signature in black ink, appearing to read 'Julius Kipng'etich', is written over a horizontal line.

**Julius Kipng'etich  
Director**

**Date: 29.06.2011**

## Executive Summary

Kisite Mpunguti Marine Conservation Area (KMMCA) is situated on the southern coast of Kenya near Shimoni and south of Wasini Island in Kwale District near the Tanzanian border. It has abundant marine life, including trigger fish, moray eels, angelfish, butterfly fish, groupers, parrotfish, wrasses, scorpionfish, pufferfish, damselfish, rays, snappers, green sea turtles, hawksbill turtles, and dolphins. Humpback whales and whale sharks are seasonal. The Marine Protected Area (MPA) is christened as the “*Home of the Dolphin and Coconut Crab*” due to presence of dolphins that visit the MPA almost on a daily basis as well as the presence of the largest land-living arthropod in the world – the coconut crab, which is endemic to the MPA and found in the Lower Mpunguti Island.

This management plan covers the MPAs - Kisite-Mpunguti Marine National Park and Reserve, with the three islands, Kisite, Upper Mpunguti and Lower Mpunguti; the Shimoni channel; Shimoni forest and areas surrounding the KWS Shimoni office (headquarters for the MPAs) the Shimoni Slave Caves, the Museum and Ramisi estuary. On the other hand, the Wasini Island, Nyuli Reef and Funzi Island will be considered as part of the plan geographic scope and as areas of influence since Kenya Wildlife Service (KWS) has no direct mandate for their management but adverse activities in these areas affects the MPAs. The above, combined form the Kisite Mpunguti Marine Conservation Area (KMMCA) as the extent to which this management plan covers.

This management plan is designated to provide the long-term vision and day-to-day guidance required for the conservation and management of KMMCA. The KMMCA management plan will achieve this aim by providing strategic guidance on the **goals** towards which management is working, and a series of **prescriptions and management actions** that need to be implemented in order to achieve these aims. It sets out the management approach and goals, together with a framework for decision making, to apply in the protected area over the ten years period. The plan is intended to be a practical tool to support and guide the coordinated and integrated management of the KMMCA.

KWS in partnership with Wildlife Conservation Society (WCS) have steered the development of this management plan with financial support from ReCoMap under the auspices of the ReCoMap Project. The Regional Programme for the Sustainable Management of the Coastal Zones of the Countries of the Indian Ocean (ReCoMaP) was a 5-year (2006-2011) programme of the Indian Ocean Commission (IOC) financed by the European Union. KWS partnered with WCS in this process with KWS spearheading the planning process and WCS offering technical backstopping based on their research on marine ecology. The planning process begun in October 2009 and has been developed in line with the KWS Protected Area Planning Framework (PAPF). The plan has been developed with the recognition of various stakeholders and interest groups that have a venture in the KMMCA, and their interests have been captured so as to provide the support for effective management of the MPAs. In essence, this plan is the result of the minds of a large cross section of the KMMCA's stakeholders ranging from government institutions, NGOs, CBOs, interest groups, Women Groups and the community at large, and represents a consensus viewpoint on how to manage the marine ecosystem sustainably for posterity.

The plan design and structure is user friendly for KMMCA and aims to ensure that the plan can be easily understood by stakeholders and implemented by the KMMCA management. In order to achieve this, the plan sets out a set of stakeholder and management agreed goals (the **purpose statements** and **objectives**) that the managers will aim to achieve, and a series of **prescriptions** and **management actions** that will be implemented in order to ensure these goals are achieved. The plan mainly focuses on the management of the MPAs and it also addresses issues beyond the MPAs that are impacting on the area. At the heart of the plan is the **Zonation scheme** and the **five management programmes**, each of which cover an essential aspect of KMMCA management. These five programmes are:

- ▶ ***Ecological Management Programme***
- ▶ ***Tourism Development and Management Programme***
- ▶ ***Fisheries Resource Management Programme***
- ▶ ***Community Outreach and Education Management Programme***
- ▶ ***MPA Operations and Security Management Programme***

As is stipulated in the PAPF, the development of each management programme has followed the **Logical Framework Approach** to ensure that there are precise and coherent links between the programme purpose statement, management objectives and the management actions. Each of the management programmes are completed by a **3-Year Activity Plan**, which breaks down the individual management actions to be delivered in the first three years of the plan implementation period into a series of tangible and explicit management activities, and thereby provides the vital link between the management plan's 10-year outlook and the annual budgeting and operational planning of day-to-day management activities.

## **KMMCA Purpose and Values**

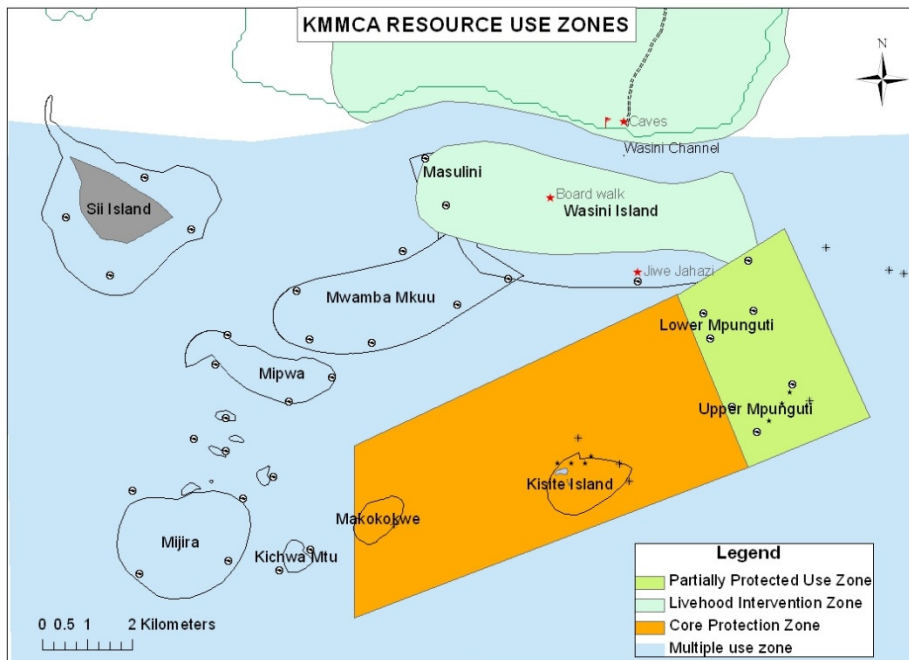
The overall KMMCA purpose/goal is derived from the need to ensure the protection and conservation of the exceptional resource values that lead to the establishment of the MPAs and the social-cultural aspects. It describes the desired state that KMMCA should achieve, the accomplishment of the ideal function of the MPA in its intended biodiversity conservation, socio-cultural and historical role.

***“To sustainably manage and conserve the biological, cultural and natural heritage of Kisite Mpunguti Marine Conservation Area and its environs for the benefit of the present and future generations”***

The development of the purpose statement was based on the stakeholder identification of the KMMCA's “Exceptional Resource Values” (ERVs), which were divided into four categories: biodiversity, scenic, social and cultural. The five most important ERVs for the KMMCA were christened as: the Sea Turtle, Marine mammals (Whales, dolphins, dugongs), Shimoni tropical forest, historical sites of Shimoni caves and tourism.

## KMMCA Zonation Scheme

Zonation is a powerful protected area management tool that allows managers to achieve different management aims in different parts of the area, particularly through defining the specific activities and developments that are permitted in the different zones. It is a geographically based tool that communicates specific resource management objectives and strategies. In coming up with the zonation scheme by the stakeholders, it was noted that it is certainly difficult for MPA managers to juggle the interests and needs of the local community, the interests of tourism development and objectives of species and habitat conservation – all in one area. The zonation scheme for the KMMCA therefore aims at providing a framework for reconciling management needs of **conserving natural resources, promoting sustainable use of the marine and adjacent forest resources** and **regulating and promoting visitor use**. The KMMCA has adopted a two tier umbrella approach where the primary zones were identified as Resource Use Zones and Visitor Use Zones. These zones and their subsequent zone types are summarised below:



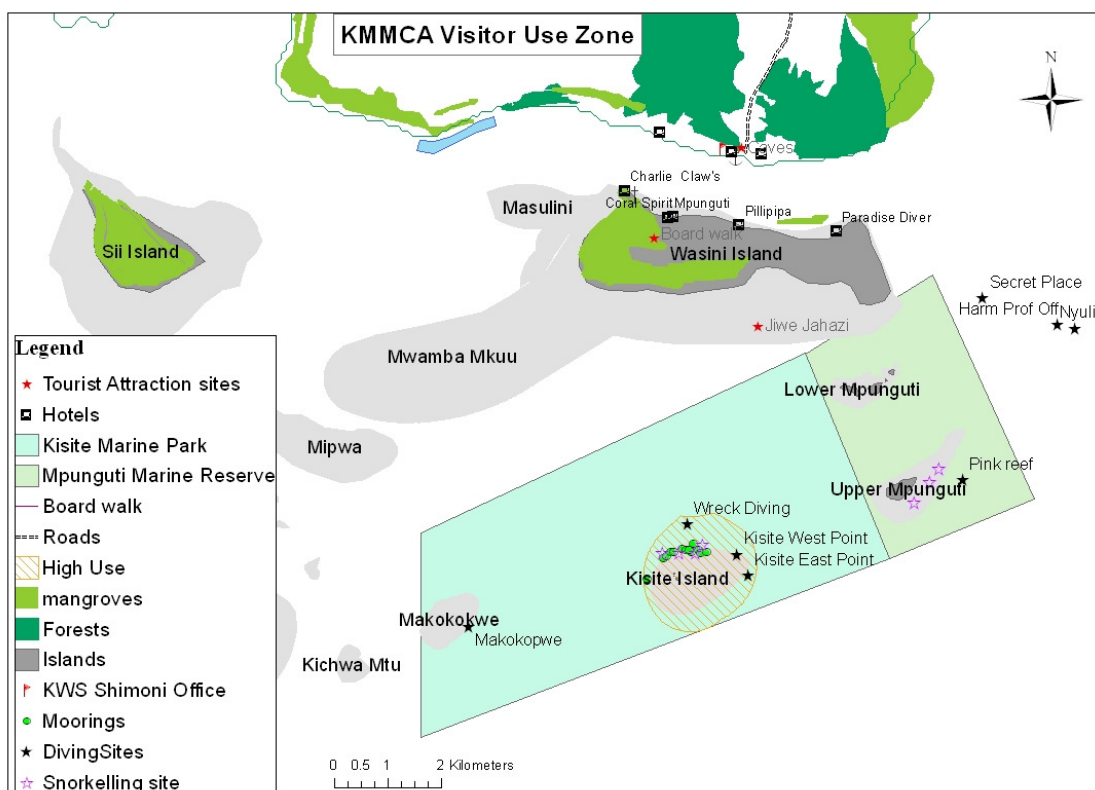
### Resource Use Zones (RUZ)

As seen from the figure, the RUZ in the KMMCA has been divided into four zones: the Core Protection zone, Partially Protected Use Zone, Multiple Use zone and Livelihood Intervention Zone. The Core Protection Zone is designed to protect and conserve biologically significant habitats in their pristine conditions and offer ideal undisturbed sites for scientific research. It covers the Marine Park. The Partially Protected Use Zone covers the Marine Reserve and will allow the ongoing use of most recreational and artisanal fishing activities that are not destructive, ecologically sustainable and consistent with the overall objectives of KMMCA. The Multiple Use zone covers the open waters and consists of areas that require specific zoning controls and management since they are under different management sectors. The allowed activities are

dependent on their specific nature and the management needs from the different sectors. Finally, the Livelihood Intervention Zone has been setup to support sustainable livelihoods, reduce illegal activities in adjacent forest, improve KWS relations with locals and protect biodiversity in the forest. The zone covers the Shimoni forest, Shimoni Slave Caves, Wasini Island and areas around Shimoni town.

## Visitor Use Zones

The KMMCA tourism zonal management follows views and inputs from the local community and stakeholders from the tourism sector. The Visitor Use Zones will facilitate the level and type of visitor use to be managed across the MPAs. Two Visitor Use Zones have been identified – High Use Zone (HUZ) and Low Use Zone (LUZ) see the figure below.



In the HUZ, any type of fishing, collection of marine resources, disturbance and/or damage to marine wildlife and habitats are prohibited, so that visitors and the local community can appreciate diverse marine environment relatively undisturbed by human activities and preserve it for future generations. This zone falls within the Marine Park covering areas around the Kisite Island where most visitor activities are concentrated.

The LUZ encompasses wide range of habitats with a different status in protection and conservation. It is the area where sustainable fishing is allowed at the same time allowing recreation activities for visitors and local communities. It offers variety for diving, snorkelling and nature walks around the Mpunguti Islands. It is found within the Marine reserve but does not receive as many visitors as the HUZ.

## Ecological Management Programme

The main function of the ecological management programme is to provide the information base on which other management programmes carry out intervention activities. All activities within the conservation area will affect the ecology and the programme is designed to monitor these. Important activities include the collection, collation and analysis of data, and the direction and management of research. It will help to ensure that, critical habitats for endemic, rare, endangered, threatened and other species that demand special attention are addressed and proper measures undertaken to ensure the survival of species in these habitats. As such, this programme aims to ensure that “*The KMMCA ecosystems integrity (structure and functions) are conserved and threats to the area’s key ecological features reduced through integrated and adaptive management*”. To achieve this, the programme uses The Nature Conservancy’s Conservation Action Planning (CAP) methodology as a mechanism for focusing the ecological management of the ecosystem. The CAP methodology has been applied by TNC in protected areas and other conservation sites around the world. The CAP process includes aspects of management effectiveness evaluation – primarily assessing context (values and threats) and outcomes (conservation status) and integrates this into a wider process of developing and implementing conservation strategies.

The Nature Conservancy CAP methodology has been used so as to comprehensively and accurately define the very ecological features upon which management needs to focus, and define the most appropriate management interventions to pursue, within a whole host of potential interventions, to ensure the conservation of these outstanding features. As a result, the most important ecological features (the *focal conservation targets*), their management needs, and the major threats to these features were identified. three key stages have been used in applying the CAP methodology: the selection of conservation targets; the identification and ranking of threats to the conservation targets; and the development of management objectives and actions to address these threats as well as to enhance the conservation targets. Nine conservation targets have been prioritized for the KMMCA as follows:

1. Mangrove Ecosystem
2. Coral reef
3. Reef fisheries resources
4. Sea grass ecosystem
5. Intertidal habitat
6. Coastal Forest habitat
7. Islands
8. Marine mammals (Whales, dolphins, dugongs)
9. Angolan black monkey and white Colobus monkey

The rigorous application of the Nature Conservancy CAP methodology helped in coming up with four management objectives to realise the ecological management programme. These objectives mainly focus on enhancing the conservation of species of conservation concern and sustainable habitat management through application of adaptive research and monitoring, minimizing levels and causes of habitat degradation, reduction of natural and anthropogenic impacts on species and promoting integrated research and monitoring programmes in collaboration with other stakeholders.

## Tourism Development and Management Programme

The Tourism Management Programme is primarily for the management of tourism activities for the KMMCA with the intention to improve visitation and strengthen the tourism contribution to the local and national economy. The programme sets out objectives and actions that aim to ensure that *“The vast biodiversity of KMMCA is conserved and marketed as a popular pristine destination that offers environmentally sustainable and economically vibrant tourism benefits both locally and nationally”*. The programme is envisaged in three key themes that lead to the formulation of the four management objectives of the programme. These themes are; enhancing the tourism experience by improving and **diversifying tourism products**, strengthening tourism product through appropriate **marketing strategies** and **promoting cultural and ecotourism** products. The programme has been developed closely in reference to the zonation scheme which sets out visitor use prescriptions.

## Fishery Resources Management Programme

The Fishery Resources Management Programme sets out objectives and actions that aim to ensure that *“The KMMCA fishery resources are sustainably managed in collaboration with stakeholders to continue supporting the national economy and local livelihoods”*. KMMCA has a fringing reef system and a complex of patch reefs running through it. The bottom substrate of the reefs consists of algae, seagrass beds, sand, live corals and coral rubbles which provide conducive habitats for various reef fishes including sweet lips, angel fishes, wrasses, parrot fishes, damselfishes and butterfly fishes among others. For a long time, fisheries resources have provided a key source of livelihood for majority of KMMCA populace and due to increasing fishing effort as a result of growing human population, increased pressure has been exerted on fish stocks resulting to reduced sizes and wet weight of landed fish. This warrants a consultative effort in addressing this impact and as a result, five management objective have been formulated that call for; enforcement of existing legal provisions, enhancement of linkages between research and management, involvement of a wider stakeholder participation in fishery resource management, seeking of alternative sources of livelihood and being proactive in addressing emerging issues that may affect the fishery resource in the future.

## Community Outreach and Education Programme

The purpose of the Community Outreach and Education Programme is *‘to ensure that the local communities are empowered to actively participate in sustainable conservation and management of natural resources at the KMMCA’*. In implementing the Community Outreach and Education Programme, management will strive to ensure that: Collaboration among all stakeholders is strengthened, the capacity to manage CBOs is improved, environmental education programmes are scaled up, and human-wildlife conflicts are minimised. To facilitate this therefore, four management objectives have been developed with associated management actions to address them. These objectives focus on; enhancing community participation in natural resource conservation and management, enhancing resource-use and human-wildlife conflict mitigation measures and improving community environmental education and outreach programmes.

## MPA Operations and Security Management Programme

The MPA Operations and Security Management Programme focuses on the administrative functions of the KMMCA including the overall management of the marine ecosystem, policy and political issues, matters of human capital, infrastructural development, *etc.* In a nutshell, this programme is the fortitude of all the other management programmes and ensures that the other programmes are facilitated to achieve their goals. The programme also focuses on security issues and law enforcement in the conservation area. The safety of KMMCA visitors and staff and the protection of the marine and adjacent forest resources remains an issue of major importance in the KMMCA and is key to the successful implementation of various aspects of this management plan. The programme seeks to ensure that, *“the KMMCA Marine Protected Area Operations and Security effectively and efficiently support the achievement and delivery of the overall MPA purpose”*. The programme covers a variety of issues that are vital to the efficient and effective management of the conservation area. Five management objectives have been developed that focus on: measures to improve the competence and morale of the staff through capacity building, improving the provision of staff welfare and leisure facilities among others; strengthening stakeholder collaboration in the management of the KMMCA; the developing and improving infrastructure and communication; enhancing resource mobilization; and strengthening security operations.

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# Plan Foundations

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# The Plan

The KMMCA 10-year (2011-2021) management plan has been developed through a collaborative effort involving a wide array of stakeholders including Kenya Wildlife Service (KWS), Wildlife Conservation Society (WCS), Kenya Marine Fisheries Research Institute (KMFRI), World Wide Fund for Nature (WWF), Dolphin clubs, Dive operators, Kenya Maritime Authority (KMA), National Museums of Kenya (NMK), Boat Operators, Beach Management Unit (BMU), among others. The planning process was funded by the ReCoMaP project whose overall objective was *“to enhance sustainable management and conservation of natural coastal and marine resources thereby contributing to poverty alleviation amongst the coastal population of South Western Indian Ocean”*..

The KMMCA is faced with a myriad of challenges that threaten both the conservation and utilisation of natural resources despite being a world-renowned haven of abundant marine wildlife resources, having an educated and dynamic human resource, their significant economic potential and donor interest and support. In general, degradation of the coastal resources has been resultant from decades of misuse. These challenges set the basic premise for the development of this management plan. Additionally the plan will mitigate against the negative impacts of human activities and development actions, guide sustainable natural resource utilization, provide a series of **management prescriptions and actions** that need to be implemented both in the short and long term in order to achieve conservation aims and assist the resource users by providing a primary resource mobilization tool. The plan will also contribute significantly towards public sensitization and awareness about conservation issues affecting the MPAs.

In general, this KMMCA management plan will address the following issues;

- Increasing rate of conflicts in and around the marine protected area;
- Uncoordinated investments both for the MPA and users;
- Loss and degradation of marine habitats and species;
- Social perceptions and compliance;
- Limited involvement of indigenous communities; and
- Poor biodiversity coverage and monitoring.

The plan sets out a common understanding between stakeholders and managers on the purpose of the MPA and the management objectives that will be implemented to achieve the MPA purpose.

## Plan structure and function

The plan structure has been developed to be as simple as possible and to create ease of understanding and implementation by the MPA managers. Table 1 below is a summary of the structure and key functions of this management plan:

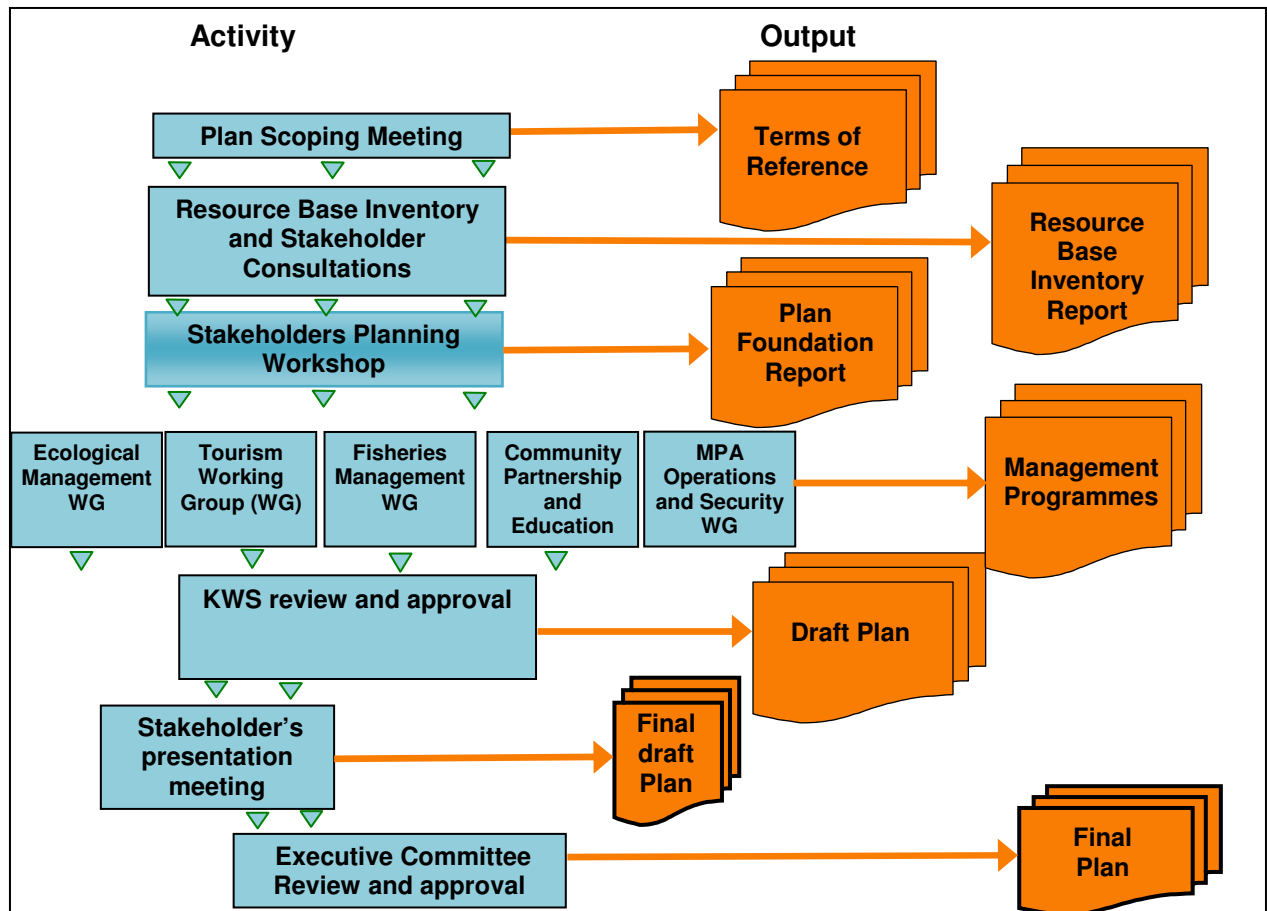
**Table 1: Plan structure, functions and contents**

Chapter	Function and contents
Plan Foundations	<ul style="list-style-type: none"> <li>▶ Provides an introduction to the KMMCA and its management</li> <li>▶ Introduces the plan, and describes the plan's structure and the framework used in the process leading to the plan's development</li> <li>▶ Sets out the Plan Purpose Statement and exceptional Resource Values (ERVs)</li> </ul>
Zonation Scheme	<ul style="list-style-type: none"> <li>▶ This is meant to reconcile different types and intensities of use in different parts of the KMMCA, and to help reconcile the sometimes competing and conflicting conservation and resource use needs</li> <li>▶ Sets out areas of the KMMCA where different types of visitor use and tourism developments are permitted</li> <li>▶ Provides specific prescriptions on resource utilization by the communities</li> <li>▶ Ensure that the management extends its mandate by increasing management presence and infrastructure development across the entire ecosystem.</li> </ul>
Management Programmes	<ul style="list-style-type: none"> <li>▶ This section forms the bulk of the completed management plan and provides a framework to guide management activities in achieving a future desired state for specific aspects of the KMMCA management. As a result, five programmes have been proposed. These are: <ul style="list-style-type: none"> <li>○ <b>Ecological Management</b></li> <li>○ <b>Fisheries Resource Management</b></li> <li>○ <b>Tourism Development and Management</b></li> <li>○ <b>Community Outreach and Education</b></li> <li>○ <b>MPA Operations and Security</b></li> </ul> </li> <li>▶ Each management programme was developed in support of the Logical Framework Approach and has a programme purpose statement and guiding principles that define and frame the desired future state for the KMMCA</li> <li>▶ Each one contains management objectives that set out the specific goals that KMMCA management aims to achieve;</li> <li>▶ Provides a set of specific management actions that management will implement to achieve these goals</li> </ul>
3-Year Plans	<p>Activity</p> <ul style="list-style-type: none"> <li>▶ These provides the link between the 10-year management actions and the annual work planning and budgeting of KMMCA management</li> <li>▶ Breaks down the programme's management actions into a series of tangible and explicit activities</li> <li>▶ Allocates responsibility for implementation, sets out the timeframe for activity implementation, and "milestones" for monitoring plan delivery</li> </ul>
Plan Monitoring	<ul style="list-style-type: none"> <li>▶ Provides a framework for the assessment of positive and potentially negative impacts of plan implementation</li> <li>▶ Includes easily quantifiable indicators for assessing impacts, and potential sources of the information required</li> </ul>

# The Planning process

The KMMCA management plan has been developed in line with the KWS Protected Areas Planning Framework (PAPF) which is the PA management planning standard for KWS. One the key features of the PAPF planning process is stakeholder participation in planning. It is envisaged that, adequate stakeholder participation will ensure the MPA is managed according to agreed principles and management objectives Figure 1 below shows the planning process that was followed in the development of this Management Plan.

**Figure 1 KMMCA Management Planning Process and Key Planning Outputs**



**Plan launch and scoping meeting:** - This was the first stage in the development of KMMCA management plan and it sets out the fundamentals of the planning process, upon which common agreement necessary to guide the planning process to proceed in a coherent and logical manner was developed. It was during this stage that the following considerations were made: the Terms of Reference (ToR) for the development of the management plan, detailing work requirements (Identification and description of plan geographic scope; management issues, problems and opportunities; Management Programmes needed to address these issues; stakeholders who should be involved in the management plan development; information needed for planning; responsibility for collection of the RBI among the CPT; timeframe and budget).

**Resource Base Inventory and Stakeholder Consultations:** - This was the second stage in the planning process that aimed at ensuring that the plan is developed based on relevant, up-to-date and accurate information. This information was used to both inform stakeholders on discussions throughout the planning process, and enable the development of key aspects of the plan such as the zonation scheme.

**1<sup>st</sup> Stakeholders Planning Workshop:** - This was meant to give stakeholders an early opportunity to participate in the planning process. The stakeholders could express issues that they needed to be considered in the development of the management plan. It is during this stage that the preliminary KMMCA Exceptional Resource Values were identified and the overall purpose statement developed.

**Management Programme Expert Working Group Meetings:** - Several Expert Working Groups were formulated to enable a small group of technical experts and key stakeholders to make significant contribution to the development of the management plan. These were based on the five management programmes that form the heart of this management plan. Each group was made up of around 10-15 participants and the membership was selected based on technical knowledge of the area and the issues concerned.

**2<sup>nd</sup> Stakeholders Presentation Workshop:** - It provided an opportunity for external stakeholders to review, comment on and endorse the final contents of the management plan.

**HQ Management Review:** - This provided the KWS' respective headquarter Executive Committees' (ECOM) an opportunity to review the plan before subjecting it to the KWS Executive Committee for review. The purpose for this is to give the plan owners an opportunity to review selected features of the plan that require the approval and endorsement by the plan owners and recommend any needed changes.

**ECOM Review:** - This is meant to gain the approval and commitment of the Executive Committees' for resource allocation for plan implementation.

## Kisite Mpunguti Marine Conservation Area

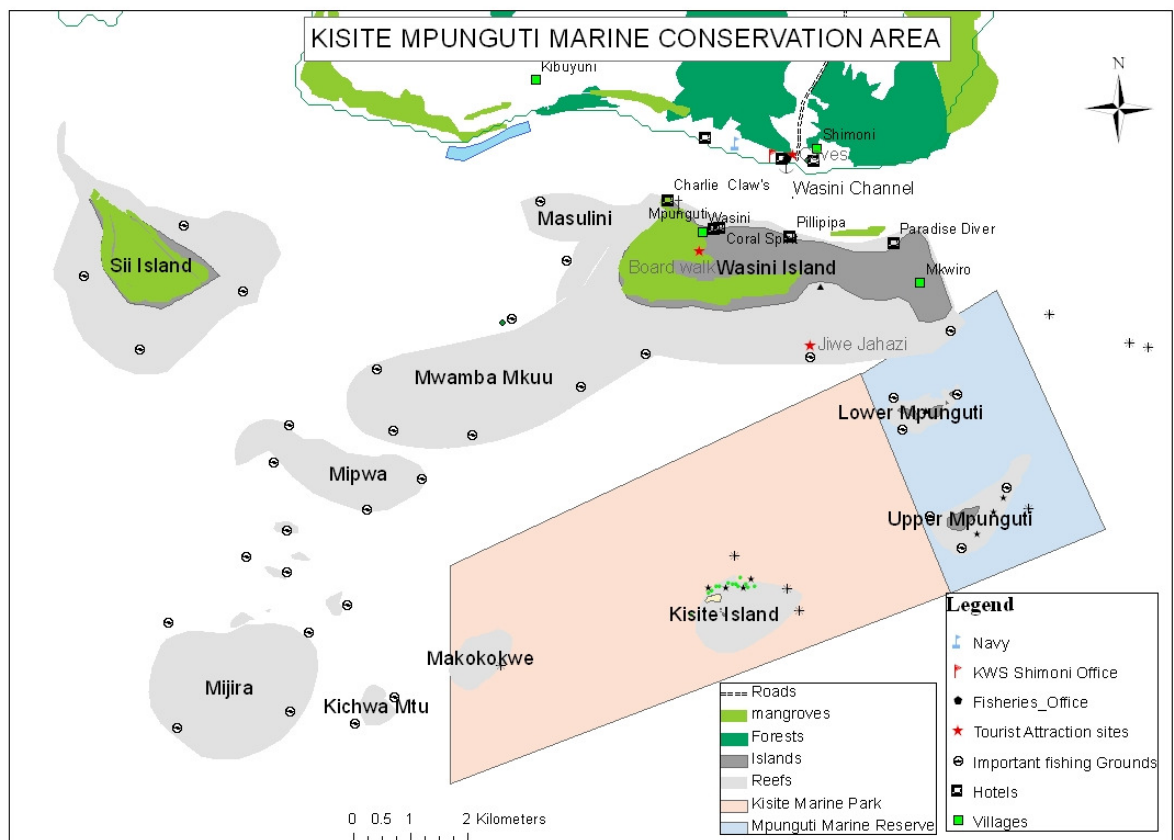
### Area description

Kisite/Mpunguti Marine Park and Reserve was gazetted vide gazettment Legal Notice. No. 216 of the Wildlife Conservation and Management Act Cap 376, Boundary Plan 204/48/49. Kisite Marine Park is the biggest of all Marine Parks in Kenya covering an area of 28 km<sup>2</sup> while the Mpunguti Reserve is the smallest of all Marine Reserves in Kenya covering an area of 11 km<sup>2</sup>. Kisite/Mpunguti Marine Park and Reserve is located at the Southern tip of Kenya bordering Tanzania and has a total area 39 km<sup>2</sup>. It includes areas of important biodiversity: patch and fringing coral reefs, sea grass beds, mangrove forests, and areas with restricted-range endemic species, all which constitute valuable

natural and tourism resources. In the larger Kisite Marine National Park no consumptive utilization is allowed, while in Mpunguti Marine National Reserve artisan fishing activities are permitted. The Park and Reserve harbour the most pristine reef which historically had been the fishing grounds of local communities. Within the Mpunguti Reserve, traditional and sustainable fishing methods are allowed with regulations enforced by KWS in collaboration with the Fisheries Department. KMMPAs were established to protect the scenic islands and special habitats of a wide range of endemic marine animals and breeding migratory birds. This trapezoid section of the Indian Ocean encompasses four small, arid coral islands, each with considerable areas of fringing reefs. Kisite Island features an exposed sand bar and the surrounding pellucid waters offer an ideal site for snorkelling. The islands of Mpunguti are known to support an important population of coconut crabs, nesting sites for African fish eagles, and its surrounding waters are frequently visited by Indo-Pacific bottlenose and humpback dolphins, migrating humpback whales as well as Hawksbill and Green turtles that feed on sea grass and algae.

The plan geographic scope for KMMCA covers: the MPAs - Kisite Marine National Park and Mpunguti Marine National Reserve, with their three islands, Kisite, Upper Mpunguti and Lower Mpunguti; the Wasini Channel; Shimoni forest and areas surrounding the KWS Shimoni office (headquarters for the MPAs); the Slave Caves, the Museum; and Ramisi estuary. On the other hand, the Wasini Island, Nyuli Reef, Sii Island and Funzi Island are considered as influence zones where KWS has no direct mandate for their management but given that they affect the management of the MPAs, they are management actions have been designed to mitigate conservation related issues in these areas. (see figure 2 below).

**Figure 2: KMMCA Plan Geographic Extent**



KMMCA attracts the largest volume of visitors and consequently generates the highest revenue in the Coast Conservation Area due to its pristine corals and high marine life diversity.

# KMMCA Exceptional Resource Values

The KMMCA Exceptional Resource Values (ERVs) describe the area's key natural resources and other features that provide outstanding benefits to local, national and international stakeholders and are especially important for maintaining the area's unique qualities, characteristics and ecology. The ERVs builds an understanding of the MPA features that are especially important for maintaining the unique character of the area and that most need to be preserved. The following sections describe the KMMCA Exceptional Resource Values as identified by stakeholders during the planning process, and their importance to the area. These sections have been set out according to the four categories of ERV identified: Biodiversity, Scenic, Social and Cultural (as listed in Table 3 below).

**Table 2: KMMCA Exceptional Resource Values**

Category	Exceptional Resource Value
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>▶ Sea Turtles</li> <li>▶ Marine mammals (whales, dolphins, dugongs)</li> <li>▶ Shimoni Tropical Forest</li> <li>▶ Coral reefs</li> <li>▶ Coconut Crabs</li> <li>▶ Mangrove ecosystem</li> <li>▶ Important Bird Area</li> </ul>
<b>Scenic</b>	<ul style="list-style-type: none"> <li>▶ Kisite and Mpunguti Islands</li> <li>▶ Kijiwe Mtu/Jiwe Jahazi</li> <li>▶ Sandy beaches</li> <li>▶ Estuary-Ramisi</li> <li>▶ Sii Island</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>▶ Tourism-utalii</li> <li>▶ Wasini Board walk</li> <li>▶ Fishing</li> <li>▶ Trade</li> </ul>
<b>Cultural</b>	<ul style="list-style-type: none"> <li>▶ Shimoni Slave Caves</li> <li>▶ Kayas in Shimoni forest and Wasini Island</li> <li>▶ Historical Ruins, war Graves</li> </ul>

## Biodiversity values

### Marine mammals (Whales, dolphins, dugongs)

Marine mammals serve as important indicators of the health of marine environments. As top level predators they impact in local food webs and ecosystems as a whole. They also indicate exposure and effects of pollutants over spatial, temporal and trophic scales. In KMMCA, these megafauna species represent an important existing and potential resource for the greater Shimoni community. Indeed, the dolphin is considered as a

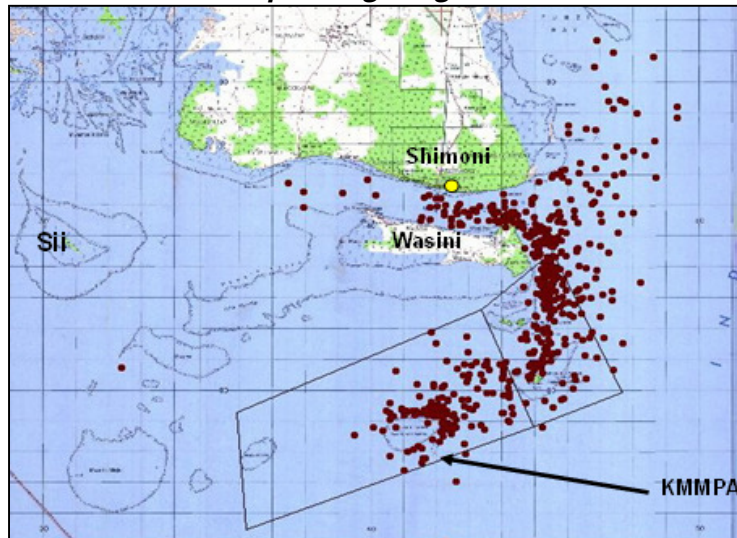
keystone species for KMMCA and is the main attraction for visitors to the MPA. Conservation of these species may also have important implications for the conservation of marine biological diversity at national (Kenya), regional (East Africa), and international levels. In addition, one of the species Indo-Pacific humpback dolphins are considered by IUCN Red species list near threatened to extinction with the population sizes decreasing worldwide. Over the last few years increasing pressure of tourism activities puts additional challenges to the marine mammal populations. Several studies are being undertaken on the marine mammals of KMMCA by different marine research institutions in corroboration with KWS. Notable among these institutions is Global Vision International (GVI) based at Wasini Island whose main objective in studying these megafauna is to provide information aimed at improving the scientific basis for the management of KMMPA by KWS and identify potential conservation issues that should be addressed through management action and research.



**Plate 1. Bottlenose dolphins in the Kisite-Mpunguti MPA**

The results on sightings and spatial distribution of the cetaceans over the five years of study by GVI indicates that, over 550 cetacean sightings of five different species were identified with certitude (Table 3). The most common species in terms of sighting frequency was Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) with a mean group size of 8 individuals (Figure 3). Bottlenose dolphin population is resident in the area and utilize these waters for all major activities: breeding, feeding, socializing and traveling. The highest spatial densities of bottlenose dolphins were concentrated along the east/south east side of Wasini Island and in the Marine Park by Kisite Island. The second in a rank was Indo-Pacific humpback dolphins (*Sousa chinensis*) with an average group size of 5 (Figure 4). In long-snouted spinner dolphins (*Stenella longirostris*) there was observed the highest group variation of 4 - 200 individuals. Spinner dolphins mostly travel by the eastern boundaries of KMMPA, however several records show that they utilize calm waters in the park or the reserve for resting. Pan- tropical spotted dolphins (*Stenella attenuate*) were sighted only on a couple surveys in offshore waters east of Wasini Island. Presence of a sperm whale *Physeter macrocephalus* was reported by villagers of Mkwiwo and confirmed by the photographic evidence. The whale was found stranded on the 5<sup>th</sup> of September 2005 on the south east side of Wasini Island. The record of a sperm in KMMPA waters is unusual. This species tends to occur in deeper waters (>200m) where its prey such as squid aggregates.

**Figure 3: Bottlenose dolphin sightings 2006-2010 in the KMMCA**

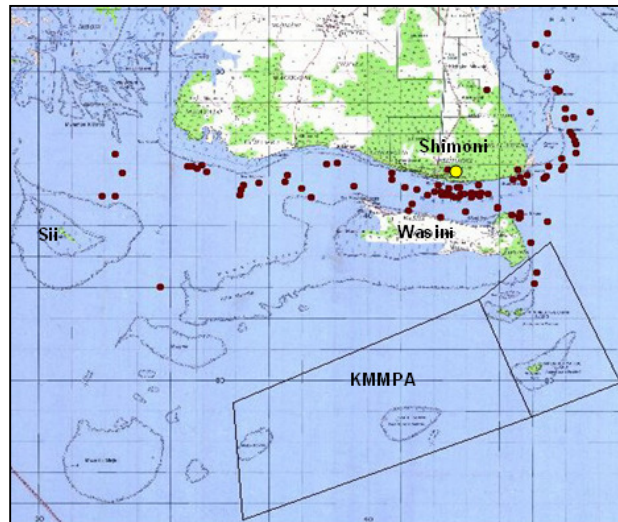


**Table 3: Cetacean species sightings 2006-2010**

Species	2006	2007	Year 2008	2009	2010	Total	%	Average Group size	Std. Deviation	Group Range
Bottlenose dolphins	142	133	70	110	134	589	80.7	8.56	7.05	1-45
Humpback dolphins	42	30	9	12	12	105	14.4	4.98	2.98	1-15
Spinner dolphins	4	4	1	3	3	15	2.05	78.38	35.08	5-200
Humpback whales	0	4	5	7	4	20	2.7	1.61	0.81	1-3
<b>Total</b>	<b>188</b>	<b>171</b>	<b>85</b>	<b>132</b>	<b>153</b>	<b>729</b>				

Decrease in the number of humpback dolphin sightings was recorded from 2007 to 2010. This could be explained by lesser number of dolphin groups frequenting the area or by the reduced amount of effort in inshore waters which is generally characterised as a humpback dolphin habitat. Surveys showed that these waters are important feeding and foraging grounds for humpback dolphins. Deterioration of near-shore habitats with an increased exposure to human activities could potentially result in humpback dolphin population decline. Therefore a special conservation attention should be given to the preservation of this species in the KMMCA.

**Figure 4 : Humpback dolphin sightings 2006-2010 in the KMMCA**



Humpback whales are seasonal visitors in the KMMCA migrating through these waters from the end of July to the end of November. Humpback whale sightings (Figure. 4.1) were not recorded in 2006 due to the most of effort concentrated in inshore. However, since records started in 2007 more than 50% of whale groups encountered in the study area were composed of mother and calf pairs. Most of the calves were of 4-5m in length which possibly corresponds to the newborn size indicating that KMMCA waters could be important breeding, nursing and resting grounds for migrating humpback whales.

**Figure 5: Humpback whale sightings 2007-2010 in the study area**



## Sea turtles

KMMCA has recorded the return of the green turtles to the Lower Mpunguti Island after one was sighted in September 2009 preparing a nesting site (see plate 1). It has been almost seven or eight years since the last turtle arrived on the Lower Mpunguti Island.

The historic decline of green turtles is one of the most cited and best documented conservation issues. Its population has declined 50-70% since the 1900's and they are recognized internationally as endangered by the World Conservation Union (IUCN) and are protected in the Appendix I of the Convention on International Trade in Endangered Species (CITES) and in Appendix I and II of the Convention Migratory Species (CMS).



***Plate 2: Female green turtle preparing a nesting site at Lower Mpunguti***

These marine reptiles inhabit all of the World's oceans except Arctic. Worldwide, its population has declined 50 - 70 % since the 1900s. All the five sea turtle species in Kenya are listed by the World Conservation Union (IUCN) as either endangered or critically endangered (IUCN/SSC, 2008) and are listed under Appendix 1 by the Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES). Sea turtles in KMMCA face myriad of threats. They are poached primarily for meat, oil, eggs and the shell, which is economically valuable. They are threatened by increasing tourism development and beach erosion. Seagrass meadows which are green turtle foraging grounds are highly impacted by sedimentation and eutrophication from raw waste discharge from hotels and residences. The coastal community believes that sea turtles products have healing properties, and the meat is an aphrodisiac. These threats place sea turtles vulnerable hence the need for more action to save the rapidly declining population. A Sea Turtle National Strategy if implemented will go a long way in conservation of the species and this management plan will support its implementation.

The historical decline of sea turtles can therefore be cited as a conservation issue. The main species observed within the KMMPA are green turtle (*Chelonia mydas*) and hawksbill turtle (*Eretmochelys imbricata*). Both species are currently listed as Endangered in the IUCN Red List of Endangered Species. See Table 5 and Figure 5 for turtle sightings from the year 2006-2010.



**Plate 3. Hawksbill turtle at Kisite Coral Gardens**

**Table 4: Sea turtle sightings 2006-2010**

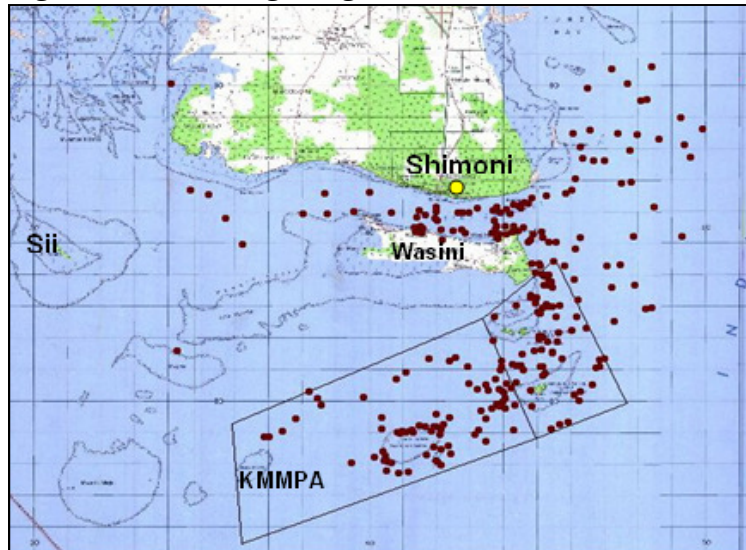
YEAR	SIGHTINGS		
	Green Turtle	Hawksbill Turtle	Unknown Turtle
2006	NR	NR	46
2007	NR	NR	86
2008	21	33	77
2009	19	15	56
2010	72	70	96
<b>TOTAL</b>	<b>112</b>	<b>118</b>	<b>361</b>

*NR-not recorded.*

### **Sea turtles**

In 2006 and 2007 turtle species were not recorded (Table 6). This could be due to the lack of knowledge in species identification by the survey team. Possibly, due to the same reason the numbers of identified turtles in 2008-2009 still noticeably less than in 2010. Most of the turtle identified to the species level (all years) were encountered on the set up transects (e.g. high concentration of sightings round Kisite Island) in KMMCA and Wasini Channel, while majority of unknown turtle species were recorded during the dolphin/whale surveys when the turtle surfaced to breath giving too little time for a confirmed identification. However, there was no major difference on distribution or habitat choice between the two species. Hawksbills and greens actively utilized KMMPA waters, while slightly higher number of green turtle sightings was observed in Wasini Channel. According to the KWS Shimonini megafauna stranding/carcass database at least 15 turtles were found dead in the Shimonini/Kisite waters in the period from 2008 to 2010 (however not all the cases recorded so the numbers are underestimated). In the most of the cases to identify the cause of death was very difficult because the necropsy was not performed. However, it seems that in most recorded cases there were no external injuries; therefore the cause of death could be internally caused. Once again most of the turtles were subadults showing that the likely cause of death is not old age. For example in 2010 female green turtle was found dead by the Lower Mpunguti with identified cause of plastic ingestion.

**Figure 6: Turtle sightings in the KMMCA 2006-2010.**



## Dugongs

Dugongs (*Dugong dugong*) are rarely seen in the KMMCA. The dugong is threatened worldwide, due to hunting, fisheries interactions and degradation of sea habitats, and pollution. This marine species is listed globally by the IUCN Red List as Vulnerable to Extinction. In 2008 (Plate 2) was the first dugong sighting over the last few years recorded west of Wasini Island close to the Nyuli reef while in 2009, one more sighting was recorded in Kisite MPA. Based on the aerial surveys conducted from 1973 to 1996 two areas were identified as potential dugong population grounds: Lamu archipelago on the north coast and Gazi-Shimoni in the south. Population estimate is considered to be less than 30 individuals.



**Plate 4: Dugong sighted off Wasini Island in 2008**

## **Mangroves**

Mangroves are a critical habitat for a variety of terrestrial and aquatic plants and animals. The terrestrial fauna includes many species of birds, reptiles, mammals and insects. Aquatic fauna includes prawns, crabs and molluscs. Mangroves are of critical importance for some fish species as feeding and breeding grounds. They are among the fastest disappearing ecosystems in the world. The mangrove forests cover over 3.2 million ha in Africa. In Kenya mangroves cover approximately 54,000 ha. Its cover has been declining for several decades due to overexploitation. Mangroves of KMMPA are significantly important for the biological, economical and ecological functions they possess. The area harbours highly significant species of mangroves with at least 10 species being recorded. They play a significant role in the socio-economic development of the coastal people. They are a source of high energy fuel wood; good and durable timber for building and boat construction. The mangroves are currently classified as endangered species by the IUCN. Due to loss of these inherent services conservation measures are urgently needed to reverse the trend. The mangroves face a myriad of threats ranging from pollution, increased sedimentations as a result of poor agricultural practices and disturbance or clearance. Mangrove vegetation has also been cleared for solar salt works and prawn farms. Some efforts are being made by some NGOs to rehabilitate degraded areas with projects aimed at environmental conservation which includes mangroves plantation.



***Plate 5: Yellow billed storks in Wasini mangroves***

## **Important Bird Area**

Important Bird Areas are sites that are critical for the conservation of bird populations, and other animals and plants. IBAs have been identified all over the world. In Kenya, 60 sites have qualified as IBAs under internationally agreed scientific criteria. They are selected by Bird Life International for conservation of the world's birds providing essential habitats for breeding, wintering and migrating birds. IBAs are unique in that they are home to endangered birds. It is also an indicator of biodiversity richness and also important for a wide range of species.

KMMCA is an Important Bird Area especially due the presence habitats such as the Kisite Islands, Wasini Islands, Mpunguti islands, reefs, beaches and the Shimoni forest. Kisite Island supports an assemblage of pelagic – feeding birds and nesting sea birds. This includes Roseate Terns and Sooty terns (Bennun 1999). Birds have been shown to be effective indicators of biodiversity. Their conservation would ensure the survival of a large number of other taxa. The overriding problem facing IBAs is degradation and loss of habitat. In the Shimoni forest for instance, a growing population is exerting more pressure for land. The increasing numbers of tourists who visit the islands for bird watching require careful management, to prevent any form of disturbance.

The remoteness of Kisite Island location and the lack of tall vegetation make it suitable for nesting seabirds. All along the Kenya coast, seabirds nest during the June–October period, when the south-east monsoon makes for rough seas and prevents human access to their nesting sites. Nonetheless, before this site was protected in 1978, egg collectors frequently disturbed the breeding colonies. The number of tourists visiting Kisite is increasing, and careful management is needed to ensure that they do not disrupt the colonies

### **Roseate tern**

Between July and October, Kisite supports an assemblage of pelagic-feeding birds. In many (but not all) years this includes a significant breeding colony of *Sterna dougallii*. Up to 1,000 pairs have been recorded, but numbers fluctuate greatly from year to year. In October 1997, 400 adults and c.100 young birds were noted. *Sterna fuscata* also nest here regularly (50 pairs recorded in 1976, and c.20 in 1997), along with *Egretta dimorpha*. The main bird species is the Roseate tern (*Sterna dougallii*) categorized by IUCN as of Least Concern. This species has an extremely large range, and hence does not approach the thresholds for Vulnerable under the range size criterion.



**Plate 6: Roseate tern**

### **Coral reef ecosystem**

The protected areas of KMMCA have a high diversity of marine life. Kisite/Mpunguti Marine Park and Reserve is a complex of fringing reef, channels, islands and patch reefs, sand, sea grass and isolated coral heads. The coral reef ecosystem is important for many reasons: it provides protection and shelter for many different species of fish,

invertebrate fauna and vertebrates. Coastal populations rely on coral reefs for food, coastal protection, and livelihoods. In addition, coral reefs are very important because they protect the shoreline from strong currents and waves. The Kisite Marine National Park protects one of Kenya's largest patch reefs. The MPA is a major attraction for an increasing number of tourists. This could lead to degradation by overuse and damage to corals. Destructive fishing practices by artisanal fishers, increasing coastal development, pollution, unsustainable tourism activities and global climate change are a threat to the coral reef ecosystem and need to be controlled.

### **Shimoni Forest**

The lowland coastal forests of the Shimoni peninsula and Wasini Island form a thin strip of 'coral rag forest', officially labelled Northern Zanzibar-Inhambane (Z-I) Lowland Coastal Forest, also known as the Coastal Forest Mosaic due to the high number of small fragmented forest patches it contains. It is a small yet vital part of the East African Coastal Forests Eco-region (EACFE).

Shimoni Forest is listed as number 129 in a list of 160 Key Biodiversity Areas for the EACFE hotspot. Most notable of the primate species of Shimoni forests is the Angolan Black and White Colobus monkey (*Collobus angolensis palliatus*). This subspecies, the palliatus, can only be found in the southern Kenyan coastal forests and the northern Tanzanian highlands. Although the palliatus were previously found along the entire coast, deforestation in the northern parts has resulted in their restriction to isolated pockets of forests south of Mombasa. Travelling further inland, the Guereza black and white Colobus occur.

### **Angolan black and white colobus monkey**

The Angolan black and white Colobus monkey has black hair with a white brow band, cheeks, and throat. Long haired white epaulettes stream from the shoulders. The lower part of the tail is white as is the band on the buttocks. The Colobus eat mostly leaves (and some fruits and flowers), have no cheek pouches, are arboreal (live in the tree canopy and rarely come down to the ground) and have a light-weight bone structure and elongated limbs – making it easier to leap from branch to branch.

Despite its enormous ecological, social, cultural and economic benefit it possesses, the Shimoni forest is being lost at an alarming rate to deforestation and tourism hence reforestation and education are the key factors to conserving it in line with the Forest Act 2005 for the benefit of the present and future generation. The principal threats to the survival of Shimoni forest and biodiversity conservation include charcoal burning, commercial timber cutting, poaching of wildlife, poorly regulated allocation of land to private landowners, private and commercial development and slash-and-burn clearance for agriculture.



***Plate 7. Angolan black and white colobus monkey in Shimoni forest***

### **Coconut crab**

It is the largest land-living arthropod in the world, and is probably at the upper size limit of terrestrial animals with exoskeletons in today's atmosphere. It is also known as the robber crab or palm thief in some areas, because some coconut crabs are rumoured to steal shiny items such as pots and silverware from houses and tents. The species inhabits the coastal forest regions of many Indo-Pacific islands, although localized extinction has occurred where the species lives close to humans. They are generally nocturnal and remain hidden during the day, emerging only on some nights to forage. It is known for its ability to crack coconuts with its strong pincers to eat the contents. It is endemic to KMPMA and it is found in lower Mpunguti Island and is unique due to its body structure. However, it's not listed in the IUCN Red list. However conservation measures need to be put in place.



***Plate 8: Coconut crab at Lower Mpunguti***

## Scenic values

### Mpunguti Islands and reserve

Mpunguti Islands have dense coastal equatorial forest with Lower Mpunguti being home to the coconut crab. The islands are a critical habitat for coconut crabs and migratory sea birds. The Islands plays a key role in supporting an important population of coconut crabs, nesting sites to African Fish eagles and its surrounding waters are frequently visited by Bottlenose and Humpback dolphins as well as Hawksbill and Green turtles that feed on sea grass and algae .Being the only available sandy beach for setting up the nests for sea turtles, the next crucial step to take is the management actions in order to protect the nesting areas and recognize it as a non-disturbance place. The overall coral cover is low and is of lower quality than that of Kisite. The current state of the reefs is due to their close proximity with the mainland and hence accessibility of short range artisanal dug-out canoes. The reserve status not only exposes the reefs to overfishing, but associated impacts have caused a rapid decline in the reef structure. It is therefore necessary that fishing and tourism practices in the reserve be regulated, and existing regulations be enforced in order to stop further degradation. The Mpunguti Islands presents a rare opportunity where one can do nature walking and have a panoramic view of the ocean.

### Sandy beach-Kisite Islands

Kisite Island is within the Kisite Marine Park where fishing is completely prohibited. Kisite Island is made of coral rock with scanty grass on the top of the cliff. Most visitors frequent this small part of the protected reef for snorkeling, sun bathing and swimming, making the area prone to coral trampling and damage by bad anchoring practices. A study by Muthiga and McClanahan, 1997, showed that all shallow sites of Kisite Island had greater physical damage regardless of the number of visitors. This suggested that natural factors such as waves and currents might be more important than trampling. The study recommended that the levels of management and visitor education in place be maintained.

**Jiwe mtu jiwe jahazi** and is an attraction site. It's aesthetic fossil coral that is shaped like a human being while jiwe jahazi is a jutting fossil coral outcrops shaped like a dhow.

## Cultural and Historical values

### Shimoni slave caves

The caves were formed millions of years ago by coral polyps under the sea. Are a historical site formally used as Kayas' shrines and as a hiding place for the people of shimoni against attacks by marauding tribes from the hinterland. The caves were used by slave traders to hide the slaves, before they were shipped out to the slave market in Zanzibar. The caves have a grisly history which inspired the song " Shimoni" by renowned Kenya-born singer, *Rodger Whittaker* who imagined that the voices of the dead slaves were calling to him from the walls of the caves. Archaeological findings indicate that these coral caves, with their lovely stalactites, have been inhabited for several centuries and are currently home to a thriving population of bats which calls for management actions for the protection of these bats. The caves have been registered by

National Museums of Kenya (NMK) as important national historical heritage and have empowered the community to run and manage the caves as a source of livelihood. Caves are important tourism attraction and is managed by the Maendeleo ya Shimoni CBO on behalf of the community. Some of the caves are however not in use since they have been blocked by silt over time and require to be renovated. Currently, breakfast is offered in the caves to visitors. The long term vision is to construct a restaurant that will be used for catering services.

### **Historical ruins, war caves**

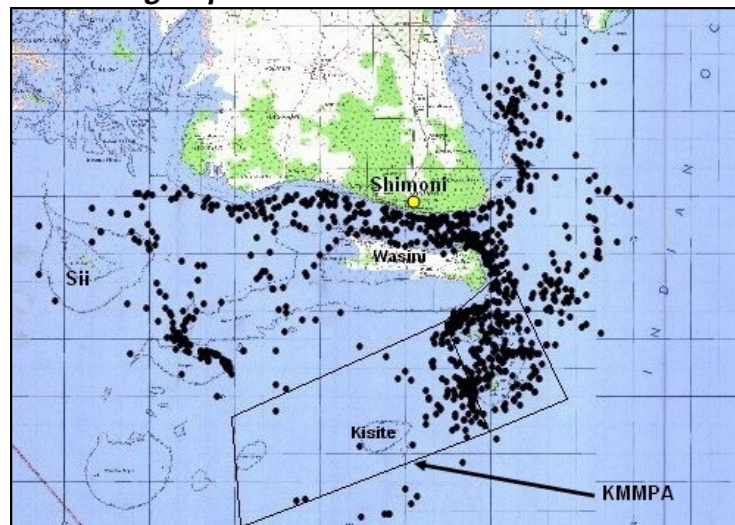
The war caves at Shimoni form part of the heritage landscape due to its multilayered values that include slave history, a shrine, unique rock structure, four species of bats and indigenous forest with birds and rare Columbus monkeys. The other elements of significance at Shimoni include the colonial buildings erected by the Imperial British East Africa Company in the later part of the 19th century. This was during the war to stop slave trade in the region and other interests. The local community once used the dark cave as a hideout during raids by invaders such as the wagalla.

### **Social values**

#### **Fisheries Resources**

Fishing is the primary activity for the community of the KMMCA and most are fishermen or rely on fishing activities for their livelihoods. Fishermen go out five to six days per week, taking Friday off (Rest day for Muslim culture).

**Figure 7: Fishing effort in the KMMCA 2008-2010. Black dots show the position of the fishing boat or fishing trap.**



Most of them fish rabbitfish (*tafi*), red snapper (*changu*), chengu, tangu, etc. Rabbitfish is the most abundant prey. According to the residents, the catches used to be plentiful ten years ago, with more than 15 kg of fish per fishermen, but nowadays the catches are going down to only 5 to 10 kg. Marine Reserve (Upper and Lower Mpunguti) is where almost all fishermen go fishing, spending an average of eight hours per day. Canoe is

the main type of boat used by the fishermen, while longlines and traps are the fishing equipment most common amongst them. The areas where local fishermen see spear-fishermen (an illegal fishing method) is around the Marine Reserve and Wasini Island. The fishermen from Mkwi and Kibuyuni use Mpunguti Marine Reserve as the main fishing ground, but depend on the season they fish on the north part of Upper and Lower Mpunguti. Fishermen from Shimonini mostly utilize waters in Wasini Channel and go more offshore towards Nyuli reef. Traditional fishing methods are methods that not harmful and are allowed under controlled conditions mainly practiced in Mpunguti Reserve.

### **Wasini board walk**

Wasini board walk is a coral garden where the Wasini women's board walk sits a top. It reminds people of Stonehenge from different vantage point. It is the best attraction on the island.



**Plate 9. Wasini mangrove boardwalk**

# KMMCA Zonation Scheme

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# Introduction

Zoning is a key management tool for multiple use MPAs. The KMMCA will be managed as a multiple use area. This means that, while enhancing the conservation of the Marine National Park, this Zoning Plan also provides for a range of recreational, commercial and research opportunities, and for the continuation of traditional activities. The KMMCA Zonation Scheme is meant to reconcile the principal purpose of protecting the KMMCA resource values by limiting use of these resources for local communities and visitors. This is to be achieved through conservation of the area's ERVs and the regulation and promotion of visitor use across the area. KMMCA zonation scheme has adopted a two tier approach to zoning as follows:

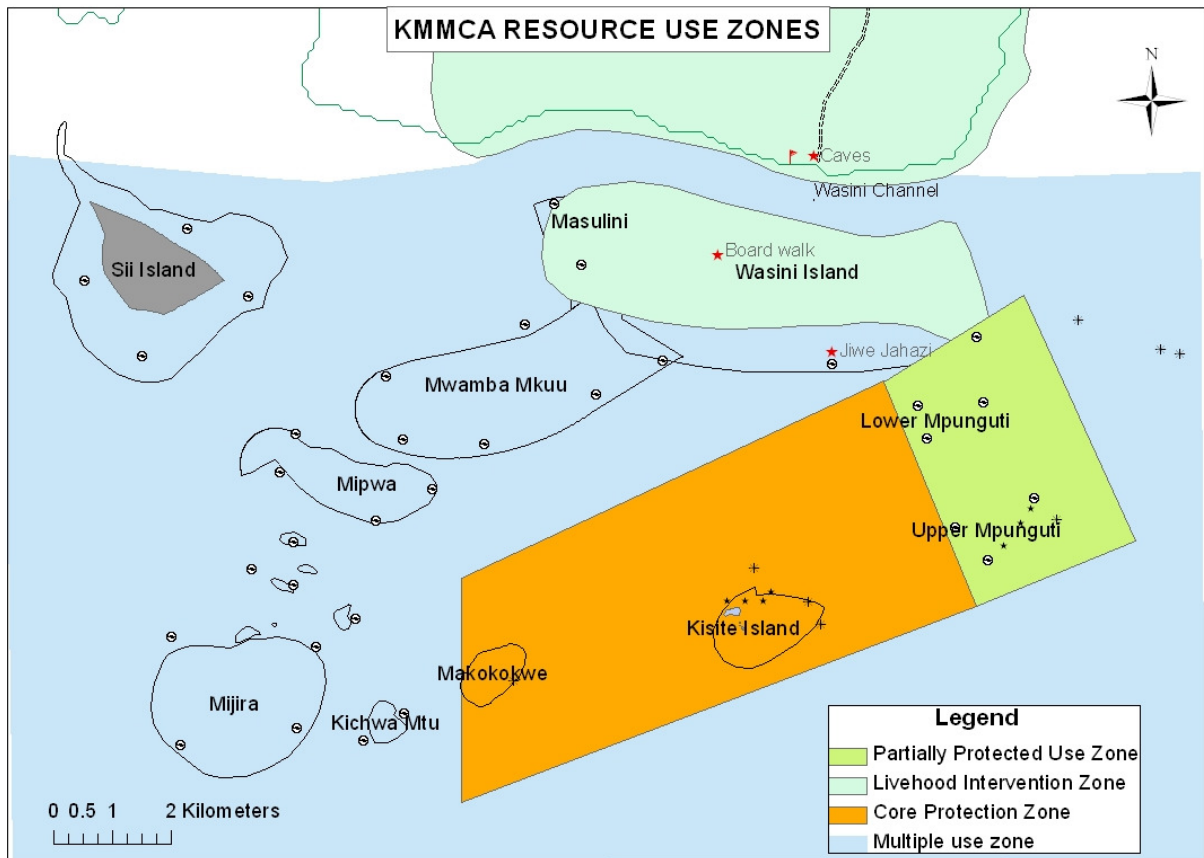
1. Resource Use Zone (RUZ)
  - ▶ Core Protection Zone
  - ▶ Partially Protected Use Zone
  - ▶ Multiple Use Zone
  - ▶ Livelihood Intervention Zone
2. Visitor Use Zone (VUZ).
  - ▶ High Use Zone
  - ▶ Low Use Zone

The following sections provides further details on the rationale behind their development, information on the limits of acceptable use and details on visitor activity and accommodation facilities prescribed for each zone.

## Resource Use Zones (RUZ)

The RUZ in the KMMCA has been divided into four zones (see figure 7): the Core Protection Zone, Partially Protected Use Zone, Multiple Use Zone and Livelihood Intervention Zone. These zones closely correspond with the KMMCA management sectors. The four zones will facilitate the development of mechanisms to reduce competition and conflict between human activities within the KMMCA while still serving conservation purposes and supporting aims of the Tourism Development and Management Programme.

**Figure 5: KMMCA Resource Use Zones**



## Core Protection Zone (CPZ)

The CPZ is designed to protect and conserve biologically significant habitats in their pristine conditions and offer ideal undisturbed sites for scientific research. Some of the core purposes of the zone are listed below:

- Protect spawning areas and nursery grounds
- Minimise damage to important habitats
- Provide refuge for protected species, such as dolphins, turtles and dugongs
- Boost species numbers, which helps the food web as a whole
- Increase the abundance of fish

This zone also proposes a 'no-take' zone to provide a high level of protection and allow for a range of recreational activities that do not disturb, damage, destroy or remove any living organism, habitat or the seabed. No-take areas have been introduced worldwide to protect threatened species, high profile habitats or pristine areas, mostly in remote localities. In the KMMCA people can access no-take areas and activities such as boating, snorkeling and diving are allowed, but all types of fishing, including artisanal, and all collecting and extractive activities are prohibited. CPZ encompasses Kisite Marine National Park covering an area of 28 km<sup>2</sup>.

**Table 5: Existing and Proposed Activities in the Core Protection Zone**

Existing activities	Proposed activities
Snorkelling	Night snorkeling
Scuba diving	Night diving
Dolphin and whale watching	Floating deck
Sun bathing	Glass viewers
Bird watching at Kisite Island (seasonal)	Wreck diving
Photography and filming	
Limited impact research (non-extractive)	
Beach walking	

## Partially Protected Use Zone

The Partially Protected Use Zone will allow ongoing use of most recreational and artisanal fishing activities that are not destructive, ecologically sustainable and consistent with the overall objectives of KMMCA. This zone includes Mpunguti Marine National Reserve (11km<sup>2</sup>) with the two islands Lower and Upper Mpunguti. The area lies under the jurisdiction and management of KWS.

**Table 6: Existing and Proposed Activities in the Partially Protected Zone**

Existing activities	Proposed activities
Snorkeling	Diving at pink reef coral garden
Scuba diving	Telescoping at watchtower at Lower Mpunguti (dolphin, turtle, bird watching)
Artisanal fishing	Nature trails around the Upper Mpunguti tropical forest
Coconut crab watching on Lower Mpunguti island	Picnic site on the Upper Mpunguti
Camping for honeymooners on Lower Mpunguti	
Dolphin and whale watching	

## Multiple Use Zone (MUZ)

The multiple use zones are areas that require specific zoning controls and management since they are under different management sectors. The allowed activities are dependent on their specific nature and the management needs from the different sectors. This zone encompasses the rest of the open waters in the KMMCA and includes Wasini Channel, mangroves along the shoreline of Ncha Mwamba coral reef, Jiwe Jahazi, Nyuli Reef, Funzi Bay and Maritime jetty at Shimoni. The entire MUZ lies under the Maritime Authorities but it is utilized by different government agencies and communities.

**Table 7: Existing and Proposed Activities in the Multiple Use Zone**

Existing activities	Proposed activities
Commercial and subsistence fishing	Turtle, dolphin and dugong conservation at Sii Island
Professional diving at Nyuli reef	Mangrove conservation, replanting and utilization

Existing activities	Proposed activities
Fun diving at Wasini south	Mariculture activities – seaweed farming at Kibuyuni and Mkwiro.
Snorkeling – Wasini south	Apiculture activities at Kibuyuni and Wasini mangroves
Boat transport across Wasini Channel and to offshore waters	Construction of a KWS jetty for tourists
Commercial activities at Wasini channel	Recreational boat hire services and activities
Dolphin watching	Mariculture: Mud crab fattening and sea cucumber farming

## Livelihood Intervention Zone (LIZ)

This zone has been setup to support sustainable livelihoods, reduce illegal activities in adjacent forest, improve KWS relations with locals and protect biodiversity in the forest. To achieve this goal, support will be given to local communities to develop sustainable livelihoods that will result in reduced pressure on the forest, raise awareness on the importance of forest conservation and need to protect the biodiversity. The LIZ encompasses Shimoni East and West forest extending all the way to Kibuyuni, with an inclusion of patches of the remaining forest on Wasini Island (Wasini village and Mkwiro village). The Shimoni slave caves, fish landing bay, Customs office, KWS Shimoni office and the Shimoni Shopping center area are also included in this zone.

**Table 8: Existing and Proposed Activities in the Livelihood Intervention Zone**

Existing activities	Proposed activities
Forest product extraction – Medicinal plants	Identification and development of new nature trails
Shimoni East Forest nature trail	Apiculture in Kibuyun/Wasinii mangrove forest
Mangrove Boardwalk – Wasini village	Extension of Mariculture activities in Kibuyuni/Mkwiro
Bird watching at Jiwe Jahazi	Construction of a hanging board walk
Historical sites	Development of curio stalls at the KWS proposed jetty
Kayas (20 Kaya sites at Wasini and Shimoni forests)	Construction of an Eco-lodge at Shimoni East
Kaya Bogoa tour at Mkwiro village	Butterfly farming
Shimoni Slave Caves tours	Local canoe tours in mangroves at high tide
	Cycling routes and camps
	Camping in Shimoni forest as well as Wasini/Mkwiro forest

## Visitor Use Zone

Zonation in the MPA planning and management is one of the ways to incorporate tourism interests more sustainably alongside other activities, such as fishing. The tourism zonal management follows views and inputs from local community and stakeholders from the tourism sector. The Visitor Use Zones will facilitate the level and type of visitor use to be managed across the MPAs. The visitor use zonation scheme for the KMMCA provides a description of the area that each zone covers, and the major

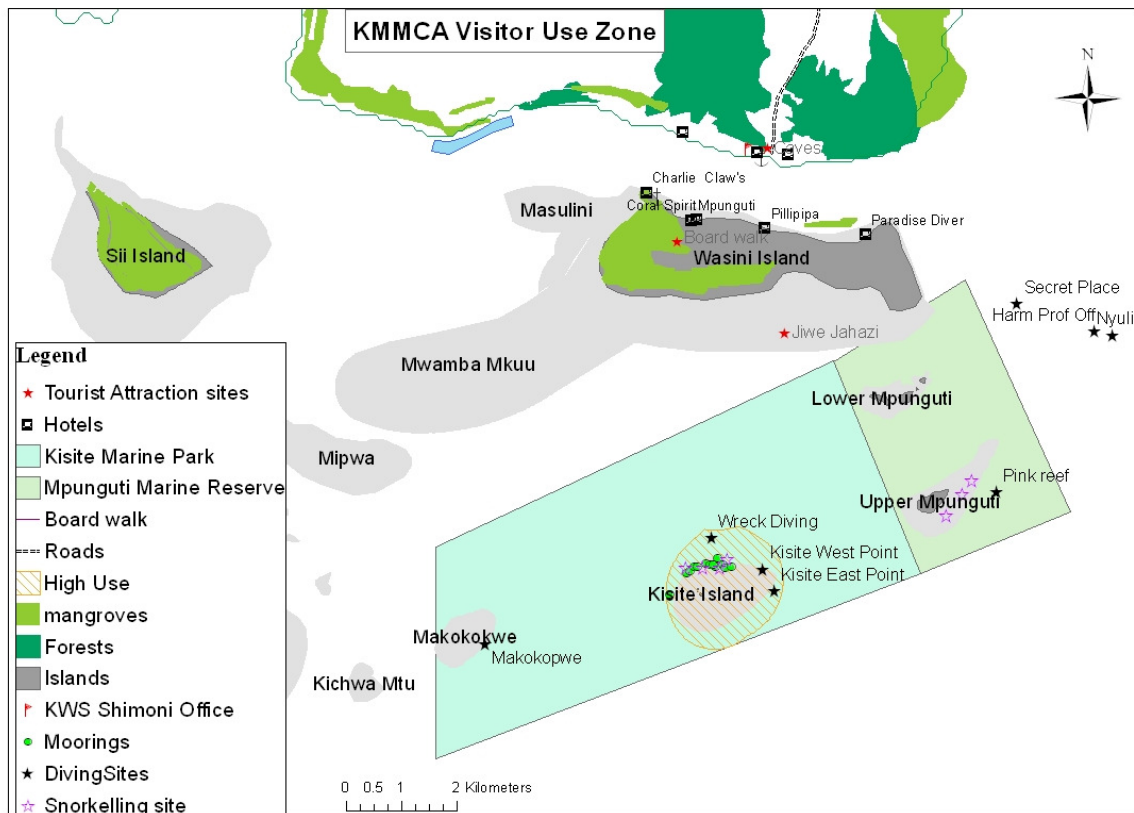
physical and geographical features it contains. As a result the following zone types have been identified.

## High Use Zone (HUZ)

In the KMMCA HUZ, any type of fishing, collection of marine resources, disturbance or damage to marine wildlife and habitats are prohibited, so that visitors and the local community can appreciate diverse marine environments relatively undisturbed by human activities. HUZ offers not only recreational opportunities, but also high value educational resources. The HUZ includes:

- Kisite Island
- Kisite coral garden
- Kisite beach
- Immediate areas surrounding Kisite Island

**Figure 6: KMMCA Visitor Use Zones**



## Visitor activity prescriptions (HUZ)

**Table 9: High Use Zone: Visitor activity prescriptions**

- |   |
|---|
| <ul style="list-style-type: none"><li>▶ Snorkelling</li><li>▶ Scuba diving</li><li>▶ Dolphin and whale watching</li><li>▶ Sun bathing and beach activities</li><li>▶ Bird watching at Kisite Island</li><li>▶ Night snorkelling</li><li>▶ Night diving</li><li>▶ Floating deck</li><li>▶ Glass viewer</li></ul> |
|---|

## Low Use Zone (LUZ)

In the KMMCA the LUZ encompasses a wide range of habitats under different protection status. In the Kisite Marine National Park (KMNP) area any type of fishing is prohibited while in the Mpunguti Marine National Reserve (MMNR) artisanal non destructive fishing is allowed. The rest of the area overlaps with the Multiple Use Zone (MUZ) where the range of recourses can be utilised. Most of the areas in this zone are not properly explored and utilized for tourist interest and satisfaction. By offering a variety of diving, snorkelling and safari options, LUZ has a potential to accommodate a wide range of visitors' recreation needs. The Low Use Zone for KMMCA includes:

- The rest of KMNP (which is not included in the HUZ) including Mako Kokwe reef
- The MMNR including Pink reef and light house
- Nyuli reef
- Mpunguti islands
- Sii Island
- Funzi Bay
- Wasini Island
- Shimoni East and West Forest

## Visitor activity prescriptions for LUZ

**Table 10: Low Use Zone: Visitor activity prescriptions**

▶ <b>Camping.</b> At Wasini and Mkwiro villages as well as in Shimoni forest. Honeymoon camping at Lower Mpunguti, and recreational camping at Upper Mpunguti
▶ <b>Scuba Diving:</b> Nyuli, Upper Mpunguti and Moko Kokwe.
▶ <b>Snorkelling;</b> Upper and Lower Mpunguti and reef in Funzi Bay which needs to be explored,
▶ <b>Nature trails.</b> Along specified routes agreed by the KMMCA management.
▶ <b>Apiculture and Mariculture tours.</b> In Kibuyuni/Mkwiro mangroves.
▶ <b>Local arts and crafts for sale.</b> On designated sites agreed by the KMMCA management.
▶ <b>Kaya tours:</b> Kaya centre and Shimoni forest sites
▶ <b>Walking and Cycling safaris.</b> Along specified routes between permanent and/or temporary camps agreed between operator and KMMCA management.
▶ <b>Mangrove board walks.</b> Wasini village and Sii Island (proposed)
▶ <b>Mangrove canoe tours at high tide:</b> Mkwiro/Wasini mangrove trails
▶ <b>Butterfly farming:</b> Shimoni Forest
▶ <b>Bird watching.</b> At Jiwe Jahazi, Shimoni East and West Forest
▶ <b>Wreck diving:</b> two proposed locations have been identified. One is 300-400 meters north of Kisite Island and the other in Mpunguti NMR.

## Visitor accommodation

**Table 11: Low Use Zone: Existing tourism facility types and bed capacity**

<b>Facility type</b>	<b>Maximum size</b>
▶ KWS Banda	14 beds
▶ Shimoni Reef Hotel	14 beds
▶ Shimoni Garden	25 beds
▶ Betty's Camps	13 beds
▶ Mpunguti Lodge	25 beds
▶ Special campsite	4 persons
▶ Magical Mwazaro Lodge	40 beds
▶ Public campsite (proposed)	100 persons
▶ Tree Houses (proposed)	10 beds
▶ Home stays	Proposed
▶ Eco-lodge (proposed)	25 beds

# Ecological Management Programme

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## Programme Purpose and Strategy

*The KMMCA ecosystems' integrity are conserved and threats to the area's key ecological features reduced through integrated and adaptive management*

The KMMCA ecological programme aims at enhancing the regeneration and ecological integrity of the key ecological systems which includes the mangroves, coral reefs, sea grass beds, sand beaches and their associated resources which are vital for sustainable development. It is however faced with major challenges resulting in the degradation of habitats and ecosystems which may translate into loss of biodiversity. This is primarily caused by the high conflict between rate of utilisation and conservation, and the balance between sustainability and utilisation.

Major threats to coral and coral reef ecosystems are from many factors ranging from sea level rise and rise in sea temperatures due to global warming and from acidification of seawater. These threats reduce reef health leading to increased reef erosion. Sea grasses which are closely associated to coral reefs are threatened by human activities. Sea grass beds are important habitats for many species of fish; they also act as sediment traps ensuring good health of coral. They are refuge for threatened species like the green turtle, hawks bill turtle and the dugongs. Threats to seagrass in KMMCA include but not limited to destructive fishing practices e.g. trawling, destruction of forest cover that leads to increased sedimentation through surface run-off after rains, poor farming practices aggravated by the lack of awareness and inadequate enforcement of legislation of seagrass beds through controlled fishing and improved monitoring.

Over extraction of mangroves to meeting increasing demands for firewood and building materials compounded by the poverty status of the indigenous community, lack of alternative livelihood, and a lack of awareness amongst communities about the true values of mangroves has been a major threat to their survival. Equally, the Shimoni and Wasini forests are under threat from encroachment for settlement and farming, illegal logging, deforestation and loss of biodiversity which contributes to a reduction of forest cover.

The KMMCA Ecological Management Programme aims to address the threats that are impacting on the most important ecological features and values of the KMMCA ecosystem, and to provide a guiding framework for the long-term ecological monitoring of the area. The following section sets out the **guiding principles** that describe key factors taken into account in the development of the Ecological Management Programme and that will influence the way the programme is implemented in achieving the Programme Purpose.

***In implementing the KMMCA's Ecological Management Programme, the Management and stakeholders should strive to ensure that:***

## **Coastal ecosystem connectivity and human wellbeing is ensure**

The KMMCA coastal and marine ecosystems, including coastal forest ecosystems of the Shimoni and Wasini, estuarine and near – shore areas and the open ocean, are the most productive, yet most highly threatened ecosystems by human activities. These ecosystems provide essential ecological services, support production and provide livelihood and income-generation opportunities for the local and inland populations. These ecosystems are intrinsically interconnected among themselves and even with more distant ones. The ecological integrity of each ecosystem thus directly or indirectly depends on the status of the other ecosystems. Human pressure has led to the degradation of these ecosystems putting the very livelihoods of the community in jeopardy. For instance, the massive deforestation and clearing of the Shimoni forest to pave way for agriculture and other developments lead to sedimentation especially during the rainy season impacting on mangrove, coral and other ecosystems. Management actions listed under this programme seeks to ensure that these ecosystems are managed in an integrated fashion if they are to continue to be sources of livelihood for the KMMCA community and inland populations.

## **Conservation of threatened marine species is enhanced**

The KMMCA is home to a variety of marine animals that include the endangered sea turtle, dugongs, dolphins, whales, and an array of fish species. The sea turtle species are listed by the World Conservation Union (IUCN) as either endangered or critically endangered and are listed under Appendix 1 by the Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES). Sea turtles in KMMCA face myriad of threats. They are poached primarily for meat, oil, eggs and the shell, which is economically valuable. They are threatened by increasing tourism development and beach erosion. Seagrass meadows which are green turtle foraging grounds are highly impacted by sedimentation and eutrophication. The dugong that used to be seen in KMMCA has become rare to be seen with the last sighting recorded being in 2009. It is listed globally by the IUCN Red List as Vulnerable to Extinction.

Conversely, the other marine mammals such as the dolphins and whales that serve as important indicators of the health of marine environments are threatened through tourism recreational and commercial fishing activities. The dolphin is considered as a keystone species for KMMCA and is the main attraction for visitors to the MPA. Potential negative interactions on marine mammals include: mortalities caused by incidental capture in nets and hooked lines; entanglement and ingestion of marine debris; ecosystem effects (e.g. competition for food, occupation and disturbance of habitat). In addition, one of the species Indo-Pacific humpback dolphins, which ranks second as the most common mammal in KMMCA after the Indo-Pacific bottlenose dolphins, are considered by IUCN Red species list as near threatened to extinction with the population sizes decreasing worldwide.

Management actions under this program aim at preserving, protecting and restoring the integrity of the rare, endemic or threatened marine species. This effort will require combined efforts of different stakeholders, more so those involved in research work so as to give guidance to the management on the best management practices.

## Networking and sharing of research information amongst researchers and KMMCA management is realized

There are many research organizations and individual researchers who have conducted research or are involved in research activities on marine conservation and other environmental issues in KMMCA. As a result, there are several journal publications and numerous reports that have been produced on various aspects of the KMMCA. These publications and reports are scattered and found with individuals who conducted the research and thus not accessible to the KMMCA managers. This beats the purpose to which the research was conducted if it does not give guidance to management of the conservation area. Lack of coordination and networking in marine research is the main contributing factor to duplication of research work and unavailability of data in different marine fields. Networking and sharing information, it would be possible to determine which places, and areas of research gaps are priorities for conservation and what strategies will yield results that count. On the other hand, there are challenges in the dissemination of information, the use of recommendations for management from relevant studies and the archiving of publications and reports produced from this research. Actions under this programme aims at initiating a formal forum for networking and sharing of research information amongst researchers and the management for. Existing regional research mailing lists, annual research meeting, quarterly newsletters, WIOMSA country chapter mailing list will be enhanced and made a routine for KMMCA.

## Effective and appropriate research and monitoring programmes for KMMCA are put in place

Effective KMMCA planning and management will require a thorough understanding of the driving forces that influence the area dynamics. This requires data on trends and use of the coastal resources. KWS has monitoring programmes for the MPAs which is done by scientists based at the CCA regional office in Mombasa. Their capacity to effectively conduct monitoring is inadequate due to insufficient human resources. Other research organizations such as WCS and GVI also does monitoring of different parameters based on their needs and again, as mentioned above, there is lack of coordination with each group doing their own monitoring. Actions under this programme thus aim at promoting coordinated research and monitoring programmes that generate data and information to inform KMMCA management in making appropriate decisions and actions.

## Targeting ecological management action

The PAPF prescribes the use of the ***Nature Conservancy's (TNC) Conservation Action Planning (CAP)*** process as a foundation for designing the MPA plan's Ecological Management Programme. The rationale underlying this is that, with limited human and financial resources available to PA managers, it is impractical to manage and monitor every single aspect of the complex ecology of a protected area. The CAP methodology provides a tested mechanism for targeting ecological management, by identifying and developing an accurate definition and understanding of the MPA's most

important ecological features, their management needs, and the major threats affecting these ecological features. In line with the PAPF, this programme also adopts the CAP framework.

The PAPF identifies three main stages in applying the CAP methodology: the selection of **conservation targets**; the identification and ranking of **threats** to the conservation targets; and the development of **management objectives and actions** to address these threats as well as to enhance the conservation targets. These key stages and their application in the KMMCA planning process are elaborated in the following sections.

## Conservation targets

The focal conservation targets are a limited suite of species, communities, and ecological systems that are chosen to represent and encompass the biodiversity found in the project area. They are the basis for setting goals, carrying out conservation actions, and measuring conservation effectiveness. The first step of the CAP process is the definition of a small number (usually about eight) of **conservation targets** which represent and encapsulate the unique biodiversity types contained within the protected area, as well as any environmental or ecological features that may require specific management actions (such as particularly endangered species or habitats). A comprehensive ecological definition and understanding of each of these targets is then achieved through the further identification of the “**key ecological attributes**” (KEAs), which are the ecological parameters upon which long-term survival of each conservation target depends. Common examples of KEAs include: essential habitat requirements of a particular species; keystone species for a specific habitat; or ecological processes and connectivity requirements. The nine KMMCA conservation targets, the rationale behind their selection, important subsidiary targets (i.e. other ecosystem components that share KEAs and threats with the conservation target concerned), and each the KEAs for each target are set out in table 12.

**Table 12: KMMCA Conservation targets, subsidiary targets, and KEAs**

	<b>Conservation target</b>	<b>Rationale for selection</b>	<b>Important subsidiary targets</b>	<b>Key ecological attributes</b>
<b>S y s t e m s</b>	<b>Mangrove Ecosystem</b>	<ul style="list-style-type: none"> <li>• High productivity value</li> <li>• High subsistence value</li> <li>• Highly degraded</li> <li>• Neglected ecosystem</li> <li>• Economic value (potential for alternative livelihoods)</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries benefit</li> <li>• Nursery grounds</li> <li>• Bird community habitat</li> <li>• Shoreline protection</li> <li>• Buffer to wave energy</li> <li>• Excellent carbon sink</li> <li>• Entrapment of sediments</li> </ul>	<ul style="list-style-type: none"> <li>• Biomass value</li> <li>• Forest cover</li> <li>• Complexity index (measure of stand height, composition, density, etc)</li> <li>• Importance value index (frequency of occurrence of a particular species)</li> <li>• Water quality</li> <li>• Nutrient levels</li> <li>• Sedimentation</li> <li>• Bird community composition</li> </ul>
	<b>Coral reef</b>	<ul style="list-style-type: none"> <li>• High biodiversity value</li> <li>• High productivity value</li> <li>• Highly sensitive habitat</li> <li>• High economic value (livelihood support, tourism)</li> <li>• Shoreline protection</li> <li>• Spawning ground</li> </ul>	<ul style="list-style-type: none"> <li>• Turtles habitat</li> <li>• Nursery and breeding ground for coral reef community</li> <li>• Reef fish</li> <li>• Reef invertebrates</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Biomass value</li> <li>• Fish and invertebrates density, diversity, and biomass</li> <li>• bleaching extent and severity</li> <li>• coral diseases</li> <li>• Diadema and Echinothrix density</li> <li>• Coral recruitment</li> <li>• Diversity and coral cover</li> <li>• Water quality</li> <li>• Predation and herbivory</li> <li>• Benthic composition (including live coral cover)</li> <li>• Reef rugosity</li> <li>• Seawater temperature</li> <li>• Turbidity (light attenuation)</li> <li>• Sedimentation rates</li> </ul>
	<b>Reef fisheries resources</b>	<ul style="list-style-type: none"> <li>• High biodiversity value</li> <li>• High productivity value</li> <li>• Highly sensitive habitat</li> <li>• High economic value (livelihood support, tourism)</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Non-commercial finfish</li> <li>• Ornamental fish</li> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Level and methods of demersal resource exploitation,</li> <li>• Status of resources (Abundance, Biomass, diversity),</li> <li>• Trophic levels structure (Herbivorous, predatory)</li> <li>• Species aggregations</li> <li>•</li> </ul>

	<b>Conservation target</b>	<b>Rationale for selection</b>	<b>Important subsidiary targets</b>	<b>Key ecological attributes</b>
	<b>Sea grass ecosystem</b>	<ul style="list-style-type: none"> <li>• High biodiversity value</li> <li>• High productivity value</li> <li>• High economic value (livelihood support)</li> <li>• Highly resilient</li> <li>• </li> </ul>	<ul style="list-style-type: none"> <li>• Turtles, dugong feeding grounds</li> <li>• Nursery ground for fish and invertebrates</li> <li>• Sediment trap/nutrient recycling</li> <li>• Carbon sink</li> </ul>	<ul style="list-style-type: none"> <li>• Biomass value</li> <li>• abundance of fish and invertebrates</li> <li>• sea grass cover and diversity</li> <li>• Herbivorous density</li> <li>• Nutrient levels</li> <li>• Primary productivity</li> <li>• canopy height</li> </ul>
Habitat	<b>Intertidal habitat</b>	<ul style="list-style-type: none"> <li>• Biodiversity value</li> <li>• High productivity value</li> <li>• Economic value (livelihood support)</li> <li>• Shoreline protection</li> </ul>	<ul style="list-style-type: none"> <li>• Octopus</li> <li>• Sea cucumbers</li> <li>• Sea molluscs and shells</li> <li>• Livelihood support (mariculture)</li> </ul>	<ul style="list-style-type: none"> <li>• Biomass value</li> <li>• Abundance/diversity of invertebrates</li> <li>• Water quality</li> </ul>
	<b>Coastal Forest Habitat</b>	<ul style="list-style-type: none"> <li>• Critical habitat</li> <li>• Encroachment</li> <li>• High level of endemism</li> <li>• High cultural value</li> <li>• High subsistence value</li> <li>• Highly degraded</li> <li>• Highly fragmented</li> <li>• Urgent need for conservation intervention</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon sink</li> <li>• Colobus monkey habitat</li> <li>• Rare endemic fauna and flora (Elephant shrew)</li> <li>• Livelihood support</li> <li>• Important bird area (in the process of being designated)</li> </ul>	<ul style="list-style-type: none"> <li>• Canopy cover</li> <li>• Forest area</li> <li>• Biomass value</li> <li>• Complexity index (measure of stand height, composition, density, etc)</li> <li>• Importance value index (frequency of occurrence of a particular species)</li> <li>• Availability of forest resources (medicinal herbs, etc)</li> </ul>
	<b>Islands</b>	<ul style="list-style-type: none"> <li>• Unique Islands</li> <li>• Rare coconut crab</li> <li>• High cultural value</li> <li>• Nesting grounds of migratory birds</li> <li>• IBA (Kisite)</li> <li>• Tourism attraction</li> <li>• Ecotourism potential</li> </ul>	<ul style="list-style-type: none"> <li>• Sooty tern</li> <li>• Coconut crab</li> <li>• Mangroves</li> <li>• Sandy beaches</li> <li>• Turtle nesting grounds (Lower Mpunguti)</li> <li>• </li> </ul>	<ul style="list-style-type: none"> <li>• Abundance and diversity of birds</li> <li>• Vegetation cover</li> <li>• Sea level</li> </ul>
	<b>Threatened Marine mammals (Whales, dolphins, dugongs)</b>	<ul style="list-style-type: none"> <li>• Biodiversity value</li> <li>• High tourism attraction</li> <li>• Indicator of ecosystem health food web maintenance</li> <li>• Highly endangered dugong (vulnerable to extinction)</li> <li>• Near threatened humpback dolphin</li> </ul>	<ul style="list-style-type: none"> <li>• Prey species</li> <li>• Sea grass</li> <li>• Livelihood support</li> </ul>	<ul style="list-style-type: none"> <li>• Water quality</li> <li>• Population size and structure</li> <li>• Genetic diversity</li> <li>• Habitat quality and utilization</li> <li>• Availability of prey species</li> <li>• Human disturbance</li> </ul>

	<b>Conservation target</b>	<b>Rationale for selection</b>	<b>Important subsidiary targets</b>	<b>Key ecological attributes</b>
	<b>Angolan black and white Colobus monkey</b>	<ul style="list-style-type: none"> <li>• Locally threatened species</li> <li>• Flagship species (Shimoni forest)</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Sykes monkeys, bush baby monkeys</li> <li>• Food tree species</li> <li>• High canopy trees</li> </ul>	<ul style="list-style-type: none"> <li>• Population size and structure</li> <li>• Habitat quality and availability</li> <li>• Food availability</li> <li>•</li> </ul>

## Threats to conservation targets

A “threat” is actually a combination of a stress and source of stress that have a negative impact to conservation targets. The comprehensive definition of conservation targets and their KEAs enables the identification of the “**threats**” to these targets and attributes, and the subsequent prioritisation of these threats according to their significance on conservation target during the 10-year lifespan of the MPA plan. The table 13 shows the priority threats impacting or likely to impact on the KMMCA conservation targets and their KEAs.

**Table 13: Threats to Conservation Targets of KMMCA**

<b>TARGETS</b>									
<b>THREATS</b>	<i>Mangrove ecosystem</i>	<i>Coral Reef</i>	<i>Reef fisheries resources</i>	<i>Sea grass ecosystem</i>	<i>Intertidal habitat</i>	<i>Coastal Forest Habitat</i>	<i>Islands</i>	<i>Marine mammals (Whales, dolphins, dugongs)</i>	<i>Angolan black and white Colobus Monkey</i>
Over exploitation	Very high	High	Very high		Medium				
Habitat conversion	Low		Low					Low	Very High
Diversion of fresh water (Ramisi river estuary)	Medium								
Climate change (sea level rise, etc)	Medium	Medium	Low	Low			Medium	Medium	
Pollution (debris from the sea)	Low								
Destructive exploitation (use of destructive gears and methods)		High	High		Low				
Wastewater/Poor waste disposal		Low			Low		Low		
Land erosion/ sediment		Low		Low					
Tourism pressure		Medium	Low				Low	High	
Coral mining		Low							
Removal of keystone species		Medium							
Aquarium fishing			Medium						
Poor water quality			Low	Low					
Herbivory				Medium					
Competition with seaweed farms				Low					
Boat Anchoring				Medium					
Charcoal production						Very high			
Illegal logging and timber						Very high			

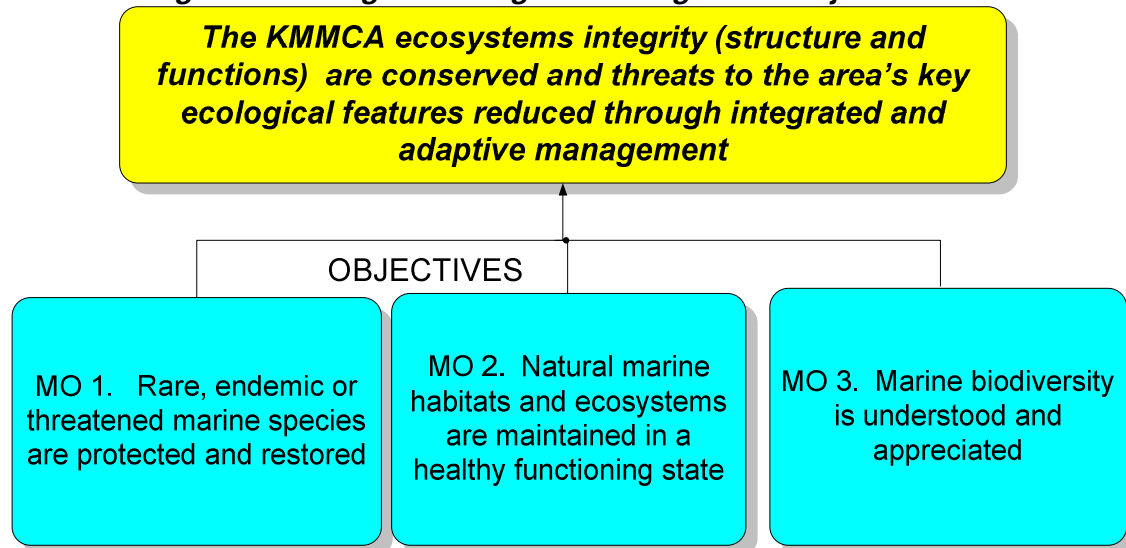
<b>TARGETS</b>									
<b>THREATS</b>	<i>Mangrove ecosystem</i>	<i>Coral Reef</i>	<i>Reef fisheries resources</i>	<i>Sea grass ecosystem</i>	<i>Intertidal habitat</i>	<i>Coastal Forest Habitat</i>	<i>Islands</i>	<i>Marine mammals (Whales, dolphins, dugongs)</i>	<i>Angolan black and white Colobus Monkey</i>
extraction									
Bush meat poaching						Low			
Forest encroachment – for agric. use and settlement						High			
Wild fires						Low			
Fragmentation						Medium			
Quarrying						Medium			
Coastal development						Low	Low		
Absentee landlords						Very high			High
Over fishing of prey species								High	
Entanglement in fishing gears								Low	
Impact from oil and gas exploration								High	
Genetic isolation									Low

# Management Objectives and Actions

The identification and ranking of the threats to the conservation targets and their KEAs provided the basis for the development of the Ecological Management Programme's Management Objectives and Actions. The following sections describe these management objectives and provide an outline of the Management Actions needed to achieve them. Under each management objective there is a brief description of the relevant management issues and opportunities, which provide the specific context and justification for the Management Actions.

Figure 9 below shows the objective tree for the KMMCA Ecological Management Programme, which is based on the analysis of the Conservation Targets, their Key Ecological Attributes, and the associated threats as described in the previous section.

**Figure 7: Ecological Management Programme objectives tree**



Each of these management objectives and management actions are set out in the following sections.

## Objective 1: Rare, endemic or threatened marine species are protected and restored

Kenya coast has considerable area for wildlife in the marine and coastal forests. In KMMCA, the Shimoni and Wasini forests represents the coastal forest ecosystem that is home to an array of wild animals that includes the Angolan black and white Colobus monkey which is the flagship species for Shimoni forest, Sykes monkeys, bush baby, baboons, the threatened African Golden Cat, the rare and threatened Zanj elephant shrew and over 145 bird species among others. In fact, Shimoni Forest is listed as number 129 in a list of 160 Key Biodiversity Areas for the EACFE hotspot.

The marine habitats of KMMCA that include coral reefs, seagrass beds, beaches and sand dunes and intertidal habitats are home to a variety of marine animals that include the endangered sea turtle, dugongs, dolphins, whales, and an array of fish species. The marine mammals serve as important indicators of the health of marine environments. As top level predators they impact in local food webs and ecosystems as a whole. They also indicate exposure and effects of pollutants over spatial, temporal and trophic scales. Too much pressure from recreational and artisanal fishing activities in the MPAs inevitably impacts cetaceans in a variety of ways. Potential interactions include: mortalities caused by incidental capture in nets and hooked lines; entanglement and ingestion of marine debris; ecosystem effects (e.g. competition for food, occupation and disturbance of habitat). Marine pollution can cause significant yet generally avoidable effects on marine animals, including mortality and reduced productivity. Marine debris has been shown to cause injuries and mortalities to individual animals. Other problems faced by the marine animals include acoustic disturbance, climate change and natural disturbances. This objective has been formulated to better understand the population ecology, key habitat requirements and threats of the species. Also important is to effectively protect the marine animals against any recreational and commercial fisheries-related mortality and other avoidable adverse effects of tourism and other coastal use and development.

To facilitate realization of this objective, the following actions have been coined. These relate to mapping and conduct surveys on turtle nesting sites and habitat utilization; dissemination of information and awareness creation about sea turtles in the area; inventorying of all key species; implementing the national survey of dugong detailed by the CMS; disseminating information and raising awareness about dugong in the area; lobbying for and contributing to the development of a National Marine Mammal Conservation Strategy; developing a regular and continuous research programme on various aspects of turtle, dolphin and whale biology and ecology for management purposes; assessing the level of human/dolphin and whale interactions and raising awareness about potential threats through training and education; and conducting an economic valuation of dolphin and whale watching industry. These are discussed in detail below.

### **Action 1.1 Map and conduct surveys on turtle nesting sites and habitat utilization**

Sea turtles have a complex lifecycle: eggs are laid and hatched on beaches, post-hatchlings are pelagic, sub-adults reside in developmental habitats, while adults live in adult foraging grounds. At different times in their life cycle, most turtle species will migrate between different foraging grounds, which are often hundreds of kilometres apart, and also migrate from these foraging grounds to onshore nesting beaches during their reproductive season.

Due to their complex lifecycle, migratory habits and physiology, sea turtles and their habitats have long been under threat from humans. They are threatened by direct harvesting/fishing, trapping as by-catch in various fishing gear and by the destruction of foraging and nesting grounds due to poor shoreline management. In KMMCA, poaching and destruction of turtle nests has often been reported. Given that the area has very few nesting beaches, the pressure on sea turtles could be inordinately high. In addition, few turtle sightings have been recorded in the KMMCA. Their numbers have reduced

drastically compared to historical records but the exact causes of this decline have not been documented. Mapping and assessing the habitat which includes nesting, foraging and migratory habitats will provide information to update the status of the sea turtle populations within KMMCA. Kenya is signatory to the Marine Turtle Strategy and Action Plan for the Western Indian Ocean (WIO), which outlines key issues in marine turtle conservation at national and regional levels, and sets out actions for the conservation, appreciation and sustainable utilization of marine turtles. As a result, KMMCA management will link up with other conservation bodies (under the umbrella of the Kenyan Sea Turtle Conservation Committee – KESCOM) that are involved in research, monitoring and other conservation efforts along the coastline to realise this action.

### **Action 1.2 Disseminate information and raise awareness about sea turtles in the area**

Sea turtle is the marine flagship species and among the most publicized species within the country. This is attributed to the high number of stakeholders within the region conducting research, education and awareness and lobbying for conservation and protection of the species. In Kenya, sea turtle research, monitoring and conservation efforts are led by six sea turtle conservation groups. These groups comprise sea turtle conservationists in different capacities, including individuals, hoteliers, local community groups, NGOs and government institutions. All these operate under the umbrella of KESCOM. Research and information generated by these groups is very vital for the conservation of the sea turtle and as a result, KMMCA will scale up its linkages with these groups develop programmes for education and awareness. Developing a sea turtle conservation and education programme in collaboration with national and international education and awareness initiatives like the international year of the turtles will enhance support for conservation among the stakeholders.

### **Action 1.7 Conduct inventories of all Key species**

Many studies have been done in the KMMCA; however, they were focused on coral reefs with mangrove, sea grass and forest ecosystems of the KMMCA receiving less attention. Species inventories of fish, coral, invertebrates such as sea urchins and sea cucumbers, gastropods and marine molluscs, birds, marine mammals, and some vertebrates in the Shimoni forest can be collated from current publications but this information needs to be updated. In addition, most of these species have not been adequately catalogued for mapping purposes making it difficult to estimate their range and extent of their distribution. Through this action therefore, KMMCA research section will undertake a thorough assessment of all biodiversity of the area through liaison with other researchers. This will as well include using GIS to map species distributions and movements. A monitoring strategy that takes into consideration key species, habitats and processes then be developed to keep the inventory up to date and monitor species movement.

### **Action 1.3 Implement the national survey of dugong report detailed by the CMS**

Dugong (*Dugong dugong*) is highly endangered species and historical reports indicate that large groups were seen in Kenyan waters. The current population in Kenya is not well known hence there is urgent need to implement conservation and legislation mechanisms to ensure viability of the opportunistic sightings in the recent past. The dugong is threatened worldwide, due to hunting, fisheries interactions and degradation of sea habitats, and pollution. This marine species is listed globally by the IUCN Red List as Vulnerable to Extinction. In KMMCA, the last sighting recorded was in the year 2008 west of Wasini Island close to Nyuli reef, while in 2009, one more sighting was recorded in Kisite MPA. Based on the aerial surveys conducted from 1973 to 1996 two areas were identified as potential dugong population grounds: Lamu archipelago on the north coast and Gazi-Shimoni in the south. Population estimate is considered to be less than 30 individuals. The exact cause of the status of dugong in the area has not been studied nonetheless from anecdotal evidence, this species is severely endangered and needs special attention nation-wide.

Nationally there is little effort to conserve dugongs hence there is the need to domesticate and implement the international initiatives among them detailed by Convention on Migratory Species (CMS) on national dugong survey. Through this action, an economic valuation to ascertain the value of the current population of dugong will be conducted that will eventually provide insights in the development of a National Marine Mammal Conservation Strategy proposed under Action 1.5 below. This will be done through consultations with local and international dugong research experts.

### **Action 1.4 Disseminate information and raise awareness about dugong in the area**

Not much research has been conducted in Kenya on dugongs. The few dugong monitoring and conservation efforts in Kenya include activities by: Eden Wildlife Trust in the South Coast, since 1992, WWF/KWS conservation and development efforts in and adjacent to the Kiunga Marine National Reserve, since 1997 and KWS-led aerial surveys, questionnaires and Environmental Days, since 1994. Currently, GVI has been conducting sighting surveys within the KMMCA in conjunction with the local communities. The fishing communities have also been reporting sightings and mortality incidents within the area. Through this action, this information will be collated and used to develop education and awareness programme geared at promoting awareness among the general public. Public awareness efforts on marine mammals, particularly the dugong, have been led by KWS with the support from regional and international conservation agencies. KMMCA will continue seeking support for awareness creation on the conservation of the dugong in the South Coast.

### **Action 1.5 Lobby for and contribute to the development of a National Marine Mammal Conservation Strategy**

Approximately 34 of the estimated 76 species of cetaceans (dolphins and whales) and 4 species of serenians (dugongs) worldwide are known to occur in the Western Indian

Ocean (WIO) region. Few systematic studies on these marine mammals have been carried out along Kenyan coast, but whales, dolphins and dugongs have been recorded. To enhance their conservation and management, it is paramount to develop a National Marine Mammal Conservation Strategy which will adequately identify and address challenges facing them.

Considering that the marine mammals are trans-boundary species, there will be need for concerted efforts by all the stakeholders to come up with an action plan for the strategy which can be implemented by all. This will elevate the status of the sea mammals to a national level hence providing a link to the regional and international initiatives on marine mammal conservation. Through this action, KMMCA will initiate the process of developing the strategy that will incorporate all stakeholders. Currently, the KWS is the signatory of all the conservation conventions which Kenya is a signatory to and hence a there is need to come up with national mechanisms in which to domesticate and implement these conventions.

**Action 1.6 Develop a regular and continuous research programme on various aspects of turtle, dolphin and whale biology and ecology for management purposes**

There is a need to develop a long term national cetacean (whale and dolphin) research programme which addresses key aspects of dolphin and whale biology and ecology such as their life cycle, migration patterns, and routes in order to understand potential threats and challenges and develop mechanism to mitigate them. This will be a starting point in development of a national cetacean standings and sightings network which will generate information on population structure and distribution, threats, migration pattern along Kenyan coast. Dolphins and whales can travel tens of kilometres every day, thus close collaboration with conservation minded stakeholders outside the KMMCA will be necessary to achieve ultimate conservation goals. Information generated will provide enough data for mapping the area, determine the geographic boundaries of dolphin populations, identify hotspots, prime habitat requirements and possible threats to the successful survival of populations.

**Action 1.7 Assess the level of human/dolphin and whale interactions and raise awareness about potential threats through training and education**

Dolphin tourism is rapidly expanding in the KMMCA area which increases conflict between conservation and tourism. Code of conduct introduced by KWS in 2007 was expected to facilitate some of the issues. However, there is still a great deal of sensitization and research required to effectively manage this activity. As such, a review of the level of interactions between human/dolphins and whales and their impacts will be evaluated so as to generate information for review of the current code of conduct and develop education and awareness programmes. Since much of these interactions are directly related to the boat owners and operators, the members of this industry will be trained and sensitized on the conservation and wise management of whale-dolphin watching activities as it is the flagship tourism product for the area.

### **Action 1.8 Conduct economic valuation of Dolphin and Whale watching industry**

Dolphin and Whale watching can become a very powerful tool for dolphin conservation. The economic value of watching dolphins in the KMMCA could provide an example of what might be done along the coast where dolphins are commonly harassed or killed. Dolphins are the tourism flagship species for the KMMCA and hence this study will promote visitation once it's economic value and its contribution to the tourism industry in the area and nationally has been determined. The study will benefit a lot from the rich data possessed by GVI from their research on dolphins in KMMCA.

## **Objective 2: Natural marine habitats and ecosystems are maintained in a healthy functioning state**

Coastal and marine ecosystems, which include tropical rainforests, estuarine and near-shore areas and the open ocean, are among the most productive, yet most highly threatened ecosystems in the world. Just like all the other coastal marine habitats and ecosystems the KMMCA provide essential ecological services, support production and provide livelihood and income-generation opportunities for the KMMCA residents, and inland populations. The habitats and ecosystems have suffered a great deal from anthropogenic pressures which have led to the degradation of resources therein putting the very livelihoods of the community in jeopardy.

For instance, there have been outcries that the fish catch by artisan fishermen has reduced significantly forcing them to venture far deep into the ocean from where they used to get their livelihoods from. This is attributed to overfishing and use of bad fishing gears. The sea grass ecosystem is threatened by deterioration of the water quality through both pollution and sedimentation. An increased amount of particles in the water reduce the amount of light available to the seagrasses. This decreases the growth of the seagrass and can eventually kill the whole population. At the same time, coral reefs are threatened by tourism pressure especially at Kisite through boat anchoring and being stepped on by divers and snorkelers. During low tide, the water levels are low and at times boats sit on the corals thereby breaking them. The mangroves of KMMCA, more so Sii Island and Wasini are as well threatened from over-exploitation, for poles and as a source of firewood.

The management actions under this objective have been developed to ensure that the KMMCA marine habitats and ecosystems are managed and enhanced to ensure that they continue providing critical socio-economic and ecological services, such as (protection from storm surges) and food, wood, fuel and livelihood for local communities.

### **Action 2.1 Initiate measures to reduce coral reef damage**

Coral reefs are amongst the most biologically diverse marine ecosystems in the world. In Kenya, coral reefs and their associated mangrove and sea grass habitats play important

ecological, economic, recreational and cultural roles. These habitats provide food and shelter for numerous fish and marine species, protect coastal areas from storm surge, prevent coastal erosion and support commercial fishing and an array of recreational activities. The health of coral reefs has continued to decline throughout the tropical and subtropical world where these habitats occur.

Baseline studies of reefs in Kisite/Mpunguti and Mako Kokwe have been carried out. Results showed that coral cover, finfish density, biomass and diversity were higher at Kisite Marine Park than at Mpunguti Reserve. Studies have also indicated that destructive fishing gears and overfishing in reserves could cause damage to coral reefs by changing the community structure from one dominated by coral and herbivorous fishes to one dominated by sea urchins. Within the MPA activities by the tourism sector may pose a danger to coral reefs including the breakage of coral by novice snorkelers. A previous study carried out in 1997, showed that damage caused by visitors was not significantly greater than that caused by natural sources (fish bites, waves). However, there were fewer visitors and boats utilizing the snorkelling sites in 1997 than in the present.

The control of seine nets is ongoing which reduces damage to coral and also reduces the amount of by-catch and catch of juvenile fish. Moorings have been installed at the most heavily used reef sites which reduce anchor damage but these need to be maintained. In addition, some tour companies sensitize their clients not to break corals and touch or remove shells. GVI is currently developing a code of conduct to go on community boats. Regular monitoring by WCS, KWS and GVI continues to provide information for management and this will be enhanced through this action. In order to minimise coral damage, a study on coral damage by visitors will be conducted so as to estimate the carrying capacity for reef tourism. From this study, it will be possible to generate appropriate information to raise awareness about coral reefs and effects of human activities.

### **Action 2.2 Mainstream the implementation of the National Coral Reef Action Plan**

Too much human pressure coupled with silt deposition from rivers, pollution and the effects of climate change are known to have diminished both the productivity and species richness and diversity of coral reef habitats. For example, trawling for prawns has damaged sea-grass habitats while global warming has caused sea water surface temperatures to rise resulting in coral bleaching. Moreover, there is inadequate awareness on the importance of these habitats and poor enforcement of relevant regulations to protect these ecosystems. A critical step in developing effective conservation and management of coral reefs in the area is the provision of information on the distribution, abundance, composition and health of these reefs. Unfortunately, existing information on coral reefs in KMMCA is scant.

A National Coral Reef Action Plan has been formulated and has prioritized actions on coral reef conservation which if implemented will lead to improved conservation of KMMCA. This action therefore calls for the mainstreaming of the implementation of the Coral Reef Action Plan, more so the following actions as envisaged in the Action Plan:

1. Conduct an inventory and map the coral reefs and associated habitats
2. Investigate the diversity and conditions of representative coral reef habitats
3. Conduct targeted research on relevant reef ecological processes, and the physical, social and economic factors that affect these processes
4. Conduct long-term monitoring and assessments on the health of coral reefs and associated ecosystems
5. Conduct targeted research on effectiveness of current management policies and legislative frameworks
6. Assess the status of reef fish and benthic life forms at representative coral reef habitats to establish a baseline for long-term monitoring.

The above will be realised through collaboration and working closely with the Coral Reef Action Plan Steering Committee, and other coral reef researchers.

### **Action 2.3 Support the restoration and rehabilitation of KMMCA mangrove ecosystem**

The mangroves ecosystem of KMMCA is faced with a myriad of challenges in their conservation. The root cause for the modification of the mangrove habitats is related to population pressure, poverty, low level of education, cultural attitudes, and poor governance. Poor governance manifests itself in a range of management problems and deficiencies, and unregulated threats from their encroachment, overexploitation, among others. Mangroves are important, irreplaceable and unique ecosystems. They support a high diversity of fauna (crustaceans, molluscs, migratory birds, fish, reptiles... etc) and associated flora as a habitat. They provide a wide array of goods and services to KMMCA communities and protect shorelines from erosion.

The KMMCA mangrove ecosystems have been experiencing high levels of harvesting which is also coupled with challenges of impacts of climate change. This has been accelerated by increasing demand for construction material in the tourism industry and for community residential areas which utilizes mangroves maximally. In order to revert this trade, efforts to restore the forests have been undergoing both in Wasini, Kibuyuni and Sii Island despite few challenges facing the regeneration. Through this action, KMMCA will partner with the other institution to develop and enhance restoration and rehabilitation programmes. At the same time, degenerated areas will be identified and mapped. Appropriate restoration measures will be undertaken in liaison with mangrove experts after which a monitoring programme for restored areas will be developed and adhered to.

### **Action 2.4 Enhance the conservation and rehabilitation of Shimoni and Wasini forests**

The lowland coastal forests of the Shimoni peninsula and Wasini Island form a thin strip of 'coral rag forest', officially labelled Northern Zanzibar-Inhambane (Z-I) Lowland Coastal Forest, also known as the Coastal Forest Mosaic due to the high number of small fragmented forest patches it contains. It is a small yet vital part of the East African Coastal Forests Ecoregion (EACFE) that extends from Somalia in the north to Mozambique in the south. This ecoregion is one of the smallest of the 25 Global Biodiversity Hotspots recognised by Conservation International, and ranks first among

the 25 hotspots in the density of endemic plant and vertebrate animal species. By definition, a hotspot has already lost at least 70% of its original natural vegetation.

The Shimoni and Wasini forests habitats support and sustain rare and endemic floral species which are of particular interest to biological conservation such as the *Barleria whytei*, *Indigofera tanganyikensis* var *paucijuga*, *Manilkara* sp aff *discolor* and *Queenslandiella* sp aff *hyalina*. The forest has many endangered and threatened species including the African Golden Cat (Rare), the spotted ground thrush (Critically endangered), Fischer's turraco (Threatened), the Southern-banded snake eagle (Threatened), the Plain backed sunbird (Vulnerable), the Uluguru violet-backed sunbird (Locally threatened) and Hildergardes tomb bat (vulnerable). The forest also has the largest population of Colobus monkey at the coast despite being an important bird area. Culturally, these forests represent important Kaya Shrines and Cultural Heritage. According to local traditions, the forests historically sheltered small fortified villages as well as being an important source of medicinal herbs. The sites of original settlements were maintained by communities (led by elders) as sacred places of ritual and burial grounds.

Despite its enormous ecological, social, cultural and economic benefit it posses, the Shimoni and Wasini forest are being lost at an alarming rate to deforestation and tourism hence reforestation and education are the key factors to conserving it in line with the Forest Act 2005 for the benefit of the present and future generation. The principal threats to the survival of Shimoni forest and biodiversity conservation include charcoal burning, commercial timber cutting, poaching of wildlife, poorly regulated allocation of land to private landowners, private and commercial development and slash-and-burn clearance for agriculture.

To ensure its conservation, an intensive biodiversity inventory will be conducted through liaison with KFS. GVI have carried out several assessments recording the occurrence of species in the forest and the current threats to the forest. Sustainable livelihood projects, alternative charcoal and tourist trails. This information can be used as a baseline to develop conservation interventions for the forest that may include its gazettement as outlined in Action 3.11 of the MPA Operations and Security Programme. At the same time, illegal activities will be mapped out and management measures recommend. Alternative domestic fuel projects such as charcoal pellets will be piloted to ease pressure on charcoal burning. In liaison with KFS farm forestry programme, farm lots of fast growing trees such as casuarinas will be promoted on community lands. Alternative sources of livelihoods such as ecotourism, beekeeping and butterfly farming to reduce the pressure on the forest will be piloted.

### **Action 2.5 Conduct research on the ecology of seagrass beds**

Seagrass beds are key marine ecosystems in the KMMCA providing fisheries, other natural products and ecological goods and services. However, very few studies have been carried out of these ecosystems in the KMMCA making it difficult to effectively manage them. Seagrass beds are found predominantly in the muddy area of coastal lagoons. Twelve species of seagrass have been recorded from Kenyan waters but data on their distribution, densities and productivity is very scanty. These habitats provide for a variety of commercially important fish species, supporting mature fish whose early life stages are found in estuaries and mud-flats. They are important feeding grounds for

threatened and/or endangered species such as the green turtle, the hawksbill turtle and the dugong. The major threat to seagrass meadows is excessive sedimentation of shallow coastal waters resulting from erosion of agricultural lands. Turbidity from a number of causes also tends to cut down the light penetration and seagrasses cannot thrive under such conditions.

This action will be implemented in liaison with other government sectors such as NEMA, Fisheries Department, Ministry of Lands, Ministry of Environment and Ministry of Agriculture. More so, this action will support the implementation of ICZM policy, Strategic Objective 2 (to preserve, protect and restore the integrity of coral reefs and seagrass beds, of thematic area 3. KMMCA management will seek to promote good land management practices that address the erosion problem, causing siltation on sea grass beds as well as coral reefs. Fishing, including trawling, will be regulated especially in the Marine reserve.

As mentioned above, information on seagrass beds for KMMCA is scanty since research on this critical habitat has not been exclusively conducted. As a result, the status and trends of seagrass distribution in the MPA will be assessed and monitoring of marine water and sediment quality to ensure seagrass protection initiated.

**Action 2.6 Control access to critical habitats and provide limitation on use in these areas (coral reefs, sea grass and mangrove forest)**

Uncontrolled human activities and natural occurring events (sedimentation, overharvesting, El Nino, use of destructive harvesting practices) have led to the destruction of coral reefs, sea grass and mangrove ecosystems. Efforts to reduce the level of destruction will involve development of resource extraction plans for coral reef-related resources, mangroves, reforestation of degraded mangroves areas and raising awareness about the need of healthy ecosystems in the conservation area.

The seagrass bed is threatened by increased sedimentation and uncontrolled raw sewage dumped in the sea. Seaweed farming is the most recent threat especially in the intertidal areas. Seaweed farming in KMMCA is taking place in Mkwiro, Kibuyuni, Gazi and Funzi Islands. Key stakeholders in these critical habitats will be made aware of the impacts of human activities on these ecosystems and will be consequently engaged in management forums when deciding on a strategy to be implemented. As such, access to critical habitats such as coral reef ecosystems; estuaries; mangroves; seagrass beds; and other spawning and nursery areas, which have been zoned as protection zone, will be restricted through implementation of the prescription provided in the zoning scheme.

**Action 2.7 Conduct research on restoration and rehabilitation of critical habitats**

The compromised species and habitats of KMMCA require restoration and rehabilitation strategies or efforts that will ensure recovery of the ecosystem's structure and functioning processes. Restoration and rehabilitation efforts are currently not prioritized as stipulated by scientific studies or are partially implemented with little success. In partnership with other research agencies

operating in KMMCA, KMMCA will conduct pilot studies on restoration and rehabilitation of critical habitats. Scientist(s) and KMMCA managers will identify and make use of available manuals used for restoration or rehabilitation of critical habitats such as mangrove restoration, artificial coral transplantation, sea urchins and crown of thorns controls. Pilot studies on restoration and rehabilitation strategies will be conducted where no manual for such exist.

### **Action 2.8 Control harvesting of aquarium fish**

The aquarium fish trade is one of the highest value products harvested from coral reefs. In Kenya this trade is artisanal and concentrated in the Shimoni area. Results from a survey in the area (Okemwa et al 2009) showed that about 145 collectors are licensed in Shimoni, use snorkelling or scuba, target about 193 species but 58% of fish landed belong to 10 species especially the Clownfishes (*Amphiprion sp.*). There has been concern about this fishery including post harvest mortality and environmental impacts such as shifts in community structure due to heavy fishing in a small area and targeting a few species and coral damage due to harvesting method.

It is a very lucrative business supporting many livelihoods in KMMCA. Aquarium fishers harvest aquarium fish, shells and corals for trade purposes and in so doing destroy breeding and homing grounds for fish species such as the clown fish. To be able to make management decisions regarding aquarium fishing, an assessment will be done to gauge the level and extent of the trade, and the percentage of fishers involved and its impact on the habitat. At the same time, live rock collection will be assessed to determine the level of damage to the corals. An assessment on the impact on the targeted species will as well be conducted to determine its sustainability. The Fisheries Act declares extraction of live coral illegal, yet their extraction by aquarium fishers continues to take place. Liaison will be made with the fishery department to review this clause and other policies that govern the trade to ensure sustainability of the fishery industry.

## **Objective 3: Marine biodiversity is understood and appreciated**

Research, monitoring and evaluation are essential for management to be effective. Managers need information to assess the status of key species and habitats as well as operational related information such as the behaviour of visitors and communities living adjacent to the managed area. In addition, managers need information in order to change management actions to adapt to changes and hence to improve management. The basic research and monitoring work that is currently carried out at the KMMCA includes assessments, monitoring, and research on specific topics. From the annotated bibliography of the MPAs 40 reports and journal articles are on the KMMCA, most are on coral reef ecology (15%), finfish and fisheries (15%) and gastropods and molluscs (12%). Very few are on direct management related topics such as financing, carrying capacity and visitor use. In addition, the first management effectiveness assessment of the Kisite/Mpunguti revealed that research information is not made readily available to managers and that the MPAs have no storage and retrieval systems for this information.

This objective has therefore been designed to streamline KMMCA related research and dissemination of research outputs among stakeholders.

The management actions that will be implemented to achieve this objective focus on reviewing of existing information and research on climate change; awareness creation with regard to climate change; conducting an economic valuation study of the area; conducting long-term and short term surveys of all critical habitats and species; studies on fishing vessels, gear use, and their catch levels; developing a formalized mechanisms for networking; developing a central data and information management system; disseminating information widely to research and educational institutions as well as to local community; and developing an ecological monitoring programme and building capacity to implement the programme. These management actions are elaborated in the following sections.

### **Action 3.1 Conduct a review of existing information and research on climate change**

The major ecosystems in the KMMCA including coral reefs, mangroves and coastal forests are threatened by the impacts of climate change. Potential impacts include increased rainfall (a threat to mangroves and coral reefs) increased droughts (threat to forests and other terrestrial habitats) and increase bleaching events (threat to coral reefs). For example the 1998 El nino bleaching event caused reduced coral cover in the reefs of KMMCA. Bleaching events are projected to increase in severity and occurrence and could potentially cause severe changes in the community structure of coral reefs. Species such as dolphins, sea turtles, coral reef fish communities, dugongs amongst others will be negatively impacted.

The marine habitats of the Kisite/Mpunguti MPA are relatively protected, which reduces stresses from other sources and improves the resilience of the habitats within this MPA. The current monitoring programs of GVI, WCS, CORDIO amongst others provide some baseline information that can be used when developing a strategy for the KMMCA. However, most of this information is on coral reefs and how climate change will impact other habitats and species of the area and potential mitigation measures are not available. This calls for a review of existing information on climate change, targeted research on climate change indicators and potential climate change mitigation and restoration measures (e.g. reforestation, pilot coral growth studies, reefs connectivity studies to identify resilient reefs, pilot a carbon capture project). For example, through regular surveys and research activities a marine resource identified as degraded or threatened will lead scientist (s) to consult with the KMMCA management committee to develop consensus and prioritize a research that aims for reducing, minimising or halting the resource damage. KMMCA management will partner with institutions involved with research including GVI, WCS, CORDIO, KMFRI and synthesize information on climate change and develop management actions that will guide management to take the best course of action.

### **Action 3.2 Raise awareness on impacts of climate change and the possible mitigation measures**

It is important that larger communities (policy makers, resource managers, resource users) are aware of current global issues affecting ecological systems within the area, and how it is impacting their activities, and eventually affect their livelihoods. Again in partnership with other research institutions, KMMCA will make all stakeholders aware of results and recommendations that result from climate change studies carried out in KMMCA. This information will be available in a synthesized and easy to understand manner targeting different stakeholders.

### **Action 3.3 Conduct an economic valuation study of the area**

The success of an MPA depends to a large extent on integrating economic concerns into its management. Economic valuation will assist in understanding and quantifying the value of resources in the conservation area in terms of raw materials, supporting and protecting natural and human systems, and maintaining options for future economic production and growth. Knowledge of the costs of loss of such benefits if quantified will give impetus to conservation and management of KMMCA by all stakeholders. Through liaison with other stakeholders, KMMCA will advertise for expression of interest for the study to be carried out.

### **Action 3.4 Conduct long-term and short term surveys of all critical habitats and species**

KMMCA requires short term and long term monitoring of critical habitats and species of special concerns in order to establish possible changes occurring over time. Of significant importance is incorporation of this data into GIS facility as it will add value in regard to visualization of changes over temporal and spatial perspectives. Species of special concern are sea turtles and dugongs, which are currently classified by CITES as highly endangered species. In addition there are other protected species that are affected by fisheries such as humpback dolphin and Napoleon wrasse whose populations are documented to be on declining trend. These surveys will ultimately provide needed information on the status and trends of critical habitats.

### **Action 3.5 Conduct studies on fishing vessels, gear use, and their catch levels**

Fishing vessels, gear type and technology used by fishers are regulated and licensed by the Ministry of Fisheries. There is limited enforcement of regulations on use of inappropriate gear, due to financial constraints. This gives leeway to fishers to use methods, including beach seines that are not appropriate and are potentially destructive. Poison and dynamite is a fishing method practiced by foreign fishers from Tanzania, and has been taken up by fishers in KMMCA. The level of damage for these gears has not been measured. A study will thus be conducted to generate information on gear use and impacts of individual gears, in order to understand the level of damage caused.

### **Action 3.6 Conduct a study on damage left by visitors and develop enforcement action**

The way managers respond to critical threats and persistent stresses, will likely be the single most important factor affecting the long term viability of the KMMCA. KMMCA receives the highest number of visitors of all MPAs. The high number of boats taking visitors to the snorkelling or diving areas has led to some boats missing out mooring buoys and hence anchoring on the sand beach which is contrary to park regulations. Anchoring on sand beach interferes with faunal behaviour on the beach and also reduces its aesthetic value. Novice snorkelers occasionally cause damage to corals while adjusting their masks or getting used to snorkelling fun of it. This has led to increase in coral rubble over the years. As a result, the extent of damage caused by inappropriate boating, recreational visitors and fishing activities will be assessed in order to quantify their impact as a threat to the health of conservation targets.

This study will be compounded by estimation of the visitor carrying capacity for reef tourism. It is essential to assess the carrying capacity in order to determine optimal levels of use, and to avoid overuse or crowding, and maintain visitor satisfaction. This will involve monitoring the number of vehicles and visitors and their activities at selected areas as well as damage caused to the resources, by comparing high and low usage areas. Studies on tourism trends, dive operations, boat use and commercial and recreational fishing will provide useful information that will ultimately lead to both increase in tourism and conservation of critical habitats.

### **Action 3.7 Develop a formalized mechanism for networking**

The KMMCA provides an opportunity for many research and educational institutions to conduct studies. However, there is little coordination or formal mechanisms for information exchange and networking. Such a mechanism would help inform the development of research proposals, minimize duplication of studies and more effectively inform management. Researchers, managers and the KMMCA community will form a forum where they can share experiences on research and management of MPAs. Existing regional mailing lists are a good starting point and will be enhanced - Research mailing list, annual research meeting, quarterly newsletters, WIOMSA country chapter mailing list. An annual research forum will be initiated and an update of key stakeholders of relevant activities going on in KMMCA will be done.

### **Action 3.8 Increase networking with managers in the region**

MPA managers share similar experiences as they manage similar ecosystems. In order to improve their performance, KWS will establish a forum for them to share lessons learnt best management practices and challenges that they experience in the course of their work. The forum will also consist of researchers operating in the region where they shall give presentations on their research work. This forum will be meeting on annual basis and organized by the warden KMMCA supported by the Coast conservation area research department.

### **Action 3.9 Develop collaborative research projects**

Collaborative effort between scientists and resource managers in developing proposals is important to ensure that priority areas are targeted and research solutions identified. This will not only create ownership in terms of clarity regarding the purpose of research and sources of research funding but also ensure proper coordination and implementation of recommendations by managers. In addition collaboratively identified targets and indicators (ecological, socio-economic, and government) to evaluate management effectiveness will enhance and improve management and planning in the area. The issue of collaborative research will be discussed and modalities on how it will be effected discussed during the first meeting of the proposed forum for networking and sharing research experience under Action 3.7 and 3.8 above.

### **Action 3.10 Conduct an assessment and develop an inventory of research needs**

There are so many researchers (private, schools NGOs or government institutions) interested in conducting research in the KMMCA. Lack of research prioritization often leads to too much research that does not effectively contribute to effective management. There is therefore the need to identify all the areas of research and prioritize them to help guide the researchers conduct studies geared to addressing ecological challenges on priority basis. Dissemination of this inventory widely to research and educational institutions will guide them to prioritize areas of research. At the same time, an inventory mechanism with relevant regional and international institutions for research needs will be developed to facilitate exchange programmes, such as WIOMSA to develop forums for information exchange on key areas.

### **Action 3.11 Develop a central data and information management system**

Based on experience, research has been carried out and data collected by different institutions and organizations working in KMMCA. Information and data is in bulk form and scattered among different institutes, which makes it difficult in accessing. There is a need for this data and information to be consolidated and archived in a way that managers can continually access and revitalize it for use when required. Further this data and Information need to be compiled into single database to facilitate efficiency of data analysis, identification of research gaps, avoid loss of data or information when an individual computer get lost or corrupted. Data sharing system accessible via Internet can also further add value by extending information sharing among stakeholders and wider public. Well-managed and shared database will increase the usefulness and relevance of research projects to managers and scientists.

### **Action 3.12 Develop an information management system that is practical and easy to use**

The main impetus for developing a monitoring and assessment system is to get information that can be used to respond to threats and to tailor management interventions to the changing environment. This cannot be done if the information that is

collected is not collated, analysed, interpreted and made available. In addition, there are many research institutions, NGOs and universities that have conducted research in the KMMCA but much of this information is not archived in one place. Although the recently published annotated bibliography of MPAs provides a meta-database of available information, individual manuscripts, articles or reports are not readily available in the KMMCA. Currently KWS is developing database at the Mombasa office which will need to be upgraded into wide information and archiving system with linkages to national and international data systems, that is, Nairobi convention clearing house mechanism. Once developed, managers and stakeholders will be trained to use information retrieval systems as well as ones that already exist online.

**Action 3.13 Disseminate information widely to research and educational institutions as well as to local community**

A mechanism to ensure smooth flow of information from scientists to managers, educational institutions, local community and vice versa will enable wider awareness of the value of marine ecosystems and its resources, ultimate benefits of conserving marine resources, and ultimately facilitate the production of quick and realistic management interventions. Further, in order to create a sense of belonging and ownership of conservation area, stakeholders need to be regularly updated on ongoing research activities, results and recommendations using the appropriate media (power point presentations in meetings or seminar, technical reports, pamphlets and scientific papers. This will promote public appreciation of conservation efforts and the benefits of the conservation area.

**Action 3.14 Develop an ecological monitoring programme and build capacity to implement the programme**

Research, monitoring and evaluation are essential for management to be effective. Managers need information to assess the status of key species and habitats as well as operational related information such as the behaviour of visitors and communities living adjacent to the managed area. In addition, managers need information in order to adopt management actions to changes and improve management strategies. The research and monitoring work that is currently carried out at the KMMCA includes assessments, monitoring, and research on specific habitat. From the annotated bibliography of MPAs (Muthiga and Kawaka 2010) 40 reports and journal articles are on the KMMCA, most are on coral reef ecology (15%), finfish and fisheries (15%) and gastropods and molluscs (12%). Very few areas on direct management related topics such as financing, carrying capacity and visitor use. In addition, the first assessment of the management effectiveness of the Kisite/Mpunguti MPA revealed that research information is not made readily available to managers and that the MPAs have no storage and retrieval systems for this information.

**Action 3.15 Review and revise management practices effectiveness with managers**

This activity will provide an opportunity for managers to review analyzed data and determine whether modifications to management practices are necessary. Management effectiveness assessment will help to find out if the conservation area is meeting its objectives in the most efficient and effective way. It will determine whether the conservation area is designed, planned and managed appropriately, and whether it is having positive results, such as protected biodiversity, promoting tourism, and improving livelihoods of local people.

## Three Year Activity Plan 2011 – 2021

The following pages set out the first 3-Year Activity Plan for the Ecological Management Programme. The activity plan details the activities, responsibilities, timeframe and extraordinary resource requirements necessary for the delivery of each management action over the first 3-year timeframe of this management plan. In addition, that plan sets out specific and timebound “milestones” that KMMCA management aims to achieve in implementing the plan.

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: Research that leads to more effective management of the biodiversity conducted and information disseminated														
Action 1.1 Conduct climate change related research														
1.1.1 Review past research studies on climate change impacts on marine ecosystems.	SRS, Warden													
1.1.2 Identify information gap and highlight the specific research requirements for the MPA														
1.1.3 Carry out research on impacts, and potential climate change mitigation and restoration measures														
1.1.4 Develop local climate change indicators and monitoring framework														
1.1.5 Apply climate change indicators to inform adaptation measures														
1.1.6 Establish data collection and management systems														
1.1.7 Partner with institutions involved with research including GVI, WCS, CORDIO, KMFRI														
1.1.8 Synthesize information on climate change and develop management actions														
1.1.9 Develop synergies with other monitoring programmes														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
allowing comparison															
1.1.10 Build capacity in monitoring climate change impact															
Action 1.2 Raise awareness on impacts of climate change and the possible mitigation measures															
1.2.1 Strengthen stakeholder linkages for coordinated implementation of research findings through MoUs, workshops and seminars	SRS, Warden, Local administration														
1.2.1 Create discussion and information sharing forums for all stakeholder representatives															
Action 1.3 Conduct an economic valuation study of the KMMCA															
1.3.1 Build capacity of staff to undertake economic valuation of marine ecosystems	SRS Warden														
1.3.2 Outsource professional expertise, especially a resource economist, during the valuation process.															
1.3.3 Disseminate the economic valuation results to decision makers to strengthen their support for the KMMCA.															
Action 1.4 Disseminate information widely to research and educational institutions as well as to the local community															Information database in place by 2013
1.4.1 Develop a formalised mechanism for networking (Research mailing list, annual research meeting, WIOMSA country chapter mailing list)	SRS, Warden														
1.4.2 Develop collaborative research projects (write concepts together)															
1.4.3 Develop a data and information management system															
1.4.4 Disseminate this widely to research and educational institution															
1.4.5 Establish MoUs with research institutions for easy development and implementation of joint research projects															
1.4.6 Institute annual researchers meeting to give updates on research activities conducted within the KMMCA															
Action 1.5 Conduct long-term and short term research on critical habitats and species															Map of critical habitats developed
1.5.1 Compile all existing data on critical habitats (mangroves, Coral reef, terrestrial forests and sea grass beds)	SRS, Warden														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.5.2 Conduct comprehensive surveys of all critical habitats and species depending on the identified gaps														
1.5.3 Map and conduct an assessment of the status of critical habitats and the main threats to these ecosystems														
1.5.4 Compile inventories of species and habitats														
Action 1.6 Conduct research on restoration and rehabilitation of critical habitats														Number of habitats restored or rehabilitated
1.6.1 Conduct pilot studies on restoration and rehabilitation of critical habitats	SRS, Warden													
1.6.2 Conduct a training to enhance capacity on restoration based on the existing manual for reforestation of mangroves														
1.6.3 Develop and implement a rehabilitation strategy														
Action 1.7 Enhance implementation of research recommendations														
1.7.1 Collate current research recommendations for management	SRS, Warden													
1.7.2 Increase involvement of managers in the development and execution of research projects														
1.7.3 Disseminate research findings using appropriate media including presentations, seminars, reports, briefs and scientific papers														
Objective 2: Levels of habitat degradation, transformation and mitigation measures established														
Action 2.1 Assess coral reef degradation as a result of resource utilization														
2.1.1 Ascertain coral health at all sites	SRS, Warden, Tourism Officer													Survey report developed
2.1.2 Ascertain activities that lead to coral damage														
2.1.3 Estimate the carrying capacity for reef tourism														
2.1.4 Monitor the number of boats, visitors and their activities at selected sites annually	SRS, Warden, Tourism Officer													
2.1.5 Review and update the current code of conduct to mitigate coral damage	SRS, Warden, Tourism Officer													
2.1.6 Organize education programmes to raise awareness on risks and impacts on coral damage														
2.1.7 Strengthen law enforcement pertaining to marine resource use														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
2.1.8 Conduct a socio-economic study to evaluate the perceptions and level of dependency of communities on the natural resources of the area	SRS														
Action 2.2 Develop and implement a long-term educational and awareness program about marine resources and effects of human activities															education and awareness programmes held
2.2.1 Conduct an inventory of existing education and awareness materials	Warden, SRS, Education officer, Tourism officer														
2.2.2 Undertake targeted stakeholder (shop operators, boat operators, schools, fishermen, tour operators, hoteliers and other government agencies) education and awareness programs															
2.2.3 Promote advocacy for conservation and protection of marine resources															
Action 2.3 Implement relevant actions of the National Coral Reef Action Plan															Research studies conducted
2.3.1 Map coral reefs and associated ecosystems	SRS, Warden														
2.3.2 Conduct targeted research on relevant reef ecological processes															
2.3.3 Conduct long-term monitoring and assessments on the health of coral reefs															
Action 2.4 Ensure the implementation of the proposed zoning plan															MPA boundaries well demarcated
2.4.1 Liaise with relevant government departments and community leaders to a bid by the zoning prescriptions	SRS, Warden, BMU, FiD, Community, KFS, etc														
2.4.2 Extend awareness on the zonation scheme – barazas, seminars, posters, pamphlets, maps, on boats, etc															
2.4.3 Enforce and implement the zonation scheme															
Action 2.5 Establish the status of forests															
2.5.1 Compile a synthesis of management recommendations based on previous studies															
2.5.1 Conduct studies on land use, land cover and habitat fragmentation															
2.5.3 Map illegal activities and recommend management measures															
2.5.4 Conduct studies on alternative livelihoods such as ecotourism															

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
2.5.5 Pilot alternative domestic fuel projects such as charcoal blocks															
2.5.6 Promote farm lots of fast growing trees e.g. casuarinas; beekeeping and butterfly farming to reduce the pressure on the forest															
2.5.7 Conduct awareness programs about the benefits of effective management of the forest															
2.5.8 Devise measures to reduce impacts of human activities in the forest															
Action 2.6 Assess the level of human encroachment at Shimoni forest															
2.6.1 Use the existing information to advice on the need for gazettment															
2.6.2 Delineate and map the extent of the forest area															
2.6.3 Determine and map the level of encroachment															
2.6.4 Conduct studies on human-wildlife conflicts, including perceptions of local community to protection of the forest and make recommendations for management															
2.6.5 Disseminate information and raise awareness about the need to gazette Shimoni forest															
Action 2.7 Conduct studies on fishing vessels, gear use, and their catch levels and make management recommendations														Study report developed	
2.7.1 Research on specific fishing gears to establish the level of damage on marine resource.	SRS, Warden,														
2.7.2 Continuously review fishing gears and techniques to reduce mortality of endangered animal species, and develop appropriate guidelines where necessary															
2.7.3 Strengthen enforcement of fishing laws and regulations															
Action 2.8 Review the current policies that govern trade in live fish and coral															
2.8.1 Strengthen law enforcement in relation to fish and coral extraction															
2.8.2 Enhance community awareness on sustainable utilization of fish and corals.															
Action 2.9 Conduct an assessment of the targeted species for trade														Target	

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.9.1 Conduct socioeconomic assessment of resource uses and the users	SRS, Warden													species for trade identified
2.9.2 Identify target species for trade														
2.9.3 Assess the impact associated with the species extraction and recommend for appropriate control measures														
Objective 3: Natural and anthropogenic impacts on species of special concerns reduced and adaptive mitigation and restoration measures initiated														
Action 3.1 Map and conduct surveys on turtle nesting sites and habitat utilization														
3.1.1Map and assess sea turtle nesting sites and their habitats														Map of nesting and foraging sites developed
3.1.2 Conduct research on main threats to sea turtles in the area														
3.1.3 Disseminate information and raise awareness about sea turtles in the area														
3.1.4 Implement relevant elements of the National Sea Turtle Strategy and evaluate achievement of the objectives														
3.1.5 Expand patrols and monitor all nesting beaches														
3.1.6 Empower BMUs and TCGs in peer education on sea turtle conservation														
Action 3.2 Implement the national survey of dugong														
3.2.1 Conduct a detailed national survey of dugong and their threats														
3.2.2 Disseminate information and raise awareness about dugongs in the area (through workshops, community meetings, schools' education programmes)														
3.2.3 Lobby for and contribute to the development of a National dugong conservation strategy.														
3.2.4 Domesticate and implement international initiatives on national dugongs	SRS, Warden													
3.2.5 Conduct economic valuation to determine the value of the current population of dugong														
3.2.6 Collect and collate existing information on sightings and mortality of dugongs	SRS													

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 3.3 Lobby for and contribute to the development of a National Marine Mammal Conservation Strategy														
3.3.1Inventory all mammals in the MPA	SRS, Warden, H-Conventions													Conservation strategy in place
3.3.2 Establish the status of identified mammals														
3.3.3 Initiate development of a national conservation strategy for the marine mammals														
3.3.4 Domesticate and implement the international conventions on conservation and management of marine mammals														
Action 3.4 Enhance the conservation of dolphins and whales														
3.4.1 Conduct studies on gears that impact marine mammals														
3.4.2 Conduct a survey to monitor interactions between human, dolphins and whales														
3.4.3 Economic valuation of Dolphin and whale watching industry														
3.4.4 Assess the intensity, extent, and sensitivity of the interactions														
3.4.5 Train and sensitize boat operators on the conservation and responsible management of dolphin watching														
3.4.6 Continue to conduct research on various aspects of Dolphin biology for management														
3.4.7 Develop national cetacean standings and sighting network Network with regional and international initiatives on dolphin conservation														
Objective 4: Ecological monitoring program developed and capacity to implement the program built														
Action 4.1 Carry out biodiversity assessment and monitoring														
4.1.1 Conduct inventories of all key species and their distributions														
4.1.2 Focus on species that have not been studied adequately e.g. in Shimoni forest, Mpunguti and Kisite Islands														
4.1.2 Develop a monitoring strategy that takes into consideration key species, habitats and processes														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
Action 4.2 Enhance capacity building for ecological monitoring															
4.2.1 Review needs assessment that have been carried out of skills required by the key agencies and lobby for professionalization of management positions;															
4.2.2 Conduct training and experiential programs for relevant staff such as WIOMSA-COMPAS and collaborating stakeholders															
4.2.3 Establish and implement an exchange programme and increase networking among managers in the region															
Action 4.3 Improve information and data management															
4.3.1Develop an information and data management system that is practical and easy to use															
4.3.2 Train managers and stakeholders in the use and retrieval of information															
4.3.3 Link up with the Nairobi Convention Clearing House Mechanism															
Action 4.4 Device proactive measures to address emerging issues															
4.4.1 Prepare to adjust and align to the current and proposed national legislation, strategies and action plans such as the new constitution, ICZM, EIA, Coral Reef and Sea Turtle plans															
4.4.2 Network with relevant institutions such as UNEP (Blue Carbon initiative), Nairobi Convention, ICRI, to keep up with emerging issues that may affect management															
4.4.3 Implement relevant actions of the National Coral Reef Action Plan															
4.4.4 Network with regional and international initiatives such as ICRI on coral reef conservation															

# **Tourism Development and Management Programme**

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## Programme Purpose and Strategy

To develop a distinct tourism experience based on the unique marine biodiversity, scenery and local culture that offers an enriching memorable experience to visitors

Tourism is a major and rapidly growing component of national and local economies in Kenya. It is a particularly important source of foreign exchange and a form of economic diversification. The KMMCA area is an important tourist destination. It ranks high in profitability among all of Kenya's National Parks and outperforms other Marine National Parks both in terms of revenues earned and operating surplus generated. The programme focal point is tourism management, marketing and product diversification. A balance is desired between encouraging public awareness and appreciation of the marine environment, yet not increasing visitor use beyond sustainable capacity. An important function of the programme is to set out clear and tangible goals that are achieved through the implementation of the plan.

This programme defines a series of management objectives and actions that the KMMCA management will implement over the next 10 years aiming to realise a full tourism potential in the area. It is based on a proactive and innovative tourism development and management strategy designed to overcome the obstacles that are presently holding back tourism development, by leveraging the area's many unique and diverse attractions.

The following paragraphs set out the strategic principles that will guide KMMCA Management in the implementation of the Tourism Development and Management Programme and the achievement of this programme purpose. In implementing the KMMCA's Tourism Development and Management Programme, KMMCA Management will strive to ensure that:

### **Tourism is appropriately developed**

While tourism has the potential to be a strong and sustainable source of support for the management and conservation of the MPA, experience in areas such as the Maasai Mara National Reserve has shown that uncontrolled and ill-conceived tourism development has the potential of "killing the goose that lays the golden egg". Most visitors to the KMMCA are presently attracted by the quality of the pristine marine environmental and opportunity to see a variety of marine wildlife especially dolphins and whales. All of which are becoming increasingly difficult to find elsewhere in Kenya's marine protected area network. The challenge therefore is to develop the capacity of tourism to support the long-term conservation of the area and contribute to the national economic development, while continuing to ensure a top-quality visitor experience based on the marine and terrestrial product diversification that sets the KMMCA apart from its competitors. This balance is best achieved by fostering a high quality, low impact tourism product which is maintained and carefully managed through management actions, prescriptions and Visitor Use limit set out in this programme. Furthermore, in order to ensure that increased investment and use of the KMMCA is in balance with the

area's exceptional environmental and biodiversity qualities, it will be important to ascertain that any proposed new developments, by either investors or KWS, are subjected to environmental impact assessment before work commences. Such regulations are based on the Environmental Management and Coordination Act (1999), and subjected to certification by the National Environment Management Authority (NEMA).

## **Tourism support infrastructure is developed and maintained**

The tourism potential in the KMMCA is presently under exploited. It will be necessary for KWS and relevant stakeholders to adopt an affirmative and innovative approach in order to kick-start investment, and thereby develop the tourism product with an appropriate reputation competitive on the economic scale. This will involve two complementary strategies: development of distinctive activities for visitors, and providing investors with innovative tourism investment opportunities.

A stimulating environment for investors has the potential to provide a diverse experience for visitors and increase accommodation options, ranging from tree houses and eco-lodges to homestays, all in a single destination. The envisaged tourism investments will capitalise on the full potential of the area's natural resources by providing visitors with a variety of accommodation options and different tourism experiences across the KMMCA. Such a strategy will offer the best opportunity to both development of tourism in presently under-utilised parts of the KMMCA, as well as provide attractive and innovative investment opportunities to potential developers. For this reason, a major feature of the tourism development strategy set out in this management plan is the development and promotion of tourism investment packages that incorporates multiple activities.

## **Tourism products are diversified**

KMMCA has a rich culture and history. However, some of it is getting lost. Currently other than the value bestowed on the Kayas, the other popularly known cultural activities is the drum beating ritual (*ngoma ya pepo*). Cultural attractions are critical for the development of tourism at the local, regional and international level. This uniquely rich culture needs to be tapped. For example, there are number of myths and stories on the scenic attractions in the area. Unfortunately, the information is scattered with no proper documentation. The authenticity of some of the folklores told is questionable since most of the people who could verify them are either too old or dead. Moreover, the rags of coral forest in the area are of religious value to the local communities as shrines (*Kaya*) used for various rituals. Hence highly respected and preserved it calls for extensive research on the cultural practices and the documentation of this rich cultural information.

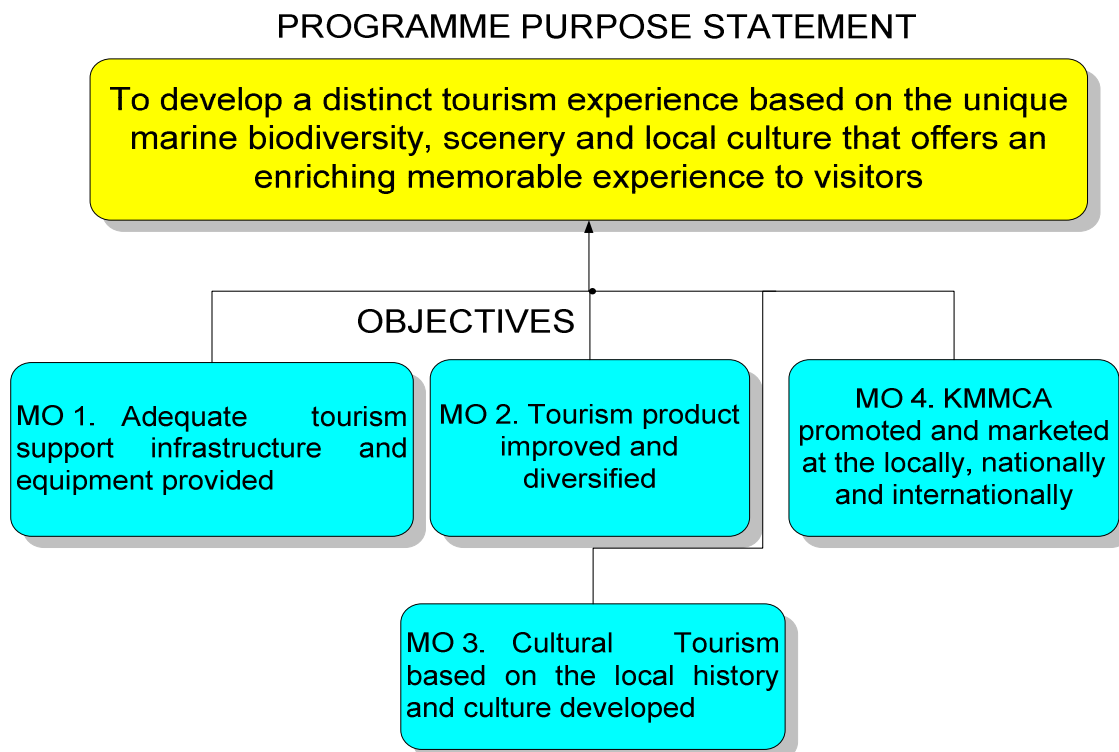
Trained personnel, preferably from the community would be of great interest to tourists and anthropologist in spreading local knowledge in a respectful way. Creation of tourist projects that celebrate authentic cultural heritage will aid in documentation of these folklores at the same time educating the youth on their cultural heritage and values.

The above strategic principles are intended to guide the implementation of the Programme's four Management Objectives that, when taken together, will achieve the programme purpose.

## Management Objectives

Figure 8 below shows the overall objective tree for the KMMCA Tourism Development and Management Programme.

**Figure 8: Tourism Development and Management Programme Objective Tree**



The following sections expound on these management objectives and management actions needed to achieve them. Under each management objective there is a brief description of the relevant management issues and opportunities, which provides the specific context and justification for the management actions.

### Objective 1: Adequate tourism support infrastructure and equipment provided

This objective aims to improve the visitor experiences by ensuring adequate development of tourism infrastructure and facilities. The future desired state of the MPA therefore is where adequate high quality tourism-support infrastructure is developed to support growth of a low impact marine-based tourism experience. The management activity areas covered include improvement of tourism facilities, development of potential

sites for tourism, accessibility to the park, well being of marine life, waste management issues and collaboration with tourism operators. At the same time, the objective aims to address the inadequacy of accommodation facilities that is currently there in KMMCA. These facilities should be of a standard appealing to the comfort of visitors. Therefore through this action, the existing available accommodations such as the KWS bandas will be improved and where possible appropriate conducive environment created for construction of more facilities. The well being of visitors is addressed by proposing ways to reduce cases of visitor harassment by safari sellers and boat operators. The management actions developed under this objective address these issues and ensure that KMMCA administration and visitor facilities are of a high and acceptable quality.

The absence of a beach in KMMCA has been a hindrance in the marketing of the area. In the spirit of product diversification there is need to introduce a beach market to capture this shortfall. The goal here is to provide entertainment and traditional knowledge systems. Hence, capture the visitors who are not going to the marine park. This can be achieved by facilitating an establishment of a cultural village where locals can showcase their traditions such as dances, songs, attires as well as local arts, crafts and food. The village can encompass structures that can be used as stalls by non water based safari sellers, thus curbing the issue of visitor harassment and congestion. The ministry of tourism is identified as a key stakeholder in the implementation of this product.

#### **Action 1.1 Construct an ecolodge at Shimoni forest**

The Shimoni forest supports and sustains rare and endemic species which are of particular interest to biological conservation. Additionally, the indigenous forest provides a vital natural resource to the surrounding Shimoni community and has the potential to support alternative sustainable livelihoods through responsible tourism. The forest and its biodiversity is under threat posed by deforestation that is taking place as more and more people clear land for cultivation and other uses exacerbated by the fact that the forest does not have any protection status. Currently a group of locals have organized themselves to form Friends of Shimoni Forest group and have been in the forefront in preventing illegal activities by, for example, demanding to see permits of those conducting such activities. Construction of an ecolodge in the forest will help to prevent further destruction of the forest. Action 2.1 and 2.2 of this programme seeks to promote visitation and diversify tourism activities and attractions in the forest and thus the proposed ecolodge will benefit as a result. There is enough land to construct the much needed eco-lodge to increase the capacity of the accommodation. Prior to the construction, there is a need for a feasibility study to determine the best site for the eco-lodge with a bed capacity of at least 25. This action will be implemented in line with Action 3.16 of the MPA Operations and Security Programme.

#### **Action 1.2 Upgrade the KWS Eden Bandas at Shimoni**

Due to the low number of accommodation facilities in Shimoni, tourists to Kisite-Mpunguti are mainly from Diani who only make day visits to the Marine Park and go for lunch at Wasini Island. The KWS Bandas are not constructed to standard for visitors though they stand a high chance of being fully booked throughout the year given the inadequate accommodation facilities. The bandas urgently require a facelift to meet

standards for the comfortable housing of visitors. Most of all is availing fresh water since the only water available is from a borehole which is extremely saline. There is also potential for expansion to increase the bed capacity of the bandas. Through this action therefore, clean fresh water will be provided in the bandas as a matter of urgency and the bandas will be upgraded. Feasibility studies will be conducted to expand the bandas so as to increase the bed capacity. On the other hand, the recurrent financial constraints on the KWS side call for the management to lease the bandas out to investors to ensure their standards are improved and maintenance assured. As a result, efforts will be made in liaison with KWS headquarters to develop modalities for leasing the bandas to private tour operators.

### **Action 1.3 Develop a public campsite at Mpunguti ya juu**

The Kisite National Park and Mpunguti Marine Reserve are situated a distance away from the mainland. Mpunguti ya Juu (Upper Mpunguti Island) has a larger area compared to Mpunguti ya chini (lower Mpunguti Island). Currently, Upper Mpunguti Island has no tourism facility or activities that take place. Objective two of this programme calls for diversifying tourism products and adding value to what is offered in the KMMCA. Hence the upper Mpunguti stands a good chance for developing a public campsite and picnic site with a capacity up to 100 persons. It could serve as a recreational area for tourists or a study site for visiting biology/tourism students on their field trips to introduce to the ecology and biodiversity of the coastal islands. As such, a team will be formed to identify the appropriate sites for the public campsite and picnic sites. Associated infrastructure that support this will be as well put in place including access trails and other nature trails. An EIA will be conducted as appropriate to identify and mitigate potential environmental impacts during and after the development.

### **Action 1.4 Conduct a study to assess the KMMCA's visitor carrying capacity**

Carrying capacity for tourist destinations implies that there is a limit to the amount of tourism development and activity that can occur in an area visitors become dissatisfied and environmental degradation occurs. Kisite Mpunguti marine national park and reserve are pristine and rich in biodiversity thus highly attractive and extensively visited. To ensure its pure attractiveness is preserved and enhanced, it will be appropriate to develop conservation mechanisms to determine carrying capacity and reduce currently evident external pressure. Carrying capacity implies that there is a threshold limit for use beyond which the reef environment is degraded and visitor satisfaction is lost. So far, observations show that diving industry is relatively unsaturated. However, snorkelling is an extremely popular activity that is mostly concentrated on the south side of Kisite Island. In 1998 a study on tourist damage versus natural causes was conducted. The results showed that there was not much difference between the two factors. Ever since the number of visitors have been steadily increasing, hence the repeated (or reassessment) study is necessary.

Tourism carrying capacity can be further broken down into its fundamental components of ecological or environmental, physical, social and economic carrying capacities. The physical carrying capacity of the reef relates to the availability of boats which ferry divers and snorkelers to the reefs, as well as the number of mooring buoys available; space on

the reef is also considered. The size and shape of the reef, as well as the composition of the coral communities also determine physical carrying capacity. The social carrying capacity of the reef is the limit to visual contact between divers and snorkellers beyond which they become dissatisfied.

The land – based component of the survey should aim to identify the main tourist attractions and estimate carrying capacity with regard to tourist arrivals and visitor satisfaction. The main objective of this component of the study is to garner the opinions of the various parties concerned, as well as to gather some statistics for analytical purposes. In addition, these investigations will highlight the perceptions of Marine Park's reef users with particular reference to reef condition, diver/snorkeler satisfaction and marine conservation awareness.

Based on the outcomes of the study, it will be possible to advice management whether to upgraded the MPA to a premium status to make it a high value, low impact MPA or otherwise. The first step is to conduct the study to assess the carrying capacity at different levels to justify the proposal and with the consequent consultation with stakeholders put the actions into practice. The potential management procedures based on the outcome of the study will include a review of the zonation scheme according to the different uses; implementation of marine education and awareness programmes, enforcement of marine park regulations, limiting visitor numbers, and establishing continuous monitoring and evaluation programme.

#### **Action 1.5 Procure a big boat for tourist excursions**

Some visitors express interest in activities provided by KWS and would prefer buying services from KWS rather than private companies or individuals. At present, KWS has no suitable boats to facilitate tourists' requirements to visit the park and the reserve. To fill this gap it is important to procure a boat with high capacity not only for local and domestic visitors but also for school and University students who usually come in numbers exceeding 40. Thus, the revenue from this venture will be amassed, and appropriate standards set in the boat industry for KMMCA. This would encourage product diversification amongst other local tourist revenue earners. With the implementation of VISION 2030, it is anticipated that number of tourists will keep increasing. Therefore, the procured boat will help supplement services provided by community's vessels. In addition, fully trained crew could set a good example by complying with the marine code of conduct and practically educating other boat operators on the respectful behaviour to marine wildlife and their habitats. Furthermore, conservation education and awareness programme developed for KWS boat guides would set higher standards for other local boat operators.

#### **Action 1.6 Liaise with Kenya Marine Authority(KMA) to have toilets installed in tourist boats and dhows**

The MPA is located away from the mainland with visitors usually spending 3-5 hours at the sea. Poor disposal of human waste can lead to increased incidents of transmittable diseases and at the same time pollutes the marine environment. To enhance the comfort of visitors during boat rides and minimize pollution from poor waste disposal there is a need for tourist boats to have toilets installed. In this regard,

KMMCA management will liaise with KMA to have all tour boats fitted with toilets with receptacles that will be emptied at a septic tank will be constructed at the proposed KWS Shimoni jetty (Action 1.6). Furthermore the possibility of additional waste disposal mechanisms will be investigated.

#### **Action 1.7 Encourage use of carboys to reduce plastic bottle disposal**

Solid waste management in Shimoni is a major problem that that has not been resolved for years. There is neither landfill site nor incinerator where solid waste could be disposed. Therefore part of the plastic bottles used by the tourist end up either on the street or are dumped in the forest where they find their way back to the ocean through surface run off during rains or being blown by wind. To reduce the hurdles of solid waste management local boat owners will be encouraged to use carboys with hand pumps on their boats instead of water bottles. The carboys are more cost effective with the capacity of up to 60 litres and do not impact negatively the environment. Unlike water bottles they cannot be thrown into the sea and could be reused numerous times. Example of a plastic carboy is as shown in this picture.

#### **Action 1.8 Establish a KMMCA tourism forum**

KMMCA lacks a unifying body for the different parties handling visitors or practicing ecotourism activities in the region. To streamline this volatile industry and have each party share the tourism cake in KMMCA, a tourism forum will be established to be overseeing and coordinating the activities of the many players involved in the tourism industry in KMMCA. the composition should comprising of; KTB, KTO, boat operators, hoteliers, Shimoni Slave Cave, Wasini board walk, Mombasa Coast Tourism Association; Friends of Shimoni Forest and other relevant stakeholders to address specific issues related to the tourism sector. This forum will be mandated to liaise with relevant authorities in Tanzania with regard to tourism activities in the two parks: Kisite-Mpunguti MPA in Kenya and the proposed cross border MPA for Kenya and Tanzania. Such collaboration will facilitate procedures that will help to handle cross border conflicts and other issues.

#### **Action 1.9 Liaise with the Ministry of Tourism to establish a circuit that connects south coast to the mainland without necessarily having to go back through Likoni ferry**

Frequent breakdowns of the ferries and constant overload with people and vehicles at the Likoni ferry cause, not only long delays, but also raises safety issues for local and international visitors. With Likoni ferry being the only link between Mombasa Airport and tourist destinations in Tiwi, Diani and KMMCA, tourism operators have been complaining about incurring losses as visitors opt for more accessible locations on the North Coast. The Dongo Kundu bypass currently under construction will connect Mombasa and the south coast easing congestion at Likoni ferry. Therefore, by liaising with the Ministry of Tourism the new tourist routes will be identified and marketed so as to increase visitation in the south coast. Another possible route could be to see how a circuit could be created that connects south coast to the Tsavos through Shimba Hills National Reserve. For example, visitors to the north coast visiting Watamu and Malindi do not necessarily have

to go back to Mombasa to so as to access the Tsavos but instead uses the Malindi-Sala road to access the Tsavo Conservation Area through Sala Gate. KMMCA will liaise with Ministry of Tourism, and other tour operators to come up with a similar route that will reduce the hustle of having visitors interested in going to the TCA go back to Mombasa but instead connect through Shimba Hills onwards to the TCA. This will as well promote visitation to Shimba Hills National Reserve.

## **Objective 2: Tourism product improved and diversified**

The future desired state for KMMCA is where tourism is improved and diversified through additional tourism products and value addition. So far KMMCA is the most visited MPA in Kenya but this is not enough and the aim is to increase visitation by offering world class products and services. The tourism potential of KMMCA has not been fully exploited. The development of appropriate and conservation-compatible visitor attractions in this area has the potential to enhance visitor experience. Increasing the diversity of the tourism products, providing information on nature friendly ways to enjoy the environment and emphasizing value of its elements will increase understanding and appreciation of the exceptional resources the conservation area contains.

To ensure that this objective is realised, several management actions have been proposed aimed at promoting tourism through additional products and diversification of tourism activities and attractions. In summary, these actions focuses on: identifying and developing nature trails, promoting ornithological safaris, promoting primate viewing in Shimoni forest, identifying potential site for wreck diving, introducing a two to three day package, developing a dolphin watching guideline and bringing order to the boat/beach operators through regular workshops. These are elaborated in detail in the following section:

### **Action 2.1 Develop nature trails**

In order to have a feel and appreciate what nature offers in KMMCA, establishment of a number of nature trails within the ecosystem especially in Shimoni forest is of particular importance. It not only teaches to appreciate the diversity and the richness of the environment but also creates potential for alternative livelihoods. In addition, apart from Shimoni forest, nature trails in Mkwiro-Wasini, Mpunguti islands will also be developed. The package would offer:

- Guided safari walks
- Guided bird walks
- Guided mangrove walks
- Self-walk safaris

To facilitate identification and establishment of the nature trails, a review of existing nature trails will be conducted and regulations made to ensure safety of visitors. Locations with vantage points will be identified for sitting, resting, and picnic facilities. Once established, appropriate maps with trail routes and locations will be produced to facilitate the proposed activities. Boat crews will be trained to offer guided safari walks

and advertise to the customers in their boats. Local community members will be encouraged to acquire the forest/safari guide training as they are well conversant with the Kaya locations, traditional stories and array of information about the area.

## Action 2.2 Promote ornithological safaris

Surveys that have been conducted by GVI, Go See Kenya volunteers and Ornithologists from Bird Life International indicates that 145 species of bird have been positively identified in Shimoni forests, four of which are recognized as threatened, and one which is critically endangered i.e. very close to extinction. The following table is a brief of globally threatened birds found in Shimoni and their conservation status:

**Table 14: Threatened Bird species of KMMCA**

Globally threatened bird species found in Shimoni forests	IUCN status
Spotted ground thrush ( <i>Zoothera guttata fischeri</i> )	Critically endangered
Fischer's Turaco ( <i>Tauraco fischeri</i> )	Near-threatened
Southern-Banded Snake Eagle ( <i>Circaetus fasciolatus</i> )	Near-threatened
Plain-backed sunbird ( <i>Anthreptes reichenowi</i> )	Threatened
Uluguru Violet-backed Sunbird ( <i>Anthreptes neglectus</i> ) - Regionally threatened	Vulnerable

From table 15 above, it is a clear indication that Shimoni forest is home to exceptional resources such as birds that can attract tourist sector interested in bird watching in addition to professional ornithologists.

On the other hand, mangroves (mudflats) and seagrass beds (sandflats) are also important areas for migrating bird species, such as African spoon bills, great flamingos yellow billed storks, due to the availability of food and the adjacent roosting sights in mangroves. Kisite and Mpunguti Islands are important breeding habitats for migratory birds that visit the islands between January to March and July to September. These islands also serve as a breeding grounds to resident birds - stints and greenshanks. The Kisite Island is an exceptional home place to roseate terns that come in large numbers for breeding.

As seen from above, KMMCA as a bird watching area but has not been marketed as such. Most marketing targets the marine environment only. To promote KMMCA as an important bird area especially the migratory birds, more research will be conducted on the migratory bird species and their migration routes and timings. For this study to be successful network of bird watching places will be established, local guides trained, and birding routes with trails identified that can provide a wonderful experience and leave the maximum benefit to birdwatchers and therefore promote the conservation of the Shimoni forest and the Islands. In addition, activities aimed at promoting bird watching such as mini-race will be initiated. The goal of the race will be to record as many species

as possible in the time frame. Thus, while enjoying the fun of bird watching people will help to protect nature and contribute to conservation efforts.

### **Action 2.3 Promote primate viewing in Shimoni forest**

The Shimoni forest is ideal for primates and there is a healthy mix of monkey species, including several colonies of the endangered Angolan black and white Colobus monkey (*C. a. Palliatus*). The baboons, Vervet and Sykes monkeys are all common and not considered in danger. Most notable of these primates is the Angolan black and white Colobus monkey. This monkey is one of five species of black and white Colobus found in Africa and represents a flagship species for Kenya's coastal forests. *C. a. Palliatus* is an East African subspecies and has a discontinuous distribution from the southern coastal and gallery forests of eastern Tanzania, into south-eastern Kenya.

Given the fact that the forest is least visited hence the continuous wanto destruction that is taking place, promoting the forest for primate viewing will add value to what KMMCA offers and contribute to the conservation of the forest. Through liaison with Friends of Shimoni forest, the KMMCA management will promote primate viewing through appropriate marketing.

### **Action 2.5 Identify a potential site for wreck diving**

Wreck diving is a type of recreational diving where shipwrecks are explored. Although most wreck dive sites are at shipwrecks, there is an increasing trend to scuttle retired ships to create artificial reef sites which creates a habitat for many types of marine life and presents new challenges for scuba divers. It is a part of the underwater cultural heritage and may be an important archaeological resource and aviation archaeology. In Kenya, there are few wreck dive sites with the first ever wreck to be purposefully created on the East African coast being Alpha Funguo Wreck in Diani where a 48m fishing trawler was sunk.

Given the demand for wreck dives from visitors, the KMMCA in liaison with dive operators and other stakeholders will identify the potential site and types of wreck diving. Since this process is quite costly a mechanism for cost sharing amongst the key stakeholders will be sort. This will require formulation of MoU for ownership and management of the wreck. One potential wreck locations as suggested by tourism stakeholders in 300m north of Kisite Island. However other potentials sites possibly in Mpunguti reserve should also be explored and identified. Currently tourist activities in the Mpunguti reserve are not active and it is mainly utilised by local fishermen. In addition, it is known that wrecks provide hiding places for fish, therefore aggregating them in that particular location, and could also be used as an artificial reef for the recruitment of new polyps. Measures will however be taken to ensure the location meets the required status and the assessment of the potential impacts on the nearby coral reef community will be investigated.

### **Action 2.6 Investigate a potential for boat/canoe hire services**

The traditional canoes have been a fantasy for most visitors and some have even been requesting to be ferried across the channel with the canoe. Exploring the potential of canoe safaris to be used within the Wasini channel as a water based activity will add value to the products that are being offered in KMMCA. In addition to fishing activities locals will be encouraged to rent their canoes to tourist and even teach them how to use such type of the boat. The KMMCA management will identify canoe or paddle boats handlers who can be used to be guiding the visitors. Appropriate canoes that are sea worthy will be identified and appropriate routes identified, bearing in mind the tidal characteristics of the channel. This will expand the locals' services and generate extra income. In collaboration with the canoe operators and tour operators, regulations will be developed to guide the operations of this activity.

### **Action 2.6 Introduce a two to three day package**

Almost all visitors to KMMCA come from Diani and only come to visit the MPA and go back. As a result, the trickledown economics of tourism to the locals is negligible. Tourism provides lots of benefits, especially if the visitors spend the night in the place of visit. Poverty and the inability to rise above ones' humble means is high in KMMCA which plays a part in resentment towards tourists and negative perception on the existence of the MPA. There is high potential for construction of high end tourism hotels in KMMCA but as at present the tourism products offered does not encourage investors to put up hotels in the area. This is because the key attraction for KMMCA is the MPA of which visitors can only spend 2-3 hours and given the fact that there is no beach in Shimoni, they opt to head back to Diani.

The introduction of a two-three day package would ensure and encourage overnight stays in the KMMCA. On the first day, for example, visitors could visit the marine park and the reserve for diving, snorkelling and dolphin watching, then later visit the historical buildings and Kayas in Shimoni, Wasini and Mkwiro villages. For accommodation, visitors could choose to camp at Mpunguti ya Juu or the proposed ecolodge in Shimoni forest, KWS Eden Bandas or one of the proposed homestays in Shimoni or surrounding villages (Action 3.2 of this programme). On the second day visitors could enjoy what the Shimoni forest offers through nature walks appreciating the diverse biodiversity especially the primates and birds, then culminate the day by visiting the Shimoni Slave caves. On the third day they could visit the boardwalks of Wasini or the proposed one at Sii Island (see Action 3.5 of this programme). To make it even more appealing, the locals will be encouraged to form a vibrant traditional dance troupe to be performing at the proposed cultural centre (see Action 3.1 below) and entertain the guests in the evenings. To allure the visitors further, efforts will be made to ensure the proposed package is least expensive so as to entice more visitors and tour companies as well as promoting the economy of the KMMCA.

To ensure the three day package is realised, the KMMCA will work closely with tourism stakeholders and the local community and ensure that the proposed actions under this management object aimed at promoting and diversifying tourism products are implemented as a priority.

### **Action 2.7 Develop dolphin watching guidelines**

Recently, the Kisite-Mpunguti Marine National Park and Reserve has been branded with the dolphin as its logo together with the rare coconut crab. The dolphins are the keystone species of this MPA and most visitors come with the aim of watching or swimming with the dolphins. Dolphin tourism, though useful in awareness-raising, has sadly led to harassment of dolphins. Dolphins have suffered from harassment from the increased human traffic like tourist dhows or the fishermen's activities. In some instances, some unscrupulous boat operators have uncouth behaviour of chasing after the dolphins when they sight them so as to entice their visitors.

From research on dolphins that is being conducted by GVI, it is now proven that dolphin tourism negatively affect the life of the dolphins by disturbing and damaging their social life. The behaviour of dolphins is significantly affected by interactions with tourist boats with dolphins being more likely to start travelling after a tourist boat instead of foraging or staying in a resting or socialising state. A decrease in the time spent foraging by dolphins is likely to result in a reduction in energy acquisition due to a decrease in food intake. Therefore, repeated interruptions by tourist boats during foraging are likely to have long-term negative effects on dolphin survival. This could ultimately cause a decline in population size and/or a change in habitat use.

Dolphin-watching tourism is of great importance to the local communities and residents of KMMCA. To safeguard this therefore, regulation of dolphin-watching tourism is urgently needed to prevent a long-term decrease in survival and reproductive success that could result in a decline in population size and/or dolphins leaving the area. This would then result in a reduction in the tourism potential which would have serious socio-economic implications in the area.

The KMMCA management in liaison with dolphin researchers such as GVI and boat operators will develop appropriate regulations to guide dolphin watching tourism. Once the regulations are developed, awareness creation campaign on these regulations will be extended to all residents of KMMCA more so the boat operators and fishermen. A big poster will be placed at the proposed tourism jetty (see Action 1.6 of this programme) to pass the message not to harass the dolphins while in the sea. On the other hand, all boats ferrying tourists to the MPA will have the regulations placed strategically in the boats where all visitors can read.

### **Action 2.8 Liaise with Ministry of Tourism to organize regular workshops with boat/beach operators**

Visitors face harassment in Shimoni from the local boat/beach operators as they scramble to allure the visitors to hire their boats to visit the MPAs. The boat operators' crowd at tour vans as tourists arrive with visitors a situation that requires urgent intervention. Although efforts have been made in the past to bring order to this industry, scrambling for visitors still exists. It is therefore paramount to be holding regular workshops with the boat /beach operators so as to ensure this problem is regulated.

The workshops will be used as a forum for the boat and beach operators to air their grievances as well as to develop strategies to deal with the now rampant cases of

tourism harassment. During the workshops beach and boat operators will be equipped with tools to form an organisation and create procedures/guidelines on how to handle the visitors. The dynamics of the trade can also be incorporated to ensure that service providers keep up with the modernisation of the industry and make their visitors more comfortable for example by installing toilets with receptacles on their boats, by making boat stepladder safer, adjusted for elderly visitors, by providing enough shade and essential first aid kits.

The issue of licensing has to be explained in depth, regulations and penalties clearly set up and the tourism operators appropriately informed. With the help of the tourist police and BMU monitoring and enforcing of the existing laws and regulations will be adhered. On the other hand, a review of MPA regulations will be conducted with the addition of the marine code of conduct and all activities that will be carried out. Once reviewed, the regulations and guidelines will be gazetted.

## **Objective 3: Cultural Tourism based on the local history and culture developed**

Tourism can be referred to as travelling for discovery or for pleasure to places that are of great interest. Tourists have an interest in people of the places they visit. They want to familiarize with their culture, their lifestyle and their practices. In Kenya, cultural tourism is practiced with an aim of understanding the origins of a people's culture, their attachment to some practices, their norms and taboos as well as their outlook on the meaning of life. Cultural experiences provide tourists with an experience that they would otherwise not get elsewhere. In coastal Kenya, the cultural tourism goes hand in hand with coastal tourism that is mainly an attraction due to the Indian Ocean with its diverse marine life. The coastal people have numerous festivals and ceremonies that are marked with traditional dances that are quite attractive to tourists.

The future desired state for KMMCA is where the culture of the communities living in the area is appreciated and marketed to promote livelihood improvement. This will be made possible through promotion of cultural tourism in collaboration with the communities and other line ministries. This takes advantage of the fact that, KMMCA is rich in culture and scenic features with folklores traditions behind them. Cultural attractions in the area include: the Kayas, folklores, songs, caves, drum beating and historical buildings. The main tribe in KMMCA is the Digo, one of the larger Mijikenda tribes, all of whom share a fascinating cultural heritage. These cultures are centred around sacred areas called Kayas. These are elevated forest glades, once used as store grounds for sacred objects known as fingos.

Cultural tourism if well promoted and marketed can uplift the living standards of the communities and consequently encourage community participation in conservation matters. This will empower communities economically and deter them from over relying on the marine resources for their livelihoods. Once communities are empowered, they have the 'personal bandwidth, to participate in the preservation of their environment, their cultural uniqueness and the wildlife that makes their neighborhoods so attractive to tourists.

This objective will be realised through a number of actions that seeks to: establish a Kaya cultural centre, promoting home stays, encouraging tour companies to include community projects in their package, training locals involved in tourism activities on the best management practices, developing boardwalks, improving the Shimoni Slave Caves and improving visitor access to community based projects such as mariculture and apiculture. These actions are discussed in detail in the following section.

### **Action 3.1 Liaise with NMK in establishing a Kaya Cultural Center**

Culture is a main pull factor which influences visitors' initial decision to travel to destinations in different parts of the world. At the national and/or local level, culture plays an important role in establishing and reinforcing people's unique identities and a sense of belonging to a particular locale. The recognition of the role of culture in creating and reinforcing people's identity has, in recent years, played a significant role in the growing interest in diverse aspects of heritage tourism, especially in the developed world. Over the last 50 years, many of the Kayas in the Kenyan coastal region have been drastically reduced in size, and land that was communal property has been registered under individual title and sold to nationals or foreign speculators. In the last ten years efforts to protect the Kayas have stemmed largely from initiatives to protect the biodiversity of the forest remains through the use of traditional practices.

Cultural tourism in KMMCA is least promoted compared to other cultures such as the Maasai. However, currently, one cultural festival in Shimoni intertwined with the Muslim religion is practiced. On the other hand, the Kayas are still of high value to the community, and some of the traditional practices are still alive such as *Ngoma ya Pepo* which is characterised by "beating of drums".

To promote cultural tourism, a cultural centre will be put in place and where possible in a historical building. The old DC house in Shimoni has been gazetted as a museum under NMK. Thus, in liaison with NMK, the building will be repossessed and a Kaya Cultural Center established there as a place where traditional dances and cultural practices can be showcased. In deed, the local history can be kept alive by narratives from the old people where ancestral stories can be told to both visitors as well as locals. There are number of myths and stories on the scenic attractions in the area, but the information is scattered. Again, through this action, these folklores will be documented to avoid loss of information that would be of great interest and value to tourists and anthropologists. With the establishment of the cultural center an annual cultural festival will be initiated. However, to ensure success of the venue vigorous marketing and proper management will be ensured. At the same time, a council of village elders will be formed to maintain and pass on the traditions to younger generation.

### **Action 3.2 Liaise with Kenya Community Based Tourism Organisations to sensitize local communities and promote homestays**

One of the 2012 flagship projects for tourism in the Vision 2030 is the certification of 1,000 home-stay sites to promote cultural tourism in Kenyan homes. As indicated above, the rich culture of the KMMCA community will be expolled to greater heights to ensure that communities benefit from cultural tourism. The KMMCA management will give support for the identification and promotion of homestay in the region as envisaged in

the Vision 2030. During home stays, visitors will be able to absorb local village culture through shared meals, discussions and language exchange, sightseeing and various activities including: helping with daily tasks to a host family, collecting firewood, weaving, market shopping, local Swahili cooking.

In return, the visitors will not only provide important income which will reinforce and promote the long term conservation of their cultural identity and their nurturing environment but also introduce host family members to foreign culture therefore expanding their scope of knowledge. The village community will receive proper economic benefits from the tourism operation and will be remunerated for their work in the operation. In addition they will be trained in a range of areas related to socially and ecologically responsible tourism.

Homestay holiday is a part of *responsibletravel.com* and *Conservation International Community Based Tourism Programme*. However, for KMMCA to be promoted as a holiday destination for village homestay, it has to meet the required standards and hospitality and hygiene. Thus, the first step through this action is to identify potential participants and in liaison with Kenya Community Based Tourism Organization facilitate the training and education on the benefits of such venture as well as teach and empower communities in the KMMCA to display their culture.

### **Action 3.3 Encourage tour companies to include community projects in their general package**

In appreciation to the fact that the communities in KMMCA have lived and conserved the marine biodiversity that offers visitors the satisfaction through different tourism activities, the tour operators who are the key beneficiaries of tourism in return will be encouraged to market community tourism projects in the greater KMMCA. To promote community initiatives the information will be included in their general package, advertised on their websites, offices and hotels. In the past, there have been deliberate attempts by tour operators to prevent visitors from visiting some of the projects run by communities if they do not get anything in return. Visitor harassment ensues as the community project members try to entice the visitors to visit their project only for the tour guides or drivers accompanying the visitors to refuse. Hence, there is a need for better and clearer organization among the community project managers to reduce cases of such negative experience for visitors and ensure maximization of economic benefit as well as facilitate maintenance of the projects to attract the visitors.

### **Action 3.4 Train local conservation based groups in basic tourism management best practices**

There a number of organized groups practicing ecotourism activities in KMMCA. notable among these are the Wasini Women Mangrove Boardwalk and the Shimoni Slave Caves. Poor management and wrangles amongst the members have resulted to deterioration of these facilities leading to lack of funds for maintenance purposes. The ones entrusted by the community to run these facilities on their behalf lacks management and leadership skills which ahs resulted to the current state of affairs as mentioned above. Through this action, the managers and officials of these projects will be trained and educated on organization and management. The other aspect of the

training will be on marketing and packaging their products to make them meet required standards to warrant visitation. When capacity is built for the management of these projects, communities will eventually benefit while at the same time regular maintenance in a bid to attract more visitors and uphold their safety ensured.

### **Action 3.5 Facilitate establishment of a boardwalks at Sii Island**

There is one boardwalk in Wasini Island which is faced with management wrangles as indicated in the above action. The boardwalk lacks maintenance and requires upgrading to ensure visitor safety. On the other hand, there is high potential for establishment of another boardwalk at Sii Island. Sii Island is not directly under the protection of KWS since it is outside the protected area. It however falls under the plan geographic scope.

The mangroves of Sii Island have in the past been over exploited in an unsustainable manner and thus the need to have the community in this area lead in ensuring their conservation. This will be made possible if the community acquire direct benefit that will deter them from destroying them so as to meet their daily livelihoods. Through this action the KMMCA will facilitate and help the community in Sii Island to construct the boardwalk. Adequate management of the same will be guaranteed by training of appropriate locals who will be running it. On the other hand, efforts will be made to assist the Wasini Women to have their boardwalk repaired and upgraded. The current management will be changed to allow for a new team to manage.

### **Action 3.6 Improve the Shimoni Slave Caves (SSC) visitor attraction while maintaining its authenticity**

Shimoni Slave Caves are a fascinating historical site and were formerly known as Kayas and a hiding place from marauding tribes. These caves were formed millions of years ago by coral polyps under the sea. The caves have a grisly history, which inspired the song “Shimoni” by the renowned Kenya-born singer, Rodger Whittaker who recorded that song in the caves. The caves forms the focus of attraction for a community based project whose revenue can be tripled if managed wisely.

The slave caves were registered under the community in 2001 by NMK. NMK offered training to its management and also offers guideline especially in any development or expansion. It thus owned by the community who appoints a management committee composed of representatives from the eight villanges in Shimoni. Cuurently, the revenue from the caves supports paying teachers employed under the Parents Teachers Association, offers bursaries to destitute children of members and help educate them through to tertiary institutions and also supports the Shimoni Health Centre to procure medicine. It is therefore an important project for the community and through this action the community will be supported in managing it. In deed, SSC forms an integral part of the KMMCA and will be marketed together.

In liaison with NMK, the SSC will be renovated to make them more captivating. One of the major undertakings will be to de-silt some of the sections that are inaccessible so as to allow for long walks.

## **Objective 4: KMMCA promoted and marketed locally, nationally and internationally**

Kisite Mpunguti Marine Park and Reserve has been branded as the “Home of Dolphin and Coconut Crab”. Under the KWS Fact Sheet, it is regarded as the “Enchanted underwater realm” and from Serena Website, it goes further and explains the MPA as ‘an enchanted realm of living coral gardens, sculpted islands, wheeling seabirds and sparklingly clear seas, this world-famous Marine Park promises an underwater world of unbelievable colour, discovery and vibrancy’.

These are good slogans explaining what KMMCA is endowed with which needs to be capitalised on when marketing the conservation area. Unfortunately, KMMCA lacks a clear marketing strategy despite its high potential as a tourist destination. To step up marketing campaign for KMMCA will liaise with the KWS Marketing and Business Development Department and take advantage of the various marketing strategies produced within KWS, KTB and at national level on tourism development countrywide.

Marketing KMMCA will aim at creating and maintaining customer awareness of the product offered both locally and internationally. More so several tourism products and attractions have been proposed aimed adding value and increasing visitation to the KMMCA. All these will be marketed through a vigorous marketing strategy as discussed in the following actions. These actions focus on: upgrading and regularly updating the KWS website, developing a detailed fold-up map and guidebook, developing an all inclusive brochure, reviewing and updating the various marketing materials for KMMCA, lobbying for KMMCA to be included in the Tembea Kenya marketing campaign, developing a marketing strategy targeting at schools, and organizing and promoting local events to popularize the KMMCA as a preferred destination. These are further discussed in the subsequent sections below.

### **Action 4.1 Upgrade and regularly update the KWS website to improve marketing of KMMCA**

The KWS website does not provide detailed information and facts about KMMCA. Indeed most of the marketing is being done by private companies on their websites, marketing KMMCA as an ideal place for diving, snorkelling and dolphin watching. The KWS website gives formal facts about the MPA in a shallow way just like for any other protected area in the country. Therefore, the uniqueness of the KMMCA does not come out clearly as a major tourism attraction.

To capture an array of information and spread it more widely a link to local stakeholders’ web pages will be set up. In addition the information on the KWS website will be improved and diversified to cover the entire KMMCA and not only the MPA. For example, the link “what to see” in the current website only provides a few pictures. Through this action, the link will be enriched with high quality pictures showing variety of wildlife that is present in the KMMCA not only for tourism but also education purposes. A video clip will also be uploaded to provide detailed information of the KMMCA, its attractions and uniqueness. Furthermore, on the page offering to ‘adopt an animal’ in some of the parks – dolphin is not even included, while Kisite has a resident population

of bottlenose and humpback dolphins that can be identified and their life histories could be followed. It would generate more interest especially among younger generation. As a result, KMMCAA management will liaise with the headquarters to have this considered and marketed. In addition, KWS staff in KMMCA will be encouraged to participate in the KWS Facebook page which has over 8,000 members. More needs to be posted in this page including news from the area, events and new tourism product developed in the KMMCA.

#### **Action 4.2 Develop a detailed fold-up map and guide book**

As part of marketing and promoting visitation and visitor experience for KMMCA and at the same time create awareness on the new zonation scheme, a detailed fold-up map and a guide will be developed that highlights various zones and the type activities that can be undertaken. Adequate stakeholder consultation will be conducted to ensure an all inclusive map and guide is developed. The map will highlight major attractions, key species, nature trails, key sites and historical facts of the area. This will be an all inclusive map/guide for the entire conservation area focusing on all aspects of physical and social environment of KMMCA. In addition developing a guide book with pictures and brief description of the most common and rare species, vast biodiversity in the ecosystem will also facilitate information dissemination and education.

#### **Action 4.3 Develop an all inclusive marketing brochure**

The vast diversity of wildlife in KMMCA is an important tourist attraction and, as a result, an important resource for Shimoni and surrounding communities. There exists a well laid out brochure for Kisite Mpunguti Marine Park and Reserve that is meant to capture this uniqueness in a summarized form. However, the brochure was developed focusing on the MPA leaving out details and attractions from other quarters making up the KMMCA. To ensure adequate marketing of KMMCA as a popular destination, it will be paramount to develop a marketing brochure that captures the vast biodiversity of marine and terrestrial life. New activities and attractions that have been proposed by this management plan including maps of the zonation will also be included.

#### **Action 4.4 Review and update the KMMCA information materials**

The current information center is stocked with plenty of information on the MPA in the form of posters placed on the walls. These posters are very educative on marine life issues. However, apart from being covering only the MPA, these posters are old and some providing outdated information. To ensure that the information availed to KMMCA customers, these materials will be reviewed and updated to make them up to date and covering the entire conservation area.

In order to increase marketing information available to relevant stakeholders about the tourism products and attractions at the conservation area, Billboards will be put up at strategic points such as at the Moi International Airport, Likoni ferry and the junction of Ukunda and Diani as well as other strategic places where the KMMCA management and stakeholders deem appropriate. The signboard at Kanana junction is old and gives no information on what one should expect from the conservation area. This will be

renovated and more information available. All the existing signposts will be re-constructed using the KWS signpost design adopted in other branded terrestrial parks, and where appropriate information on distance to destination and other relevant interpretive information will be included. Additional informational signage will be installed at tourist facilities such as gates, campsites and bandas.

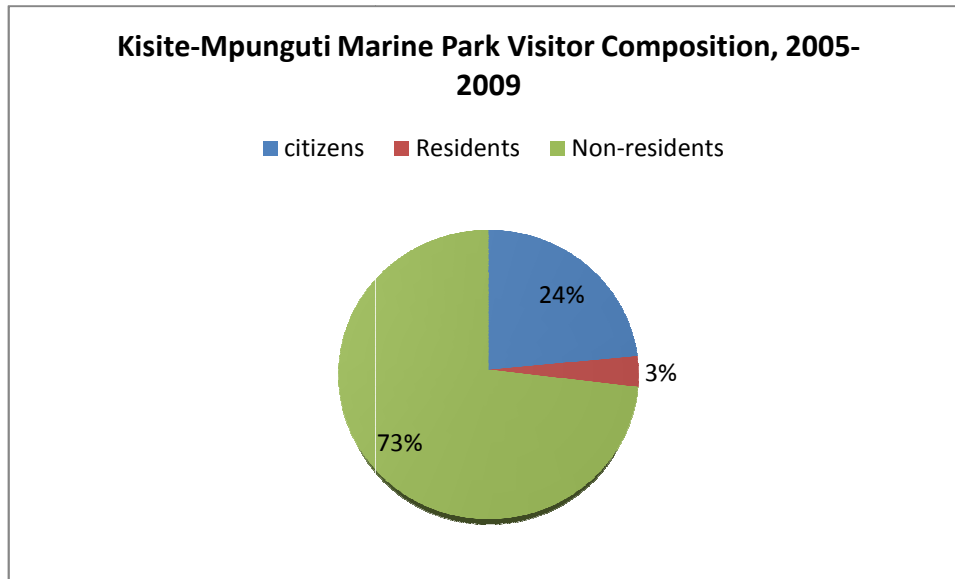
Conversely, measures to increase the use of research information for marketing of the conservation area will be explored and a stronger liaison between marketing specialists and park managers created.

#### **Action 4.5 Explore opportunities for KMMCA to be included in the Tembea Kenya marketing campaign**

Tembea Kenya....Starehe Zetu, Ustawi Wetu...is an interesting campaign that was launched by the Domestic Tourism Council of Kenya after the 2007 post election that saw international tourism decline to a record low. The initiative is part of a tourism recovery strategy spearheaded by the National Tourism Crisis Management team which was set up to mitigate the effects of the 2007 post election. As a result, a new domestic tourism logo “Tembea Kenya’ (Visit Kenya) and website were unveiled in March, 2008 to gather stakeholders of the local tourism industry and the media.

Domestic tourism in KMMCA is very low compared to foreign/international tourism as is shown by visitation trends in figure 9 below. On the other hand, Kenya suffers from travel advisories that come from our tourism market targets. This is mostly due to instability in the country with the recent one being the 2007-2008 post election violence. The Tembea Kenya campaign is therefore a good initiative to allure Kenyans to utilize domestic tourism destinations. Consequently, KMMCA will liaise with the headquarters to capture the domestic market through marketing in this programme. Efforts will be made to have the Tembea Kenya market the KMMCA to greater heights. In addition, occasional news in the local media (TV, newspapers) will be developed with special offer packages to catch the attention of Kenyan visitors.

**Figure 9: Percentage number of visitors to KMMPA**



**Action 4.6 Liaise with Wildlife Clubs of Kenya (WCK) to develop a marketing strategy targeting schools and citizens**

There is a growing need to capture the large population of students who visit KMMCA. Currently, due to large numbers they are unable to visit the MPA, mainly because of the cost and capacity of the available boats. In liaison with KWS HQs affordable packages will be developed and extended to the WCK to be promoted to schools. WCK will also be approached to assist by providing a bigger boat that can accommodate the needs of larger groups of students. Moreover, the local community will be invited to invest in this venture.

To capture a larger turnout of domestic tourists including schools, the vernacular FM stations such as Kaya FM will be used to promote the area. There are also a number of meetings and conferences that are held at the coast, such as the annual head teachers meeting. This presents a potential market to advertise activities in the KMMCA. as a result, during such meetings/conferences, promotion materials including brochures and video clips on KMMCA will be distributed. Promotional materials will also be distributed to the schools, universities and colleges especially before school breaks.

**Action 4.7 Organise and promote local events**

Organizing park level events has become common for the different protected areas in Kenya. KWS is encouraging each park or reserve to come with their own unique events that can promote their area as well as add more revenue for its conservation. Unlike revenue collected from gates, revenue from such events goes directly to the development of the protected area in question. KMMCA will not be left behind and will follow suit. As a result a team composed of KMMCA stakeholders and a representative

from the KWS headquarters Resource Mobilization office will hold a consultative meeting to come up with an appropriate event for KMMCA. This event could include activities such as shows, carnivals, fairs and festivals. For example, a seafood festival could be organised to promote local seafood such as fish, crabs or seaweed products. Annual Kisite Park Awareness week could include a number of wildlife orientated activities and sports event like swim across Wasini channel, competition for Kisite Dolphin Cup, local canoe race across Wasini channel, etc. once the appropriate event has been identified and agreed upon by the stakeholders, it will be advertised nationally via newspapers and TV and in future included in travel guides to generate interest of a wider public. These events are likely to boost KWS' image and reputation nationally as well as internationally, and will help ensure on-going support for the KMMCA's conservation well into the future.

## Three Year Activity Plan 2011 – 2021

The following pages set out the first 3-Year Activity Plan for the Tourism Development and Management Programme. The activity plan details the activities, responsibilities, timeframe and extraordinary resource requirements necessary for the delivery of each management action over the first 3-year timeframe of this management plan. In addition, that plan sets out specific and timebound “milestones” that KMMCA management aims to achieve in implementing the plan.

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: Adequate tourism administration and infrastructure improved and developed														
Action 1.1 Liaise with relevant institutions to explore possibilities of installing water in Shimoni, Mkwiro and Wasini														2 water systems provided by 2014
1.1.1 Conduct a survey to identify the best viable option for water provision for Shimoni, Mkwiro and Wasini	Warden KMMCA, NEMA, Water Engineer, Community													
1.1.2 Facilitate provision of a desalinization machine at Mkwiro borehole														
1.1.3 Construct additional water jabias (storage tanks)														
1.1.4 Provide Support for roof water harvesting at Wasini/Mkwiro village														
1.1.5 Liaise with Kidimu water committee to explore possibilities of piping water to KWS Kisite Marine Park HQ and nearby villages														
1.1.6 Conduct EIA for piping water from Kidimu/ Ramisi River														
Action 1.2 Construct and upgrade KWS tourism facilities														One information

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.2.1 Conduct a feasibility study for additional tourism accommodation facilities inside KWS Shimoni forest - Bandas - Hostel - Tree house - Picnic sites - Campsite	Warden KMMCA, AD-CCA H-BDM DDCSS													complex constructed by 2014  Two new revenue streams created One existing facility improved
1.2.2 Re-design and rehabilitate existing KWS Bandas														
1.2.3 Rehabilitate the old conference hall														
1.2.4 Construct a new state of the art conference hall and information centre														
1.2.5 Develop picnic sites, camp sites at Mpunguti islands														
Action1.3. Assess visitor carrying capacity and associated impacts in the MPA														One data base developed by 2013  MPA status upgrade implemented by 2013
1.3.1 Develop ToRs for the assessment	WARDEN, SRS H-EP Tourism officer													
1.3.2 Develop monthly/annual visitor database on visitation														
1.3.3 Carry out visitor impact assessment to determine the visitor carrying capacity on critical habitats														
1.3.4 Enforce the recommendations of the assessment report														
1.3.5 Based on the recommendations from the assessment, upgrade Kisite to a premium park status														
Action.1.4 Construct a modern jetty next to KWS Shimoni office														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
1.4.1 Develop a design for the jetty that includes: - shopping stalls - boat moors - cafeteria - changing rooms - Ticketing office	Warden KMMCA KCDP Manager, Civil Works													Jetty constructed by June 2013	
1.4.2 Tender for the construction of the jetty and associated infrastructure	“														
1.4.3 develop a code for the operationalization of the jetty after construction	“														
Action.1.5 Introduce incentives to encourage long stay by visitors in Shimoni															Emergency response Plan developed by 2012
1.5.1 Conduct a feasibility study															
1.5.1 Market the package to hoteliers and tour companies	Warden KMMCA														
Action.1.6.Liaise with the ministry of Tourism to organize regular workshops with boat/beach operators															
1.6.1 Conduct regular workshops quarterly															
1.6.2 Structure boat operators into co-operative societies or registered CBOs															
1.6.3 Formulate operators code of conduct and MPA regulations															
1.6.4 Develop an emergency response plan/ strategy for boat operators															
Action.1.7 Lobby KMA to develop and enforce standards for better waste management and disposal on tour vessels															
1.7.1 Liaise with KMA and public health and other operators to have boats designed with toilets															

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
1.7.2 Encourage use of carboys to reduce plastic bottle disposal															
1.7.3 Assist boat operators to comply with the new standards															
1.7.4 Improve existing visitor toilets and construct additional ones at Shimoni KWS office															
1.7.5 Construct additional visitor toilets															
1.7.6 Enhance the capacity of boat operators to use carboys															
1.7.7 Initiate alternative water provision on boats to replace plastic bottles															
Action.1.10 Liaise with the Ministry of Tourism to establish a circuit that connects South Coast with the inland															
1.10.1 Follow up on the construction of Dogo Kundu by-pass to ease congestion and delays at the ferry	warden Civil works MoT														
1.10.2 Lobby Ministry of Tourism to open new tourist circuits to link KMMCA with Kidogo gate at Shimba Hills-Tsavos															
Objective 2 Tourism Products diversified															
2.1.1 Develop nature trails in Shimoni KWS Forest, Shimoni east and west forests, Mpunguti islands, Mkwiro-Wasini	Warden, community H-BDM													3 nature trails Developed by 2013	
2.1.2 Initiate guided safari walk, birding, mangrove walks, and self walk safaris															
2.1.3 Improve on the existing nature trails in Shimoni forest															
2.1.4 Develop a guide map with nature trail routes															
Action.2.2 Market KMMCA as a bird watching destination															Bird watching strategy Developed by
2.2.1 Develop bird watching marketing strategy	Warden, SRS														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.2.2 Conduct more research on migratory bird species to inform management and tourists	Tourism officer H-BDM													2014 8 naturalists trained by 2014
2.2.3 Establish bird watching sites and trails														
2.2.4 Develop guide books for birders														
2.2.5 Train community naturalists as bird watching and guiding skills														
Action.2.3 Explore possibility of butterfly farming to promote tourism														
2.3.1 Conduct a study to establish butterfly species found in KMMCA	Warden tourism SRS AD-CCA													1 butterfly cage built by 2013 Strategy developed for marketing and export by 2014
2.3.2 Create awareness and train local community on butterfly farming														
2.3.2 Assist community groups to construct butterfly cages for tourist watching and release to the wild.														
2.3.3 Develop marketing and export strategy for butterfly and pupae like Kipepeo farm or Arabuko for community.														
Action 2.4 Identify potential sites for wreck diving														
2.4.1 Conduct a feasibility study for potential of wreck diving	SRS													EIA report available by2012
2.4.2 Conduct an EIA for potential effect of the wreck														
2.4.3 Mark the wreck site in the MPA and outside														
Action 2.6 procure a big boat for tourist excursions														
2.6.1 Visit outside countries to identify the appropriate vessel for KMMCA e.g. JAPAN, S.AFRICA , TURKEY etc	FLEET MANAGER													one excursion boat bought by 2014
2.6.2 Conduct a community sensitization for procurement of the boat	WARDEN													

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
2.6.3 Tender for the services of tour operators	AD-CCA H-BDM														
2.6.4 Initiate procurement process for a 40 pax boat															
Action 2.7 Organize and promote local events															
2.7.1 Form a committee to deliberate on possible events for KMMCA	Resource mobilization Ad-enterprise. warden H-BDM														2 events conducted annually
2.7.2 Conduct consultative meetings with stakeholders to plan and organize the proposed events; - Cycling, - Swimming - Canoeing - Dances - Beauty contests - Football - Traditional food making competition															
2.7.3 Award of trophies and incentives-Dolphin cup															
Objective 3 Marketing strategies developed and enhanced															
Action 3.1 upgrade and update the KWS website to improve marketing of KMMCA															
3.1.1 Provide information on KMMCA uniqueness to the KWS webmaster	Warden Web-designer H-BDM TOURISM OFF.														KMMCA website updated by 2012 KMMCA Facebook page created 2012
3.1.2 Disseminate the information to all companies and stakeholders web pages															
3.1.3 provide more unique pictures and sceneries videos “what to see” digital images															
3.1.4 Ensure regular update on the website															

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.1.5 Update KWS face book page with Kisite news, events and new tourism products.														
3.1.6 Lobby to tour companies to include community projects in their general package.														
Action 3.2 Develop a detailed fold –up map and guide book														
3.2.1 Develop fold up maps and guide books														
Action 3.3 Publicize KMMCA Widely														
3.3.1 Review and update information materials	Warden													
3.3.2 Install billboards at strategic points e.g. Mombasa Moi international airport, hotels, ASK, public week, all junctions to Shimoni from Ukunda , upcoming KWS jetty.	SRS													2 billboards installed by 2013
3.3.3 Explore opportunities to be included in “Tembea Kenya marketing campaign”	H-BDM													8 road signage's installed by 2012
3.3.4 Compile research information for marketing	Warden, SRS													
3.3.5 Promote and market domestic tourism by mobilizing Kenyans in major cities	Warden, SRS													
														2 media bulletins/ Talk shows annually
3.3.6 Provide news on conservation in the local media (TVs, newspapers, vernacular fm stations )about the KMMCA	H-BDM													
Action 3.5 Liaise with KWS HQ to Incorporate KMMCA in development of marketing strategies targeting schools														
3.5.1 Develop a marketing strategy to target schools, colleges to enhance domestic tourism.	WARDEN, H-BDM AD-CCA AD-EDU SAD P&R													1 big Dhow procured for schools hire by 2013
3.5.2 Provide a KWS dhow for hire to accommodate student numbers.														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
<b>Action 3.6 Establish local tourism related data</b>															A cultural promotion strategy developed by 2013
3.6.1 Liaise with KWS HQs-B D and M department to provide Safari-Card services at KMMCA	TOURISM OFF. H-BDM WARDEN														
3.6.2 Establish a data base of all organizations operators and service providers relevant to the tourism industry.															
3.6.3 translate information about KMMCA posted at KWS website into several languages e.g. French, German, Kiswahili, Chinese etc															
<b>Objective 4 Cultural and ecotourism promoted and enhanced</b>															
<b>Action 4.1 Develop a plan to promote cultural tourism</b>															Data base established by 2013
4.1.1 Develop a comprehensive strategy plan for promotion of cultural tourism.	Warden, H-BDM														
4.1.2 Liaise with NMK and the Ministry of Heritage and Culture to establish a cultural centre	AD-enterprise														
4.1.3 In liaison with NMK, identify and map archaeological and historical sites.	NMK														
4.1.4 Develop documentaries (videos,VCDs, DVDs, Story books) to archive and market all the cultural materials	Tourism officer														
<b>Action 4.2 Collaborate with relevant stakeholders to promote home-stays and voluntourism</b>															
4.2.1 Promote and sensitize communities on home stays															
4.2.2 Identify potential providers of home stays to facilitate training and education															
4.2.3 Train community on socially and ecological responsible tourism	Warden														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
4.2.4 Establish linkages with the conservation international community based tourism organization	Tourism off. H-BDM SAD-CWS,AD-Enter														
Action 4.3 Promote value addition for community eco-tourism based products															
4.3.1 Capacity build the existing community ecotourism attractions( Wasini women board walk,shimoni slaves cave,kibuyuni/mkwiro mariculture,kibuyunu apiculture	Warden, SRS KMFRI AD-CCA TOURISM OFF. AD-Enter. Warden DSGO. H-BDM														3 Community projects upgraded and value added by 2013
4.3.2 Establish and construct community mangrove boardwalk at Sii island															
4.3.3 Upgrade and extend wasini women board walk															
4.3.4 Renovate the shimoni slaves cave and addition attractions															
4.3.5 Train community on seaweed farming as an alternative livelihood and tourist attraction															
4.3.6 Establish youth conservation (ecotourism) groups and strengthen their linkages with KWS and other stakeholders															
4.5.3 Train the youth on leadership skills and projects developments for group development															2 youth groups identified and registered by 2012

# **Fisheries Resource Management Programme**

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## Programme Purpose and Strategy

The KMMCA Fishery resources are sustainably managed in collaboration with stakeholders to continue supporting the national economy and local livelihoods

KMMCA has fringing reef system and a complex of patch reefs running through it. The reefs are erosional fossils extending several kilometres beyond KMMCA both in the North and South directions. The bottom substrate of the reefs consists of algae, seagrass beds, sand, live corals and coral rubbles which provide conducive habitats for various reef fishes including sweet lips, angel fishes, wrasses, parrot fishes, damselfishes and butterfly fishes among others.

Approximately, 75% of the fish catch is derived mainly from shallow coastal waters. The entire geographical scope of KMMCA falls within the realm of shallow coastal waters. Somewhat less rewarding fishing activities within shallow coastal waters is partly caused by lack of technologically advanced fishing vessels capable of venturing into open ocean waters among local fisher folk (Artisanal fishers). Only a few commercial fishers and sport fishers operate off the reefs and in deeper waters. Fishers utilizing fishery resource within KMMCA use a variety of fishing methods including trap, hook and line, seine nets, gill nets, dynamite and spear gun.

For a long time, fisheries resources have provided a key source of livelihood for majority of coastal communities including the one adjacent to KMMCA. Fisheries resources also serve as basis for water based tourism activities including snorkelling, diving and sport fishing. However, due to increasing fishing effort as a result of growing human population, increased pressure has been exerted on fish stocks resulting to reduced sizes and wet weight of landed fish. Additionally, reduced abundance and distribution of fish stocks have caused fishers to opt more for illegal and unsustainable fishing methods such as use of dynamite and ringnets. Therefore, there is need to put in place measures that would allow rebuilding of fish stocks in KMMCA so as to facilitate continuous support of fisher folk livelihoods and water based tourism activities such as snorkelling, diving and sport fishing.

The Fisheries program sets out actions which KMMCA management will implement in the next 10 years. In implementing these actions, KMMCA management hopes to realize both conservation and sustainable utilization of fishery resources to support both local livelihoods and national economy. The following sections set out the strategic principles that will guide KMMCA management in implementing the Fisheries Program and in achieving the program purpose.

***By implementing fisheries program, KMMCA management strives at ensuring the following:***

## **Collaboration with Fisheries resource stakeholders is strengthened**

KMMCA fishery resource management involves a wide pool of stakeholders drawn from local community, state and non-state agents. The local community stakeholders comprise of fisher folk, Fish dealers, Beach Management Unit (BMU) members or Community Based Organizations (CBOs) with interest in KMMCA's marine fishery resource. State agents stakeholders include Ministry of Fisheries (MoF), Kenya Marine and Fisheries Marine Institute (KMFRI), Kenya Maritime Authority (KMA), Kenya Wildlife Service (KWS) and National Environmental and Management Authority (NEMA). Non-state agents on the other hand include Wildlife Conservation Society (WCS), Coastal Ocean Research and Development Organization (CORDIO), East Africa Wildlife Society (EAWLS) and Global Vision International (GVI) among others.

For long, these stakeholders have been engaged in fishery resource research, conservation efforts or fishery utilization activities in uncoordinated manner. MoF for example has been licensing fishing activities in KMMCA especially so in the reserve without consulting KWS which manages the operations of KMMCA including fishing activities. On the other hand, Beach Management Units (BMUs) have been accepting migrant/foreign fishers (e.g. Tanzania/Pemba ring netters) to fish in and around KMMCA without seeking input of other stakeholders in regard to the same. This in many occasions has led to multiple conflicts among fisher folks (those in support versus those against ring net fishers) on one hand and environmentalists and BMUs/MoF on the other hand. While the ring nets yields are high thus economically viable compared to other fishing gears, their impacts on fish stocks and fishery habitat is detrimental since they break the corals besides collecting seagrasses in the course of their operation.

To facilitate achievement of both conservation and sustainable fisheries utilization, it is necessary to promote and enhance wider stakeholder collaboration geared towards ensuring that activities by the different institutions and organizations are coordinated and integrated towards achieving the fisheries program purpose. However, stakeholders and other resource users require first to comply with the legislation that has been put in place to support fishery management. While KMMCA management authorities play a primary role in enforcing legislation, compliance will greatly be improved if the stakeholders actively take part. This call for a common strategy and focus among different stakeholders to ensure utilization of the fishery resource is undertaken in a way that permits both derivation of socio-economic benefits and conservation of the same.

## **Viable fish stocks and healthy habitats maintained**

To achieve the balance between conservation and sustainable utilization of fishery resources, habitat integrity has to be upheld in addition to controlling fishing pressure. Achieving this implies accomplishing to a large extent, the main goal of Marine Protected Area (MPA) which is to protect and maintain whole functioning ecosystems. Considering the interconnectedness and linkage of marine components, through a complex web of direct and indirect interactions, including nutrient exchange, migration and predator-prey relationship, management of all main coastal and marine habitats other than coral reefs is crucial. Other key habitats of relevance to fish and other marine species include

mangroves, seagrass beds, estuaries, lagoons and other coastal wetlands, small islands, beaches and coastal dunes, rocky shores and offshore pelagic and deep sea ocean.

Although protection and management of individual biological elements (e.g. threatened species, sensitive habitats and target fishery species) is challenging in ensuring biodiversity conservation and maintaining productivity, focused status monitoring of keystone species (e.g. their distribution and abundance or loss) is key to characterizing the state of biodiversity in the area at any one time. For instance, loss of keystone species implies greater damage or loss risks for ecosystem functions and services.

## **Fishery ecological components in KMMCA are monitored**

Monitoring of fisheries in and around KMMCA is essential in determining the impact of fishing on stock (or populations), species and biodiversity within the marine protected area (MPA) and fishery yields and thus on the livelihoods of the local coastal community. Monitoring data is crucial in stimulating the design of sound management interventions. While KMMCA fishery has fairly retained its species richness, a number of human induced threats with potential to negatively affect its ecological integrity have been noted and include:

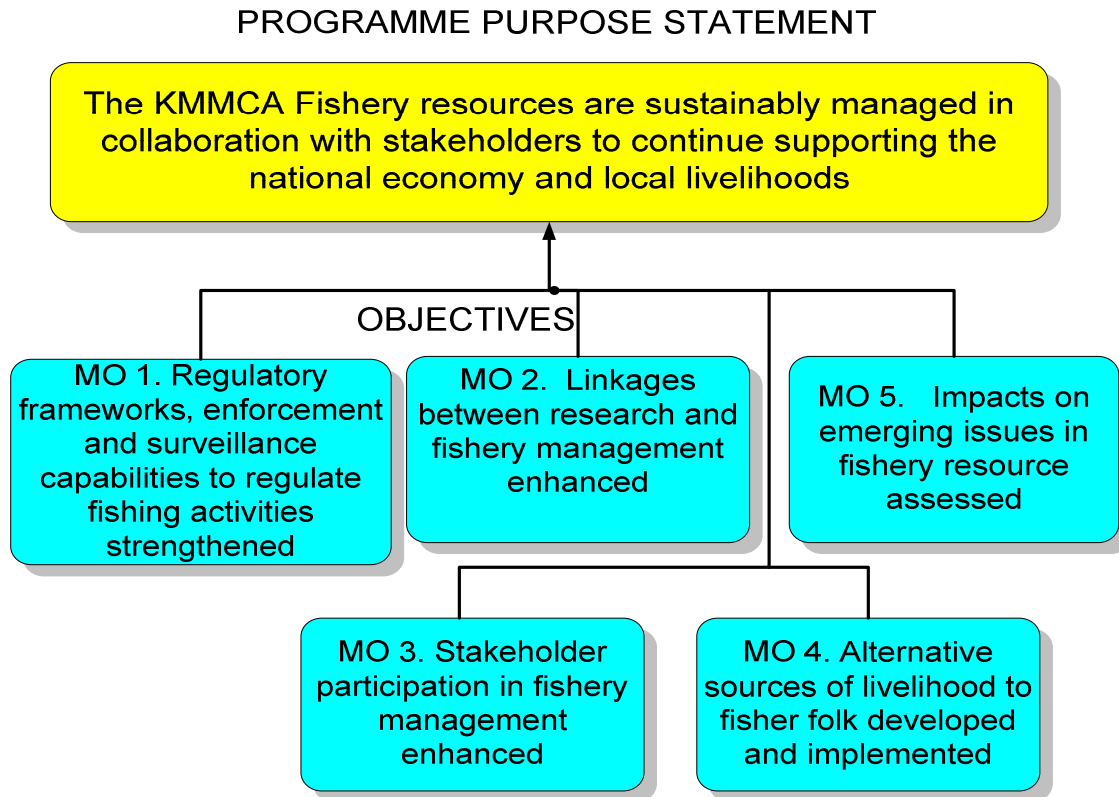
- ▶ Increase in the number of artisanal fishers in lagoonal waters (shallow coastal waters)
- ▶ Increased usage of illegal and destructive gears e.g. dynamite fishing
- ▶ Growing fishing pressure from migrating fishers (from Tanzania)
- ▶ Introduction of high yielding but destructive gears e.g. ringnet/beach seine nets
- ▶ Fishery habitat alterations and degradation e.g. beach and coastal development, breaking of and harvesting corals for aquarium interests or display- curio selling.

These strategic principles are intended to guide the implementation of the fisheries program's five Management Objectives which, when taken together will lead to achievement of the programme's purpose. These objectives are outlined in the objective tree below.

# Management Objectives

Figure 10 below shows the overall objectives tree for the KMMCA Fisheries Resource Management Programme.

**Figure 10: Fisheries Resource Management Programme**



The following sections describe these objectives and provide an outline of the management actions needed to achieve them. Under each management objective there is a brief description of the relevant management issues and opportunities, which provide the specific context and justification for the management actions.

## **Objective 1: Regulatory frameworks, enforcement and surveillance capabilities to regulate fishing activities strengthened**

The Wildlife Conservation and Management Act, Cap 376 of laws of Kenya is a key legal instrument used by KWS to manage MPAs including their fishery resource. However, while this Act is specific on regulations governing terrestrial parks, it is silent on marine protected areas thus it is largely inadequate to facilitate effective management of fishery resource in MPAs. Additionally, the conduct of fishing activities in marine reserves is vested in Fisheries Act, Cap 378. Accordingly therefore, the licensing of fishing activities

and enforcement of fishing regulations in the marine reserve is the responsibility of Ministry of Fisheries (MoF) whereas KWS performs the management of the same to promote conservation. This arrangement is increasingly perceived to promote mismanagement of fishery resource in the MPA thus in direct contradiction with its noble goal of enhancing biodiversity conservation including fishery resource.

For long, there has been inadequate enforcement of fisheries law in and around KMMCA. MoF which is charged with the responsibility of enforcing fishing regulations is generally under-capacitated in terms of personnel and work tools (serviceable boats/engines, fuel e.t.c). KWS on the other hand is equally under capacitated besides lacking the mandate to police the fishing activities in marine reserves. Additionally, beach management units (BMUs) which mainly consist of local fisher folk and thus better placed to be 'watchdogs' have not been empowered to deal with fisheries issues within their areas of jurisdiction. These conditions have combined to cause increase of illegal, unreported and unregulated fishing practices in KMMCA. This objective seeks to enhance collaboration between state and non-state actors in pooling resources and efforts so as to facilitate effective enforcement of fisheries legal provisions.

### **Action 1.1 Enhance capacity to facilitate effective law enforcement**

Scarcity of appropriate patrol boats and trained personnel are known to contribute to illegal, unreported and unregulated fishing practices in KMMCA. Even in situations where patrol boats and staff are available, other necessary resources such as fuel, serviceable engines could be unavailable thereby giving room for little to no patrols that are necessary to monitor fishing practices and act as deterrent for unsustainable usage. In order to counter this, adequate resources will need to be to facilitate fishery surveillance thus to control against unsustainable utilization of fishery resources. To cut back on cost and ensure adequate surveillance, joint patrols (involving all relevant stakeholders) will be conducted on regular basis as indicated in Action 5.7 of the MPA Operations and Security Programme.

Limited capacity among enforcement officers drawn from different stakeholders is other key issue contributing to low policing of fishery resources. To enhance capacity amongst enforcement officers, refresher or up skilling trainings will be undertaken on regular basis in order to improve efficiency of enforcement team. In particular, enforcement personnel will be trained on arrest and prosecution procedures. Such training will include build up of water tight case through careful drafting of charge sheets, collection and preservation of evidence. Further regular consultative meetings between enforcement personnel and MPA management will assist in reviewing enforcement approaches with intent to improve them in line with changing fisheries crime dynamics.

Government agents (MoF, KWS) charged with the responsibility of enforcing fisheries regulations are usually inadequate owing to government freeze on recruitment or as a result of staff leaving their respective employers through natural attrition e.g. resignations, retirement, dismissals or deaths. To fill up this gap, other stakeholders will be encouraged to nominate their members to beef up the number of enforcement personnel to assist in fisheries enforcement.

### **Action 1.2 Lobby for the gazettment of more effective MPA regulations**

There's no doubt the Wildlife Conservation and Management Act, Cap 376 is limited in promoting conservation and sustainable utilization of fishery resources. For instance, MPA regulations though allowing for the practice of artisanal fishing in the marine reserves, do not explicitly qualify what fishing gears or methods constitute artisanal fishing. Such omission creates grey area usually used by errant fishers to exploit the fishery resource within the MPA. Through this action, therefore, efforts will be made to initiate the formulation of additional regulations appropriate for conservation of fishery resources and their gazettment for implementation. Such regulations will include the following: With the exception of a specified permit from the Director of Kenya Wildlife Service or an officer of the service dully authorized by the KWS Director, No person(s) shall:

- Collect or take sardine or ornamental fish, coral, shells, or any vertebrate of whatever description within the marine park and reserve;
- Operate jet skis
- Use ringnet, seine net or trawl within five (5) nautical miles or within the marine reserves;
- Use spear fishing in the Marine Protected Areas;
- Use any explosives, poisonous or noxious substances or electric shock for the purpose of rendering fish easier to catch etc.

### **Action 1.3 Develop and implement MoU between MoF and KWS to manage areas of overlap within MPA**

In marine reserves, fisheries activities are vested in Fisheries Act though the management of the sites is under the jurisdiction of KWS. In pursuit of their mandate, MoF licences all fishing activities in the reserves many a time without consulting KWS. Subsequently, the usage of some legal but destructive gears e.g. seine nets in marine reserves have always caused conflicts between MoF and KWS with the latter often feeling that the usage of seine nets causes coral breakage, entanglement of sea turtles and destruction of sea grass habitats thus it should rather be declared illegal gear.

Given the overlapping mandates of MoF and KWS over the management of fishing activities in the marine reserves, it is imperative that a memorandum of understanding (MoU) between the two institutions is developed and implemented in order to minimize the adverse implications of such overlap on fishery resource conservation and sustainable utilization in KMMCA. Development of the MoU will enhance harmonization of operations for sustainable development. Existence of a valid MoU between these two institutions will as well facilitate joint and efficient enforcement of fisheries regulations in and around the marine reserve thus facilitating the following:

- KWS officers will become authorized officers in the implementation/enforcement of Fisheries Act;

- KWS will collaborate with MoF in enforcing fisheries regulations beyond KMMCA;
- KWS will become a member of the licensing committee and will obtain greater control of fishing activities in the marine reserves.
- The resources of both institutions shall be pooled together thereby reducing scarcity scale of work tools and personnel.

#### **Action 1.4. Conduct conservation awareness to magistrate and prosecutors to enhance justice for fishery resources**

This action will be implemented in liaison with Action 5.6 of the MPA Operations and Security Programme. Arrests usually do not lead to eventual conviction of perpetrators. In the majority of cases very low penalties are accorded to them in case they are convicted. Hence there is a need to create awareness to the judiciary to understand the magnitude of the impacts of illegal fishery activities through case studies and field tours. Such actions will facilitate faster and more effective sentencing.

The judiciary support is instrumental in deterring overexploitation of fishery resource and/or related crimes especially if its members are aware of the adverse consequences of fishery stock exploitation. Lack of such knowledge among court prosecutors who draft charges and the Magistrates who convict offenders result to preference of light sentences or penalties to culprits. Such light penalties are not deterrent enough to discourage a repeat of similar crimes.

To ensure offenders get penalties that are deterrent, KMMCA management will endeavour to sensitize the police and the judiciary officials on the implication of exploited fishery stock to both conservation and socio-economic concerns by way of exposure trips, field tours or exchange program. Emphasis will be given to the consequences of exploited fishery through use of destructive fishing gears on the livelihoods of local community and tourism prospects (reduced snorkelling, sport fishing) thus national revenue base.

#### **Action 1.5 Empower BMUs to execute their mandate**

Currently, the running of BMUs is not up to standard and therefore not delivering as anticipated. Factors responsible for the current condition of BMUs include lack of appropriate trainings and capacity building on the roles of BMUs in fishery management. Provision of desirable skills and support to BMU members is a step towards professionalizing fishing fraternity thus improved management of fishery resources in KMMCA. To this end, MoF is commended for offering relevant training to BMU leaders in Kibuyuni, Wasini, Majoreni, Mkwiro and Shimoni though the training would have been beneficial if it extended to the larger membership of respective BMUs.

Empowered BMU will be in a position to use its enforcement committee in mapping out and controlling against unsustainable fishing practices or gears. This is because BMU members unlike KWS or MoF personnel are numerous and since they are direct users of fishery resources are better placed to passionately guard against destructive methods of fishing. Additionally, BMU members being mostly local fisher folk profess some degree

of ownership for fishery resources and as such they will be willing to participate in conserving and utilizing the fishery resource in a sustainable way given necessary resources (patrol boats, fuel, engines, safety equipment, and communication facilities etc.).

On the other hand, most of the information on illegal activities in the MPA is derived from information provided by BMU. If empowered further say through provision of communication facilities and appropriate security skills, they could dedicate some of their members as scouts to monitor and report illegal fishing practices in the MPA. Security of information is particularly important in guarding against revenge attacks among fisher folk or BMU members.

The BMUs will also be assisted in developing their by-laws to facilitate their transformation into legislation upon signing and certification of the same by Director of Fisheries. The BMUs will also be assisted to have the draft by-laws signed into legislations to avoid fatigue occasioned by long periods of waiting.

## **Objective 2: Linkages between research and fishery management enhanced**

Appropriate research on both biological and socio-economic issues is essential for long term effective management of MPAs including its fishery resource. Natural science research is vital to understanding ecosystem function and change whereas the social science research is essential to identifying the sources of human induced problems. In KMMCA, fisheries research or monitoring program will be guided to focus on the following key areas:

- I. Catch (weight) and catch composition (species and/or families harvested)- Lengths are important for standard specific fisheries stock assessments;
- II. Fishing effort- This could include type, duration and location of fishing operations; number of boat-days, man-hours or gear hours per unit time
- III. Costs and revenues- these cover fish prices, fuel, gear costs and wages

KMMCA has long been used as study sites for various research programs carried out by KWS, Wildlife Conservation Society (WCS), Kenya Marine and Fisheries Research Institute (KMFRI), Coastal Ocean Research and Development in the Indian Ocean (CORDIO), visiting researchers from local and international universities, and local CBOs and NGOs. While the findings of such research programs are critical in guiding management in reaching credible decisions regarding MPA management including its fishery resource, there has been inadequate dissemination of research information to MPA managers and planners; hence science driven management has been minimal.

Additionally, KWS has no resident research personnel within KMMCA and so it relies on research personnel based at Mombasa regional office. Based on this circumstance therefore, KMMCA management at times rely on other stakeholders for scientific information to support planning and management decisions. However, due to inadequate collaborative mechanisms between KWS and other research stakeholders, request for information can either be denied or its provision could be delayed.

This objective has therefore been designed to streamline the conduct of research in KMMCA and the dissemination of findings/outputs among stakeholders. The management actions that will be implemented to achieve this objective focus on establishing a KWS research sub - station in the vicinity of KMMCA, developing and operationalizing a research database; establishing information exchange and advocacy for the carrying out of priority research. These management actions are elaborated in the following sections.

### **Action 2.1 Establish KWS research sub-station at KMMCA**

KMMCA is large enough to have a designated research officer to oversee, coordinate and prioritise research activities therein including those related to fishery resource. More often than not research needs emanate from day to day running of MPAs. The absence of resident research personnel in KMMCA as it is the case currently implies that the management relies on the research information generated by other stakeholders whose objectives are not necessarily consistent with those of KWS. It is therefore imperative that a Sub-station be established in KMMCA and equipped with the relevant staff and standard research equipment in line with the Biodiversity Research and Monitoring Division Strategic Plan.

The research officer will team up with staff or individuals from local institutions involved in the research too and where necessary develop collaborative arrangements with researchers from further afield. Upon the posting of a resident research officer(s) in KMMCA, a field station will be developed and equipped with necessary facilities with guidance of the regional or national research office. The MPA management will in turn charge a fee to cover the use of basic research facilities and facilitation of research work e.g. provision of logistical support where appropriate.

The functions of the research sub-station at KMMCA will be similar to those of other KWS research units elsewhere, but additionally it will perform the following in relation to fishery resource in KMMCA:

- a) Carry out mapping of fishery resources and their distribution in KMMCA;
- b) Conduct survey to establish the number of fishers, fishing gears and vessels (log frame) operating in KMMCA;
- c) Carry out assessment of fish catches (wet weight and species composition) in the designated landing sites in and around KMMCA;
- d) Determine whether KMMCA is contributing to food security and poverty alleviation through analysis of fish catch estimates, marketing and distribution of catch and the number of people using the MPA resources regularly.
- e) Strive to work with BMU members in research data collection to facilitate easier adoption and implementation decisions based on the same;
- f) Undertake keen monitoring of indicator and keystone fish species of economic and biological importance in KMMCA (e.g. Trigger fishes).

### **Action 2.2 Establish fisheries research data base at KMMCA**

Currently, little to no data or information generated from KMMCA is available for use by the management of the same. This seems to work contrary to KWS strategy of pursuing science driven management. With establishment of a research office at KMMCA, a research data base detailing past and on-going research works will be put in place. As a first step, an annotated bibliography of all research work that has been carried out in KMMCA will be done and thereafter, efforts will then be made to solicit for the research outputs (research reports and publications, documents and data) that are not readily available to the public.

In the long term there will be periodical assessment of research works to be undertaken to ensure they contribute to MPA management and that they are not duplicative. This ensures that new research builds on the results of previous research thereby enabling their results to be built into the MPA decision making, planning and management process. The managers, however, will need to understand the limitations of the research results and this will be achieved through regular discussions and feedback sessions with scientists.

### **Action 2.3 Carry out priority research focussed at addressing pertinent fisheries issues of KMMCA**

Though fisheries issues are generally of similar nature along the Kenyan Coast, there are also area specific issues. Subsequently, fishery issues that are somewhat synonymous to KMMCA and adjacent areas include dynamite fishing in and around KMMCA especially around Kibuyuni, ringnet fishing in Vanga areas adjacent to KMMCA and use of spear gun fishing. These fishery issues have over time been addressed in piece meal through adoption (and frequent lifting) of temporal ban in response to public pressure or administrative and political intervention.

In the interest of long term sustainability of fishery resource in and around KMMCA, a comprehensive research will be instituted that will focus on fishery issues in this area. In particular, target species will need to be monitored in the context of their biological attributes during and after temporal ban. Alternative methods of fishing will be explored and popularized among the fisher folk in order to stimulate sustainable utilization of fishery resource in KMMCA. Such methods could include use of Fish Aggregation Devices (FADs) at offshore sites. This has two advantages; first it enables fishers to utilize fish stocks at offshore sites thereby easing the fishing pressure in inshore waters and secondly it lessens the fishing duration since fishers will only be fishing around the FADs where they would likely be able to catch fish. Gear exchange still could serve to reduce use of destructive fishing gears. This was piloted at Shimoni Kibuyuni and Majoreni in 2008 though up to date there has been no follow-up study to assess the impact of gear exchange project.

### **Action 2.4 Establish an information sharing and exchange programme**

Information regarding Kenyan MPAs including KMMCA may at times be available BUT not accessible to MPA managers. Such information may only be available in regional

office and KWS headquarters thereby leaving little to no information/literature/data at MPA level. Alternatively, some information for the MPA gets personalised to the extent that respective MPA managers go with it in the event of a transfer.

There is therefore need to avail all relevant information to MPA's offices to facilitate its ready use whenever the need arises. Additionally, information of whatever nature should be listed as MPA's asset and thus their necessity to be included in the handing -take over notes whenever transfers occur. Also, establishment of a forum where MPA managers share a myriad of information regarding their respective MPAs will enrich information banks among individual MPA managers. One key forum to facilitate information exchange regarding fisheries issues and other conservation matters could use of newsletter for the conservation area. Towards this end, responsible MPA managers would be required to engage BMU members on regular basis in order to bring up issues for discussion thus prescription of appropriate management measures.

### **Objective 3: Stakeholder participation in fishery management enhanced**

Successful management of MPAs depend partly on active involvement of stakeholders. In light of fishery resource management, such involvement could include participatory approaches to program assessment, planning, implementation, monitoring and evaluation. Majority of fisheries challenges in KMMCA requires concerted efforts of both state and non-state agents towards effective fishery resource management. For instance, use of sustainable fishery utilization methods requires a close working relationship between fisher folks and marine conservation players including community based organizations (CBOs), Non Governmental Organizations (NGOs) and Government agents (e.g. KWS).

Currently, there is weak coordination among these stakeholders, at times resulting to duplication of efforts. It is therefore important that working relations between stakeholders are strengthened and coordinated to generate synergy and strengthen unity of purpose. Some of the actions aimed at facilitating achievement of this objective include formalisation of relations between Government and non-government players in environment and natural resource conservation, establishment of a functioning conservation area management committee and active participation in County administrative forums.

#### **Action 3.1 Formalise relations between state and non-state players of environment and natural resource management**

Several players have varied roles and interests in marine natural resources. The government agencies for example have mandates over different marine natural resources with Ministry of Fisheries overseeing fishery resources, KWS over wildlife, Tourism over tourist related activities, NEMA over environmental issues and Maritime Authority with oversight role over marine safety and resource utilization within territorial waters. On the other hand, non-government agencies take interests in conserving marine resources, advocate for their responsible utilization and research. It is therefore fitting for all stakeholders to enter into a formal agreements with appropriate government

agencies to enable them voice their concerns thereby making respective agencies appreciably accountable to the public in line with their mandates.

Under formalized arrangement setup, it is also expected that responsible government agencies will recognise and support the effort of other non-governmental players in supplementing their roles which such agencies would have laboured to perform perhaps costly had they to undertake themselves. This is particularly so in areas of sensitizing the rural folk on environmental conservation. Additionally, participative management of natural resources inspires ownership of these resources thus likely successful conservation efforts.

### **Action 3.2 Establish a vibrant conservation area management committee**

This action will be implemented in conjunction to Action 2.3 of the MPA Operations and security Programme which advocates for establishment of a KMMCA Management Advisory Committee. Through this action, the implementers of the fisheries programme and the MPA Operations and security programme will pull resources to formulate one committee to foresee the management of the KMMCA.

The committee is very important given the fact that there are multiple players in fishery resource management in KMMCA and therefore it will be desirable for the MPA management to put in place a functional Conservation Area Management Committee (CAMC), with members drawn from relevant government agents, tourism players (sport fishers), NGOs, community representatives, security agents, research and other conservationists' representatives. CAMC primary role will be to advice on KMMCA management issues related to fisheries, lobby for controlled and planned development of tourism facilities including proper waste disposal and resolve resource based conflicts to ensure sustained utilization of marine resources within KMMCA. The committee once formulated will clearly define terms of reference for the CAMC from inception (in light of prevailing legal provisions) with room to improve over time and circumstances. The CAMC will hold regular meetings, with KMMCA manager taking lead in convening meetings as secretariat to the forum. The CAMC will be expected to propose appropriate management measures to address issues in KMMCA relating to fishery resource management. The forum will also be expected to monitor implementation of management actions geared towards solving various fishery related challenges.

In regard to inherent resource based conflicts involving either dive operators or fishers on one hand and sport fishers and artisanal fishers on the other hand, CAMC will purpose to provide objective measures to address such conflicts to the approval of both conflicting group(s) as much as possible. They will for example explore delineation of several points along the reefs and mark them out with marker buoys as dive/snorkelling spots and remainder sites as fishing areas. These points will however be agreed upon especially by both fishers and dive operators. In conflicts involving sport and artisanal fishers, for example, CAMC could encourage sport fishing companies to register as BMU members at which position they would contribute to BMU kitty. Additionally, instead of fishing in Marine Reserves for baits (thereby conflicting with artisanal fishers), they could purchase fish baits from artisanal fishers ("chuchungi" fish) and fish only in deep sea waters (instead of fishing in Marine Reserve).

### **Action 3.3 Participate in County administrative forums**

Active participation of KMMCA management in county administrative meetings will no doubt increase its visibility besides providing opportunity for it to lobby for support from appropriate government agents in their course to push for their fishery related interests. Since County running is partly implemented through a number of committees formed to address specific issues of economic, social, environment, or administrative nature, KMMCA management will endeavour to associate itself with any one or more of such committees.

Participation in numerous committees will leverage KMMCA management influence in various issues that directly or indirectly relate to utilization of fishery resource within and around KMMCA. Key among such issues includes acquisition of all grabbed landing sites and beach access routes. Successful outcome of such engagement with involvement of KMMCA management will definitely improve the relations between the general public and KWS thus a condition for enhanced conservation efforts.

Other aspects likely to be influenced to the advantage of KMMCA include control of migrant fishers especially from the neighbouring country of Tanzania which many a time are associated with destructive fishing methods such as dynamite fishing.

## **Objective 4: Alternative sources of livelihood to fisher folk developed and implemented**

Since time immemorial, the coastal communities have largely relied on fisheries for their livelihood besides mangrove cutting and tourism. However, continuing fall in productivity of nearshore fisheries along the Kenyan Coast has made it necessary for alternative sources of livelihood to be explored. Factors for reduced fish catches include concentration of increased fishing effort (large number of fishers, fishing nets, boats etc.) in the inshore waters and lack of efficient fishing technology and vessels capable of utilizing/venturing deep ocean waters fish stocks. Manifestations of reduced productivity include low catch per unit effort, declined sizes of landed fish stocks and increased uses of destructive fishing methods.

In the interest of conservation and sustainable utilization of the remaining fish stock levels, several options for alternative livelihood for the fishing folk in the Kenyan coast including those living adjacent to KMMCA need to be explored. This objective explores such options including but not limited to the following: fish culture, establishment of community managed marine protected area, seaweed farming, tapping into developed funds for other life supporting initiatives. These are further explained under the following actions.

### **Action 4.1 Initiate and implement fish farming**

Fish farming (particularly mariculture) is thought to be appropriate alternative source of income for coastal artisanal fishers in the prevailing conditions of declined wild fish stocks. Three types of mariculture that can be undertaken include pond culture on land behind mangroves, suspension culture (cage and raft) in sheltered waterways that are of

sufficient depth, and rack culture in the shallow intertidal areas. Also, Acadja net enclosures utilizing mangrove pools, and down ponds emulating mangrove pools, are preferred for community projects, because they are cheap and easy to manage. Additionally, studies on mud crab farming indicate that low-cost pens that are integrated in mangroves do not require any capital inputs and can exist as long as labour is available.

The KMMCA will be assisted and capacitated to start fish farming as an alternative source of livelihood. Some of fin and shellfish candidate species for culture include milkfish, mullets, shrimps, oysters and mud crabs. Production of cultured fish is hoped to sustain the increasing demand for fish protein among human population adjacent to KMMCA and beyond. By so doing increased use of destructive fishing methods and size over-exploitation of wild fish stock would be reduced.

#### **Action 4.2 Support establishment of community managed marine protected areas (CMMPA)**

In the spirit of mainstreaming conservation at grass roots, KMMCA management will support establishment of community managed MPAs. This is in consideration of the fact that KMMCA is only but a fraction of the larger marine ecosystem in Kenyan coast under conservation (especially in South Coast). To enhance conservation outside KMMCA, community managed MPAs will be supported since they will function as buffer areas for KMMCA. Its establishment will also in a way demystify the notion that conservation is a preserve of Central Government – a feeling that has for long nurtured resentments from the adjoining communities.

Additionally, CMMPAs would enable local communities to derive the MPAs associated benefits namely tourism related income. Such arrangement will be indicative to community members that conservation can be a source of livelihood perhaps better-off than traditional methods of resource extraction such as fishing. Subsequently, community members will be self persuaded to leave out destructive fishing methods thereby allowing the build up of fish populations in appropriate size structure that would be pleasant for tourist viewing.

#### **Action 4.3 Promote sea weed farming**

Currently, seaweed farming is being practiced in Shimoni Kibuyuni and Mkwiro villages. The seaweed farming has shown that it could form a vital source of livelihood if further developed. In fact research has indicated that the aforementioned areas can support even large scale seaweed farming. The challenge currently in place is lack of proper marketing strategy for the farmed seaweed. The only existing market is Zanzibar but the local farmers have no direct access to this only market thereby making them to rely on rather exploitative middlemen. In a way to support those practicing seaweed farming, KMMCA management will encourage and support locals to establish co-operatives in order to streamline marketing of their seaweed and seaweed products (Seaweed jelly, soup and sauce). By so doing, the accruing income will encourage more fishers to try a hand in seaweed farming thereby decreasing fishing pressure for wild fish stocks.

Additionally, seaweed farming has been reported to have encouraged the availability of fish in the farmed area. Locals believe seaweed provide food resources for fish besides acting as anti-predatory sites for prey fishes. Looked at this context, seaweed farming has facilitated productive fishing and thus the likelihood for more fishers to embrace seaweed farming to indirectly maximize fish production.

#### **Action 4.4 Tap into devolved funds to assist alternative livelihood ventures for communities**

There seem to be numerous devolved funds currently at community level. Some of these include Local Authority Transfer Funds (LATF), Constituency Development Funds (CDF), Youth and Women Empowerment funds, Economic Stimulus Funds etc. However, community living in adjoining areas of KMMCA (just like any other adjacent to any other protected area) seem to be unaware of such funds existence (or if aware, they're less interested in applying for the same). In this regard, the KMMCA management will take the role of enabling the adjoining community to access numerous funding if by so doing the resulting phenomenon will reduce utilization pressure of wild fish stocks within KMMCA or in general support of conservation in the area. For instance, KMMCA management could prepare funding proposals for ecotourism initiatives (Dolphin watching ventures, swimming with turtles expeditions, tour guides training etc.) for community members. Successful funding of such initiatives will provide alternate livelihood sources for community members who otherwise could continue with environment destructive options in their quest to derive their livelihoods.

On the other hand, KMMCA management while utilizing KWS social responsibility interventions facility will target projects with direct impact on sustained utilization of fishery resource in KMMCA. Such projects will include provision of appropriate fishing gears in exchange for surrendered destructive fishing gears, provision of advanced vessels capable of venturing into deep sea fishing thereby transforming artisanal fishers to commercial fishers. At basic level, KMMCA managers will use KWS social responsibility interventions to acquire safety equipment for fishers utilizing KMMCA waters. Such equipment include life jackets, life rings/tubes, communication gadgets (at least linking them with BMU office), fish preservation equipment .Provision for safety and fish preservation facilities may not only inspire fishers to venture into deeper water because of their assured own safety and those of their catches (kept in good conditions) but also likely to cultivate good working relations between KWS and fishing community thus a window for advancing conservation through sustainable utilization of the fishery resource in KMMCA.

### **Objective 5: Impacts on emerging issues in fishery resources assessed**

As time passes, issues occur at different geographical scales: National, Regional and even Global. Some of these emerging issues may have direct or indirect effect on fishery resource management and general conservation initiatives. Considering that most of the emerging issues are beyond the scope of KMMCA management, planning for such events is important since it lays ground for copying up with their implications on MPA management (when they actually occur). Examples of emerging issues include fishery resource management under the new constitution dispensation, new infrastructure

development in the Indian Ocean (gas/oil exploration) and new but destructive fishing methods.

Under the new constitution dispensation, fishery resources will be managed under the county governments. This will mean that fisheries activities within KMMCA will be supervised by Kwale county government once it becomes operational. This changed governance of fishery resource will likely call for a changed strategy to address fisheries resources of KMMCA.

The on-going gas/oil exploration in Indian Ocean and plans for Mombasa Port expansion are examples of massive new infrastructure on Kenyan coast. While these are appreciable ventures, the implications for these on fish stocks and fishery habitat is not yet known. Any negative impacts of these ventures on fish stocks or habitats at designated areas could occasion behavioural responses such as fish migration to alternate areas including KMMCA. This in turn would attract concentration of fishing effort at new fish destination sites thus increased management cost in form of increased surveillance patrols, awareness programs and general advocacy for sustainable utilization practices especially if KMMCA will be such new destined sites (for migrating fish groups).

Actions to be undertaken to determine impacts of merging issues include the following: Participation in development plan making for fishery resource by Kwale County Government, Participation in Environmental Impact Assessment and Audits (EIA and EA) for Government development project in Coast and explore the impacts of new fishing gears on fish stock levels.

#### **Action 5.1 Participate in fisheries development plan for Kwale County**

Past experience indicates that local communities especially the fishing folk harbour ambitions of having marine protected areas de-gazetted to give room for fishing in those areas. Based on this evidence, it will be important for KMMCA management to fully participate in plan development for fisheries resource in Kwale County once it is initiated. By so doing, they will be able to shape the by-laws formulations thus influence utilization approaches for fishery resource in the County, KMMCA included.

Participation of KMMCA management in other forums where fishery resource management is deliberated is also important since they have opportunity to correct some misconceptions about sustainable fishery utilization or conservation. Alternatively, such forums could be used to raise some concerns (red flag) against resolutions that may jeopardize conservation initiatives. Such concerns could involve advocacy for use of destructive fishing methods under the disguise of community empowerment e.g. legalising fishing at critical ecological grounds say turtle foraging areas, use of spear gun or politicisation of conservation initiatives touching on fisheries issues.

#### **Action 5.2 Involve KMMCA representatives in EIA and EA for major coastal project**

Given dynamism of marine environment and the desire to enhance conservation beyond the boundaries of KMMCA, it is important for KMMCA research officers (or managers) to

be involved in the EIA and EA for major coastal projects to present their concerns on biodiversity and natural resource management (fisheries) especially if the project sites are close or linked to KMMCA. Whereas there's no obligation for KMMCA representatives to be among the team doing the EIA or EA, they could still participate as part of the general public during scoping stages and other public feedback phases of project EIA and EA making process.

Alternatively, KMMCA representatives could still lobby to be included on board during gas/oil exploration expeditions so as to ensure the exploration undertakings adheres to environmental concerns as set out in EMCA guidelines and national oil/gas exploration regulations (if any is in place at the moment).

To facilitate an informed participation of KMMCA management in future engagement with developers, KMMCA research team would better gather as much baseline data for project target areas in the context of their biological, social and economic status, ecosystem functioning and bio-physical interaction data. Getting such data before hand will be helpful in defining change after project implementation thus forming bases for decision making on project impact on environment integrity.

### **Action 5.3 Explore the impacts of emerging fishing methods on fish stocks**

To guard against temptation by fisher folk to perceive KMMCA management as being malicious about their livelihood sources (fishing) by classifying some gears as destructive, it will be proper for KMMCA management to imperatively initiate and implement fishing gear analysis in KMMCA in collaboration with relevant stakeholders namely Fishers, Ministry of Fisheries, Beach Management Units, Kenya Marine and Fisheries Research Institute and other non-state researchers. Such joint venture would yield results that are likely to be acceptable to all thus an enabling condition for a common approach to fishery resource management.

In the interest of balancing out varied interests of different stakeholders, a win-win situation would be moulded out of such joint approach. One such situation could be zoning of Mpunguti marine reserve based on various fishing gear types and characteristics e.g. exclusive trap fishing zone, gillnet fishing zone, fishing line zone, multi-gear fishing zone. With sectioning of the fishery based on gears, it will be easier to establish the impact of each gear type on the fishery thereby facilitating quick decision making.

## Three Year Activity Plan 2007 – 2010

The following pages set out the first 3-Year Activity Plan for the Fisheries Management Programme. The activity plan details the activities, responsibilities, timeframe and extraordinary resource requirements necessary for the delivery of each management action over the first 3-year timeframe of this management plan. In addition, that plan sets out specific and timebound “milestones” that KMMCA management aims to achieve in implementing the plan.

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1 Fisheries legal provisions enforced in effective manner														
1.1. Enhance capacity to facilitate effective law enforcement														
1.1.1 Carry out capacity needs assessment	Warden, AD-CCA, HCO-CCA													Capacity needs assessment report in place  Appropriate equipment, facilities and work tools in place  No. of staff trained on refresher courses
1.1.2 Mobilize financial resources to procure required equipment, facilities, and/or tools of work														
1.1.3 Constitute joint enforcement programs involving relevant players of fishery resource: MoF, KWS, BMU e.t.c														
1.1.4 Provide refresher courses to update skills of enforcement personnel														
1.1.5 Undertake exchange programs to improve on enforcement efficiency														
1.2 Lobby for the gazettment of fishery friendly MPA regulations														
1.2.1 Constitute a task force to take audit of existing regulations and their efficacy; formulate their terms of reference	Warden, AD-CCA													Task force, stakeholders workshop and Gazettment of MPA regulations done by the specified period
1.2.2 Organize a stakeholders workshop to solicit ideas on desired MPA regulations in support of fishery resources														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
1.2.3 Prepare workshop proceeding and submit to Ecom for adoption and gazettment of suggested regulations															
1.3 Develop and implement MOU between MoF and KWS to manage areas of overlap within MPA															
1.3.1 Formulate a committee to look into issues surrounding ineffective implementation of the current MoU between MoF and KWS	Warden, AD-CCA														A working MoU in place by Dec. 2012
1.3.2 Organize a workshop for KWS and MoF to report on committee findings and devise the way forward															
1.3.3 Finalize the MoU and implement as stated															
1.4. Support BMUs in executing their mandates															
1.4.1 Carry need assessment for BMUs															
1.4.2 Mobilize financial resources to address the BMUs capacity needs on priority basis															
1.4.3 Organize specific need trainings from time to time e.g. leadership, entrepreneur skills e.t.c															
1.4.4 Undertake exchange program for BMUs to enrich their experience															
Objective 2 Linkages between research and fishery management enhanced															
2.1 Establish KWS research sub-station at KMMCA															
2.1.1 Identify appropriate site for research sub-station establishment	Warden, AD-CCA, SRS-CCA														Operational research sub-station by June 2014
2.1.2 Solicit funds to construct and equip the sub-station															
2.1.3 Lobby for posting of staff with rightful competencies to the sub-station															
2.1.4 Prepare and defend budget for operationalization of the research sub-station															

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
2.1.5 Devise a program for interaction between research and park management team															
2.2 Establish fishery resource data base at KMMCA															
2.2.1 Seek funding for appropriate database establishment (Computers, servers, software and support wares)	Warden, SRS-CCA, AD-CCA, HCO-CCA														A functioning fishery data base at KMMCA by June 2013
2.2.2 Liaise with local research bodies and MoF to share existing fisheries data bank for KMMCA															
2.2.3 Design fishery data collection protocol or program															
2.2.4 Train staff on data collection techniques, analysis, storage and retrieval of the same from data base															
2.3 Prioritize research focusing on pertinent fisheries issues of KMMCA															
2.3.1 Profile fisheries issues of concern for KMMCA	Warden, AD-CCA, SRS-CCA														Research report for priority fishery issues in KMMCA in place by June 2014.
2.3.2 Seek funding to actualize research for identified research priorities															
2.3.3 Liaise with regional and/or other relevant research entities to conduct research															
2.3.4 Organize a forum/workshop to facilitate research feedback to KMMCA staff and other players, Way forward devised															
2.3.5 Implement research recommendations and evaluate their validity from subsequent results after some specified period.															
2.4 Mainstream information sharing and exchange in KMMCA															
2.4.1 Develop information sharing infrastructure say through registering with professional news bodies: topical bulletins/newsletters/magazines, intranet, twitters	Warden														Information sharing and exchange system in place by June 2013

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.4.2 Develop and implement information sharing/exchange program with staff and stakeholders on regular basis (quarterly, annually)														
2.4.3 Update strategy of information sharing/exchange as dictated by prevailing conditions/circumstances														
2.4.4 Participate in conferences (National/regional/international) to enhance information gathering														
Objective 3 Stakeholder participation in fishery management enhanced														
3.1 Develop synergies between various players of fishery resource management														
3.1.2 Organize a stakeholders workshop to seek roles of different players in fishery resource management: - Document who does what - Identify gaps/overlaps between roles of various players - Explore possibility of mitigating overlaps through role realignment/re-allocation - Devise a way of pooling resources towards better fishery resource management - Drawing terms of reference for each player	Warden, SRS-CCA													Synergized approach to fishery management in KMMCA in place by Oct. 2012
3.2.2 Develop and implement a forum where different actors report on their role progress, challenges faced and suggested mitigations														
3.2 Establish a vibrant fishery resource management committee														
3.2.1 Generate a list of fishery resource players														A functioning fishery

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.2.2 Organize a workshop to publicize the need for the above action and thus: - formulation for the terms of reference for the above committee; - election of office bearers and their reign time span - role specification for each official - frequency of committee meetings	Warden, AD-CCA													resource management committee in place by October 2012
3.2.3 Select some representative of this committee to be part of advisory committee														
3.2.3 Seek funds to strengthen the committee operations														
3.2.4 Conduct exchange programs for the committee members to enhance efficiency of their roles														
3.3 Lobby to participate in County level forums														
3.3.1 Organize a meeting for County officials to sensitize them on role played by fishery resource in supporting livelihoods, conservation and tourism (economy) thus KWS interest in fishery management: - Concern for license of destructive fishing gears - Management of migrant fishers from neighboring countries	Warden, AD-CCA													Participation of KMMCA management in County forums by January 2013
3.3.2 Submit fishery related reports to County administration on regular basis and seek feedback where appropriate														
Objective 4 Alternative sources of livelihood to fisher folk developed and implemented														
4.1 Initiate and implement fish farming														
4.1.1 Undertake fish farming campaign among the fisher folk	Warden, AD-CCA													Positive attitude and actual doing of fish farming by

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
4.1.2 Mobilize financial resources to implement fish farming on pilot basis at demonstration sites- Part of awareness campaign														April, 2013
4.1.3 Organize a workshop to publicize the success story of farmed fish (mariculture), highlight challenges faced and devise way forward														
4.1.4 Liaise with MoF for follow-up and technical input														
4.1.5 Prepare funding proposals to roll out fish farming														
4.2 Support establishment of community managed marine protected areas (CMMPAs)														
4.2.1 Consult to find whether the current constitution (or any existing legislation) allows for the establishment of CMMPAs	Warden													A functioning community managed CMMCA in place by June 2014
4.2.2 Carry out an outreach program to encourage fisher folk to embrace community managed marine protected areas (outside already gazetted areas)														
4.2.3 Organize for field visits to already established CMMPAs (if any in place so far)														
4.3.4 Provide technical support from time to time for fisher folk intending to embrace CMMPAs														
4.3 Promote seaweed farming														
4.3.1 Liaise with individuals/institutions that previously studied the potential for seaweed farming in/around KMMCA	Warden, AD-CCA, AD-CWEF													Large scale seaweed farming adopted by June 2014 in and around KMMCA
4.3.2 Undertake market research for seaweed (besides Zanzibar)														
4.3.3 Encourage fishers and other community members interested in seaweed farming to connect to alternative market outlets through formation of co-operatives														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
4.3.4 Train some fisher folk on seaweed farming techniques and associated skills														
4.3.5 Publicize seaweed farming through BMU to wider forum and the implication of such on wild fish stock levels.														
4.4 Tapping into devolved funds to improve fishers production														
4.4.1 Sensitize the fishers on existence of alternative government funding sources besides KWS e.g. LATF, CDF	Warden, AD-CCA, AD-CWEF													Amount of funds sourced from devolved government funds
4.4.2 Seek funds to train BMU leadership on proposal writing skills: Enabling fishers to seek funds on their own														
4.4.3 Prepare funding proposal for CRS fisher project: - Purchase of fish preservation facilities - Sea safety equipment - Advanced vessels capable of venturing into open waters														
Objective 5 Impacts of emerging issues on fishery resource assessed														
4.1 Involvement in EIAs and EAs for coast development projects in the area														
4.1.1 Train staff in EIA and EA	Warden, H-CO, AD-P and EC													No. of staff trained in EIA and EA by June
4.1.2 Sensitize communities to be involved in EIA making process for projects in and around KMMCA														
4.1.2 Participate actively in EIA making process for coast development project within and around KMMCA (especially during public participation phase)														
4.1.3 Help in enforcing the EMCA provisions by reporting non-conformities by project implementers to facilitate adoption of mitigation measures in time.														
4.2 Explore the impacts of emerging fishing gears on fish stocks														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
4.2.1 Take stock of old and emerging fishing gears operating in and around KMMCA	Warden, AD-CCA, SRS-CCA													Report of emerging gears impact in place by June 2014
4.2.2 Organize a meeting with stakeholders with view to initiate a joint study to assess the impacts of emerging gears vis avis the old ones														
4.2.3 Solicit funds to undertake gear impact survey within and around the area.														
4.2.4 Undertake collaborative initial stock levels and habitat status before adopting the usage of emerging gears.														
4.2.5 Allow usage of emerging gears in specified areas for specified period														
4.2.6 Undertake a repeat assessment of fish stock levels and habitat status														
4.2.7 Assess the impact of emerging gears from the difference between state of affairs before and after usage of emerging gears.														

# Community Outreach and Education Programme

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# Programme Purpose and Strategy

To empower local communities to actively participate in sustainable conservation and management of natural resources at the KMMCA

The local communities at the KMMCA entirely rely on marine resources for their livelihood key among them being fishing and tourism related activities. A small number is also engaged in subsistence farming. With increase in human population and concomitant increase demand in marine resources, there have been cases of over exploitation of marine resources as well as encroachment on the marine ecosystem. Consequently, the KMMCA Community Outreach and Education Programme will work towards mitigation of these adverse impacts; improve awareness of the KMMCA's values; and foster a constructive and supportive relationship between KMMCA management, its adjacent communities and key stakeholders.

The programme purpose sets out a clear and tangible goal that the MPA managers are aiming to achieve over the 10-year timeframe through the implementation of the plan. Hence defining the purpose for Community Outreach and Education programme that will provide managers with the overall goal they shall be aiming to achieve.

The following sections set out the underlying guiding principles that underpin the Community Outreach and Education Programme.

## Guiding Principles

*In implementing the KMMCA's Community Outreach and Education Programme, KMMCA Management will strive to ensure:*

### Enhanced community communication

Effective communication between MPA-managers and local communities is essential to enable both parties to raise and resolve common problems and work towards achieving shared goals. To ensure community support for conservation, bottom-up approach to natural resources planning and management should be applied. In this regard, outreach activities will therefore target the local community's present and future needs and aspirations. Thus, under this programme, KMMCA management will aim to enhance community communication mechanisms to improve MPA-community relations.

## **Stakeholder collaboration in natural resource management**

Many of the threats to the ecology and natural resources in the KMMCA stem from resource uses and practises by the local community in the MPA adjacent area (both marine and terrestrial ecosystems). The scale and intensity of these impacts is increasing and, although outside the direct mandate of KWS, these issues cannot be left unaddressed. As such, activities under this programme will pursue partnerships and collaborations with other institutions and organisations (such as BMUs, KMFRI, KFS, Department of Fisheries and NGOs) to address issues of mutual concern outside the core protected area.

## **Awareness creation on the importance of the KMMCA**

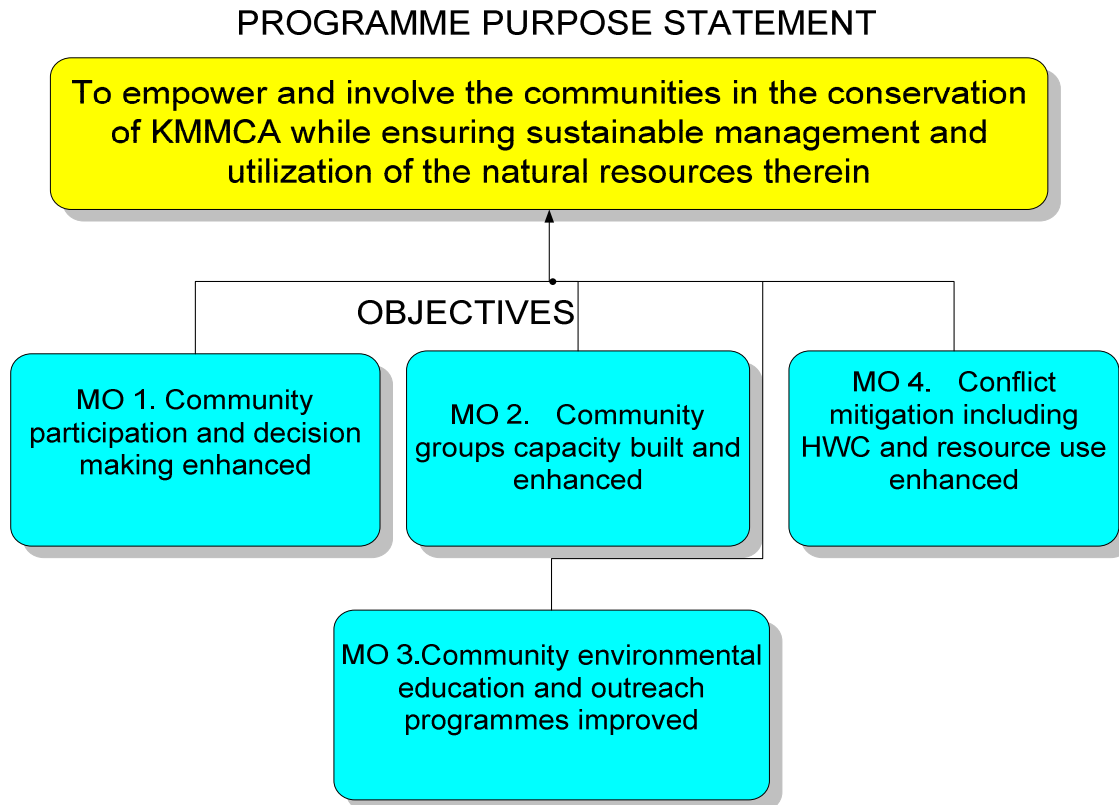
One of the core functions of KWS is to provide conservation education and raise awareness on the importance of wildlife and protected areas to improve support for wildlife conservation locally and nationally. One of the key objectives of the KWS Conservation Education programme is to “develop conservation education programmes and disseminate information to targeted groups”. Therefore, activities under the Community Outreach and Education programme will aim at educating the local community on the significance of the KMMCA. Management actions will be designed to ensure that the conservation message reaches different social strata in the community. For example, school children will be reached through wildlife and environmental clubs that have been established in schools; while adults will be educated through conservation seminars and workshops organised by KMMCA management.

These guiding principles are intended to guide the implementation of the Community Outreach and Education Programme. Four management objectives have been designed, which when taken together will achieve the Programme Purpose.. The following sections describe these management objectives and provide an outline of the management actions needed to achieve them.

Figure 12 below shows the overall objectives tree for the KMMCA Community Outreach and Education Management Programme.

# Management Objectives

**Figure 11: Community Outreach and Education Management Programme objectives tree**



## Objective 1: Community participation in natural resource conservation and management enhanced

The local communities have a range of environmental, social and economic factors limiting the enhancement of their livelihoods. The key ones include: widespread poverty, subsistence based lifestyles, climatic variability and seasonality, lack of access to finance and technology, restricted access to resources or assets, and lack of land tenure security. Over-dependency on fishing and lack of conservation awareness are some of the factors contributing to over-fishing and poverty in fishing communities. While there is a potential for alternative livelihood options, cultural factors as well as limited economic incentives among other factors have inhibited development in local communities. Consequently, this management objective has been designed to empower local communities to exploit diverse opportunities presented by natural and cultural resources

in the area and thereby enhancing their livelihoods and at the same time minimize pressure on marine resources.. The management actions that have been designed to achieve this objective focus on:

**Action 1.1: Support formation and registration of viable and effective conservation related community groups**

Sustainability of any community project requires full ownership by the community from project design to implementation. Many of the existing community development projects that have been established in the KMMCA have been donor driven. This has created a 'dependency syndrome' and most projects fail soon after the donor project ends because of lack of ownership and accountability. In view of this, to ensure that KWS-supported community projects are sustainable, KMMCA management, through the Community Wildlife Service Department, will facilitate target community groups to organise themselves into cohesive groups. These community groups will have clearly defined goals and objectives that members will be aiming collectively to achieve and group rules and regulations that each member will subscribe to. Once a community group is registered with the Department of Social Services, they will be supported in developing a business plan which will outline the activities that will be implemented to achieve the defined group mission. Further KWS and its partners will support implementation of the participatory business plan with priority being given to activities that will enhance environmental conservation.

**Action 1.2: Carry out an evaluation of previous and on-going community projects**

Several IGAs initiated by the community exist in the KMMCA. IGAs is a method for communities to benefit directly or indirectly from the conservation area. The success of these IGAs depends on the type of initiatives proposed. It may also require a high degree of community organisation and capacity. Once established, the sustained success of such a venture depends on management capacity of the local community.

To ensure that community projects that contribute to the achievement of the KMMCA's purpose are initiated and implemented, it is important that a critical evaluation of current and previous projects is carried out to discern what constraints implementation or ensures success. In regard to this, an evaluation of the programmes and projects of selected community groups that KMMCA management intends to partner with will be carried out. The lessons learned from this evaluation exercise will be used to support the design of community projects that will deliver the intended outcomes; improved community livelihoods and enhanced conservation of the environment, and especially the marine environment. This evaluation will be carried out by the KWS Community Wildlife Officer in collaboration with community members through a Participatory Rural Appraisal (PRA) that will also identify the community's aspirations.

### **Action 1.3: Conduct an Organization Capacity Assessment for existing community groups**

The organization of a group has a major influence on a group's potential to achieve its set goals and objectives and ultimately its success or failure. Hence, before KWS engages or partners with a community group it is necessary to understand how that group is organised, what its functions and its strengths and weaknesses. This will enable KMMCA management to make informed decisions on strategies or approaches that are needed to improve the performance of specific community groups. As such, under this management action, KMMCA management will carry out an organization capacity assessment of community groups before offering support or partnering with a group in a conservation or social project. This will be a systematic evaluation of the group's organisational processes, structures, systems and skills aimed at identifying and understanding the group's strengths and weaknesses to enable them to develop effective strategies that turn around the group; hence achievement of mutual conservation goals.

### **Action 1.4: Train conservation community groups in project management**

Once the organisational capacity assessment stipulated in action 2.3 above has been carried out and gaps in the capacity of the community groups have been identified, KMMCA management will support training of community group officials in line with the identified training needs. The training will mainly focus on project design, implementation and maintenance and will be carried out through short training workshops.

### **Action 1.5: Support community empowerment activities in the KMMCA**

In response to the poor socio-economic conditions of the MPA adjacent areas, it is essential that the MPAs exploit all options it has to contribute to sustainable poverty reduction and economic empowerment of communities living in and adjacent to the MPA. In regard to this, KMMCA management will support local community entrepreneurs through its enterprise department to establish non-conservation-linked enterprises. This will include supporting establishment of small enterprises e.g. organised groups of crafters who can produce traditional handicraft and art for sale locally and elsewhere in the country.

In addition, to empower community members to exploit alternative livelihoods, KWS will support education of selected qualified needy students in secondary and tertiary institutions. Further, whenever opportunities for unskilled labour arise at the KWS KMMCA offices, priority will be given to members of the MPA adjacent community.

### **Action 1.6: Support establishment community based tourism enterprise projects**

The establishment of successful community-based tourism ventures can be difficult and, depending on the type of initiatives proposed, may require a high degree of community

organisation and capacity. Some notable community-based tourism initiatives include Shimoni slaves' caves and Wasini women boardwalk. The sustainability of these initiatives depends on management capacity, market access, publicity, and effective benefit sharing and involvement within the wider community. Initiatives for conservation of turtles with the support of CORDIO has been underway in Kibuyuni. Moreover, Shimoni forest is opening up as a tourist destination; GVI has trained a number of forest tour guides and has been trying to market the area as a key tourist destination. Sii is rich in a special species of mangroves and a variety of water birds, hence has a high potential for development of tourism activities. Hence, under this management action, KMMCA management will collaborate with its partners in supporting community based organisations in the establishment of viable tourism enterprises. Such activities include development of existing visitor attractions on community land, cultural tours in local villages, or homestays. The support will include training these CBOs in customer care, tour guiding, and tourism management. Such training will be offered through workshops and in some special cases, where advanced tourism management training is justified, qualified members of the CBOs will be trained at the Kenya Wildlife Service Training Institute.

**Action 1.7: Support establishment and registration of a community based tourism operators association**

Constant wrangles and poor leadership amongst members of community association has lead to the dormancy of its activities, a notable example being the KIBOHA. This CBO had 50 members with a total of 22 boats providing tour services in the marine park. However, due to poor leadership and lack of financial management skills, the association collapsed. As a result boat owners started doing business independently resulting in an unhealthy competition. Consequently, boat services have no standards and it is not uncommon to find boat owners who employ crew that lack health and safety handling experience, which is necessary in case of emergency. As such to streamline tourist boat services and thereby ensure that the safety of visitors is not compromised, KMMCA management will support boat operators to establish a community based tourism operator's forum which will be registered by the Ministry Of Tourism. This forum will set visitor safety standards and resolve conflicts among members.

## **Objective 2: Resource-use and human-wildlife conflict mitigation measures enhanced**

Unsustainable fishing practices is one of the major challenges affecting management of marine resources in the KMMCA. Destructive fishing practices and over fishing threaten sustainability of fisheries and consequently the livelihoods of many members of the fishing folk. For instance, dynamite fishing, use of beach seines, small-mesh size nets, spear guns in coral reefs, and ring-nets in shallow inshore waters, which are fishing methods preferred by migrant fishermen is a source of conflict between these fishermen and local the indigenous fishermen. In addition, there is overfishing in the inshore waters as local fishermen lack suitable fishing boats that can be used to fish in deep waters.

On the other hand, KMMCA has a coastline of about 321 kilometres. This coastline comprises a mix of natural habitats which host diverse wildlife species and farmlands where subsistence farming is the mainstay of the local community. The natural habitats which include coastal forest patches harbour problem animals, such as, elephants, buffaloes, crocodiles, wild pigs and primates which often raid adjacent farmlands causing losses to farmers. These Problem Animals are often controlled through scaring but this is only a temporary solution as the crop raiding often recurs.

Effective and efficient communication and collaboration mechanisms are essential for building supportive and constructive relationships between MPA managers and surrounding communities. These mechanisms need to ensure that issues can be raised and addressed to facilitate a harmonious working relationship between KMMCA managers and the local community thereby ensuring that shared goals are achieved. In addition, creating awareness on the importance of wild animals to mankind is important in reduction of cases of indiscriminate killing for bush meat or to reduce HWC.

#### **Action 2.1: Identify and document resource use conflict areas within the KMMCA**

There is need to identify and document all the conflicts on resource use within the conservation area to facilitate design of effective intervention measures to resolve such conflicts. Some of the identified conflicts include the use of ring nets within the reef, use of explosive-dynamite to fish, crop raiding by wildlife, and threat to human life posed by crocodiles in river Ramisi; a key source of fresh water for the local community. Under this management action, therefore, KMMCA management in collaboration with the local community will identify and document all the conflict areas to help design viable solutions. This will also include participatory mapping of all the conflict hot spots to have insights on the local distribution patterns of the conflict areas.

#### **Action 2.2: Formalise access of migrant fishermen to Kenyan fishery**

There are migrant fishermen, mainly from the Island Pemba and main land Tanzania, who often fish in the KMMCA. These fishermen are more experienced in fishing, hence most of the time they are contracted by local fish dealers to fish in Kenyan waters. Since these fishermen use ring nets and dynamite fishing they are able to land more fish than the local fishermen creating tension. In addition, the government of Tanzania subsidizes fishing activities of the Pemba fishermen by hiring out cheap boats enhancing efficiency of their fishing operations.

To ensure that conflicts between local and foreign fishermen is minimised, KMMCA management will collaborate with the Fisheries and Immigration Department to ensure that there is vigilance in the fishing permitting system. This collaboration will be extended to monitoring whether both local and foreign fishermen have paid the requisite fishing licensing fees and enforcement of the law regarding illegal fishing methods.

### **Action 2.3: Support establishment of a Community Consultative Forum (CCF)**

Currently, a forum where the local community can communicate its problems and aspirations to KMMCA management is lacking. This has resulted in tense relations between the local community and MPA management due to conflicting approach in the management and utilisation of marine resources in the MPA.

Therefore, to ensure effective communication between the KMMCA management and the local community, a Community Consultative Forum will be established. This forum will draw participation from key KMMCA stakeholders including CFAs, BMUs, Boat associations, women groups, CBOs among others. The CCF, whose main objective will be to discuss management issues of concern at the KMMCA and resolve natural resource use conflicts, will hold regular bi-monthly meetings which will be convened by the KWS Community Wildlife Officer at KMMCA.

### **Action 2.4: Explore alternative PAC methods**

One of the core mandates of the KWS is to conserve wildlife and protect people and their property from wildlife damage. At the KMMCA the problem animals include crocodiles that are a threat to human life; and hippos and primates that damage crops. Methods used to control these problem animals include scaring them with thunder flashes, using water and chilli powder to scare away baboons, or shooting animals that are a real threat to human life.

To enhance problem animal control, KMMCA management will explore use of other equally successful methods of controlling problem animals. This will include experimenting with the paintball method used on baboons which is reported to have worked successfully in Kiunga; using wire mesh enclosures to improve safety for those fetching water in crocodile infested rivers; and supporting installation of piped water to villages to minimise the local community's vulnerability to crocodile attacks

### **Action 2.5: Improve Human-Wildlife Conflict response mechanism and time**

Prompt response to problem animal incidents can help reduce damage to property and thereby enhance community-KWS relations. In this regard to effectively and efficiently respond to animal incidents communication links between frequently affected communities and KMMCA will be initiated. This will involve establishing a 24 hour-mobile phone hotline for receiving human-wildlife conflict cases. This mobile phone number will be publicized through public meetings and any other opportunistic community meetings that KWS will be represented. In addition, the problem animal management unit at KMMCA will be strengthened through deployment of additional rangers and provision of relevant field gear to ensure that they are able to reported incidents promptly and efficiently.

**Action 2.6: Nominate and recommend gazettement of KMMCA Honorary warden within the area**

Having a responsible member of the local community who has a passion for conservation working closely with KMMCA management on conservation issues can go along way in ensuring that community concerns are addressed promptly. The Wildlife Act (CAP 376) provides for gazettement of Honorary Wardens who have the same powers as the KWS Warden. Such a Warden can deal with problem animal management and other conservation-related work that the local KWS Warden may assign them. Hence, the KMMCA management will identify and nominate a local honorary warden for gazettement by the KWS Director. Once gazetted, the honorary warden will be assigned tasks, including human-wildlife conflict management and conservation awareness creation and he/she will be reporting progress to the KMMCA management regularly.

**Action 2.7: Provide support to enhance the compensation claim process**

KWS has standard operating procedures, which are followed in conducting all activities within its mandate. The KMMCA encompasses terrestrial unprotected areas, where incidences of injuries and death caused by wildlife are prevalent. However, there is lack of awareness on the wildlife compensation procedures. In view of this, KMMCA management will carry out a sensitization campaign to educate the local community on the wildlife compensation requirements. This will include highlighting cases that can or can not be compensated, the process and steps involved, and the government agencies involved in each step of the compensation process.

**Action 2.8: Conduct study to establish crocodile infested areas**

The a section of the terrestrial part of the KMMCA lies within a wetland created by river Ramisi. This river is permanent and a major source of domestic fresh water shared by both wildlife and the local community. The river suffers from constant floods, which most of the time hinders accessibility of the water resources by the local community due to high infestation by crocodiles, particularly in the flood plains. The population size and crocodile “hot spots” are not known constraining design of effective management strategies to handle the crocodile menace. Consequently, under this management action, a survey of crocodiles will be carried out to determine their numbers and distribution. Further, accumulated data on crocodile attacks will be analysed to determine hot spot areas. Thereafter, the this information will be disseminated to the local community so that people are aware of risky areas that should be avoided.

## **Objective 3: Community environmental education and outreach programmes enhanced**

The development and strengthening of programmes to promote conservation education and awareness is one of the major objectives in the KWS Conservation Education Strategy 2006-2011. Environmental education to create awareness among various stakeholders on the importance and urgency of conserving the KMMCA is indispensable, considering the fact that with increasing population density dependence on the marine resources to sustain livelihoods also grows. Thus, this objective has been design to increase awareness, understanding and participation of the public in the marine protected areas and thereby promote behavioural change towards reducing the over dependency and pressure on the marine and forest resources.

In the KMMCA, the information centre at KWS Shimoni office is supposed to foster education and awareness-raising activities. This information centre has informative posters of marine biodiversity KMMCA's exceptional resources displayed on the wall.. Currently community outreach activities in KMMCA are handled by one JICA volunteer with the assistance of KWS rangers. Hence to enhance the conservation education and community outreach programme the management actions that have been designed focus on:

### **Action 3.1: Organise outreach and awareness creation activities in the KMMCA community areas**

Most of the human wildlife conflict in the surrounding areas is related to crocodile attacks and usually this is blamed on human ignorance. The crocodile infested areas are within the river and the flood plains and require that these areas are accessed with a lot of caution. There is need to create awareness on the behaviour and handling of dangerous animals such as crocodiles to minimise incidents of injuries and death. In addition, the KMMCA has unique conservation values which the community is not aware of. Thus, there is a need to raise general awareness on the importance of KMMCA.

Consequently, KMMCA management will collaborate with other government and NGOs in organising conservation events such as annual marine environment day, mazingira competition, and species specific awareness activities like year of the dolphin, year of the turtle as well as forming community and school based clubs.

### **Action 3.2: Liaise with other conservation education stakeholders to improve use of the KMMCA by local schools**

KMMCA ranks among the protected areas highly visited by organised groups. However, it still has potential to accommodate more groups if accommodation and education resources envisaged under action 3.4 and 3.5 of this programme are implemented. Currently, organisations such as WCK and CORDIO-EA have been carrying

conservation education work in community areas and this has encouraged schools groups to organise tours to the KMMCA. To further enhance KMMCA visitation by local organised groups, KMMCA management will boost the conservation education activities of WCK and CORDIO-EA through offering transport to school groups.

### **Action 3.3: Revive and strengthen conservation clubs**

One way of creating conservation awareness amongst the school going age group is through recruiting students into environmental clubs. Currently, the Wildlife Clubs which are promoted by the wildlife clubs of Kenya are active in several schools. Similarly, Dolphin clubs have also been established in some schools. To enhance conservation education in schools, KMMCA management will support establishment of conservation related clubs in the schools that are within KMMCA. In this regard, KMMCA management will work closely with WCK in establishing these clubs.

### **Action 3.4: Construct a student hostel at KWS Shimoni offices**

Currently, the biggest challenge to the conservation education in the KMMCA is lack of adequate accommodation, particularly for large organised school groups. The existing KWS bandas have a capacity of 12 beds making it not ideal for large groups. Hence, to ensure that large organised groups are adequately catered for, KWS will construct a 60 bed student hostel at the KWS Shimoni offices.

### **Action 3.5: Construct and equip a resource center at KWS Shimoni offices**

The current education centre at the KMMCA serves the entire south coast. This facility is small and it lacks requisite education tools to effectively convey conservation messages to large organised groups. As such, under this management action, a robust resource center will be constructed. This resource center will contain a lecture hall and library and associated facilities. In addition, modern education and outreach equipment will be procured deployed to the resource center.

### **Action 3.6: Upgrade and update KMMCA education and outreach tools**

Over the last few years, conservation education volunteers have tried to come up with simple and easy ways to present educational materials. There is however, a constant need to keep conservation educational materials up-to-date to reflect the changing dynamics in the KMMCA and raise interests of the public. To increase awareness on marine issues and thereby enhance public marine literacy, it is essential that the current education and outreach tools are upgraded. Consequently, brochures, leaflets and pamphlets will be designed in such a way that they portray correct information which is specific to the KMMCA and is targeted at various community social strata. The current underwater film on the KMMCA was done with poor quality images hence there is need to engage a professional consultant or train local staff to produce an new underwater film of the unique and pristine marine ecosystems at the KMMCA. Since the improvement and updating of the information is a continuous process, KMMCA will

acquire an underwater camera to ensure that marine video database is regularly updated.

**Action 3.7: Strengthen the KMMCA education staff and capacity**

Currently the KMMCA does not have staff deployed to do conservation education and outreach work. This work is currently carried out by local and foreign volunteers and interns. On the other hand KWS rangers also carry out outreach activities in neighboring schools. However, given the importance of the biodiversity and recreational significance of KMMCA and the many threats facing it, there is need to have a coordinated approach for implementing the conservation and education programme. In regard to this, KMMCA management will liaise with KWS headquarters human capital department to have a conservation education officer deployed to the KMMCA. This officer will be responsible for developing a robust conservation education programme that when implemented will lead to increased community support for conservation.

## Three Year Activity Plan 2007 – 2010

The following pages set out the first 3-Year Activity Plan for the Community Outreach and Education Management Programme. The activity plan details the activities, responsibilities, timeframe and extraordinary resource requirements necessary for the delivery of each management action over the first 3-year timeframe of this management plan. In addition, that plan sets out specific and timebound “milestones” that KMMCA management aims to achieve in implementing the plan.

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: Community participation and decision making enhanced														
Action 1.1: Facilitate establishment of a Community Consultative Forum (CCF)														
1.1.1 Hold discussions with community group leaders and decision makers concerning role and procedure for establishing a KMMCA CCF														At least 4 CCF Formed by June 2013
1.1.2 Identify and mobilize stakeholders in the formation of an active community consultative forum such as community based tourism operator's forum e.t.c														
1.1.3 Provide support for developing MoUs and Articles of Association for the forum														
1.1.4 Support registration process of the forum														
1.1.5 Provide technical support for the operations and stakeholders' participation mechanisms														
Action 1.2: Assess the interest of different groups making up the CCF														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.2.1Provide support and training to community members in developing project proposals														
1.2.2 Carry out Participatory Rural Appraisal (PRA) in collaboration with community representatives i.e. Consultative Communities Commettee and CCF to identify new projects														
Action 1.3: Build the capacity of CCC & CCF to effectively manage community projects														
1.3.1 Hold discussions with community leaders and decision makers concerning roles to be undertaken by the CCC and CCF														
1.3.2Provide technical support, training and other support in community project management														
1.3.3 Implement the Community Action Plan (CAP) developed through PRA														
1.3.4Participate in key CCC and CCF meetings and promote linkages between the community forums and the wider community														
Objective 2: Capacity of community groups built and enhanced														
Action 2.1: Facilitate the registration of community groups as business entities														
2.1.1 Carry out an inventory of community groups and their mandate														
2.1.2 Conduct an Organization Capacity Assessment for registerd groups														
2.1.3 Provide support and training to community in developing business plans and business management														
2.1.4 Provide support for developing Articles of Association for the business enterprise														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.1.5 give guidance on registration process for the new upcoming groups														
2.1.6 Analyse information collected during Participatory Rural Appraisal to Identify gaps and recommendations made on community projects														
2.1.7 Carry out need assessment on the viability of the community enterprises as business entities														
Action 2.2:Enhance the capacity of existing community enterprises														
2.2.1 Evaluate perfomance of on-going KWS assisted community conservation projects														
2.2.2 Organize a business enterprenual seminar for the communities														
2.2.3 Organise exchange visits														
2.2.4 Organise trainings														
Action 2.3: Prioritise employment to local people for unskilled labour														
2.3.1 Provide a local advertising mechanisms for unskilled jobs to ensure openness and transparencesy														
2.3.2 Give priority to local communities to apply for locally advertised unskilled jobs.														
Action 2.4: Initiate and nature potential tourism enterprise in KMMCA														
2.4.1 Identify potential areas for tourism enterprise and mobilize the communities														
2.4.2 Collaborate with relevant stakeholders in establishing and endorsing registration of tourism enterprise documents														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.4.3 Provide support to communities in setting up and building capacity of the tourism enterprises committees														
2.4.4 Assist management committee in developing the tourism enterprise management plan														
Action 2.5: Assess the viability of any IGA to be initiated and ensure ownership														
2.5.2 Hold meetings with existing groups to identify lessons learnt from existing IGAs														
2.5.3 Develop a simple action plan for establishing viability of an IGAs and ownership.e.g bee kipeng , butterfly farming, seaweed farming														
2.5.4 Implement the action plan														
Action 2.6: Liaise with the MoT to form an association of community based tourism operators and link to existing legislation														
2.6.1 Hold discussions with stakeholders, leaders and other decision makers concerning roles to be undertaken by community based tourism operators association which will act as an umbrella body														
2.6.2Hold joint meetings with the MoT to promote and support establishment of community based tourism operators association														
2.6.3Provide support for developing Memorandum and Articles of Association for the association														
2.6.4Provide technical support and training of members on financial management, leadership skills, conflict resolution e.t.c														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 3: Conflict mitigation including HWC and resource use enhanced														
Action 3.1:Enhance resource use conflict resolution														
3.1.1 Constitute a steering committee with representatives from both countries														
3.1.2 Develop a joint working plan on migrant fishermen for the two country														
3.1.3 Implement the working plan														
Action 3.2: Identify and map out PAC hotspot areas														
3.2.1 Analyse the existing information on PAC														
3.2.2. Map out the hotspot areas														
3.2.3 Establish a PAC database														
3.2.4 Collaborate with research section to establishing a GIS PAC database system														
3.2.5 Hold community meetings to create awareness on HWC issues														
3.2.6 Produce annual human wildlife conflict reports														
Action 3.3: Explore alternative PAC methods														
3.3.1 Liaise with research section to identify and assess new PAC techniques, including wildlife scaring methods such as the paintball method used on baboons which has been reported to work successfully in Kiunga areas														
3.3.2 Undertake exchange study visit to other sites using new PAC techniques														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.3.3 Obtain necessary PAC equipments and carry out pilot trials of new methods														
3.3.4 Equip and train communities on the new selected PAC techniques														
Action 3.4: Improve HWC response mechanism and time														
3.4.1 Establish a mobile PAC unit base around KMMCA														
3.4.2 Establish an active a 24-hour hotline number which will be available to the community														
3.4.3 Strengthen existing outposts														
3.4.4 Liaise with communities to identify a suitable site for Msambweni outpost														
Action 3.5: Nominate and recommend gazettement of KMMCA Honorary wardens within the area														
3.5.1 Identify and recommend suitable persons for nomination														
3.5.2 Gazette honorary wardens														
Action 3.6: Enhance the compensation claim process														
3.6.1 Create awareness among KMMCA community members on the compensation process														
3.6.2 Ensure timelyprocessing of compensation claims through District Wildlife Compensation Commettee (DWCC)														
3.6.2 Liaise with claimants and KWS headquarters in processing of claims														
Action 3.7: Conduct study to establish crocodile infested areas														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.7.1 Liaise with research section to carry out a survey study to determine crocodile occurrence and distribution in river Ramisi.														
3.7.2 Analyse the existing data on crocodile on HWC														
3.7.3 Based on the outcome of the survey, advice locals on the safe ways to access water resources.														
Objective 4: Community environmental education and outreach programmes improved														
Action 4.1: Stregthen community outreach programmes														
4.1.1 Deploy a community warden														
4.1.2 Encourage volunteering from both local and international communities														
4.1.3 Update the existing education and awareness materials, equipment to support identified outreach activities														
4.1.4 Develop additional teaching aids														
4.1.5 Carry out awareness activities														
Action 4.2: Raise awareness of the KMMCA important conservation values														
4.2.1 Organize annual conservation awareness events and activities on the uniqueness of KMMCA. Such annual events to include;- annual marine environment days, mazingira competitions, species specific awareness activities like year of the dolphin, year of the turtle etc														
4.2.2 Participate in local and international exhibition and trade fairs to raise awareness on the uniqueness of KMMCA														
4.2.3 Collaborate with local media in promoting KMMCA as an important conservation value														
Action 4.3: Improve linkages with conservation education organizations														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
4.3.1 establish linkages with existing conservation education organizations within KMMCA														
4.3.2 Promote and support establishment of Wildlife Clubs in schools														
4.3.3 Introduce sponsored marine tours in KMMCA														
Action 4.4: Construct a 40 bed student hostel														
4.4.1 Identify a suitable site for the construction of student hostel														
4.4.2 Design and develop BQs														
4.4.3 Procure equipment to equip the hostel														
Action 4.5: Revive and strengthen conservation clubs														
Action 4.6: Install digital education screens at the proposed education centre														
4.6.1 Identify optimum number of equipment need														
4.6.2 Procure equipment														
Action 4.7: Upgrade the KMMCA education and awareness materials and the underwater footage														
4.7.1 Identify education materials and underwater footage to be upgraded														
4.7.2 Procure equipment and materials needed														
4.7.3 Engage a professional to undertake underwater footage of the unique and the pristine environment for education and awareness as well as marketing the area.														
Action 4.8: Strengthen the KMMCA Education staff and capacity														
4.8.1 Deploy appropriate staff for KMMCA education and outreach programme														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
4.8.2 Train education staff according to needs assessment														
Action 4.9: Enhance enforcement of public health sector														
4.9.2 Team up with public health and other relevant institutions and stakeholders to surport enforcement of public health strategy	Warden, Public Health Officer,													
4.9.3 Implement the strategy														

# **MPA Operations and Security Programme**

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## Programme Purpose and Strategy

KMMCA Marine Protected Area Operations and Security Management Programme effectively and efficiently support the achievement and delivery of the overall MPA purpose

Efficient and effective delivery of MPA operations and security are defined as integral to the success of all management interventions in the protected area. However, Kisite Mpunguti Marine Protected Area is increasingly being confronted by a host of conservation and management issues and challenges to its biodiversity, scenic, social and cultural exceptional resource values. Despite all these the protected area and reserve are still having the highest visitation numbers and are the foremost revenue earner in CCA. In order to confront these numerous challenges there is constant need for enhanced institutional efficiency and security. Consequently, the need to elaborately steer and create conducive environment through this programme for park operations, staff welfare and morale, institutional collaboration and visitor security among others are the big tasks for the park's management. An important function of the programme is to support the other management programmes to achieve their individual purposes which enable achievement of the overall MPA purpose. However, to achieve this it will be necessary to ensure an efficient and focused institutional structure that supports and facilitates the daily management functions of the MPA operations and security programme.

To enhance its standard for service delivery, efficient and effective implementation of the plan the KMMCA's principle objective for law enforcement in marine protected areas will be enhanced so as to ensure preservation of the environment, the prevention of all illegal activities as well as ensure safety of visitors, staff and the KMMCA property within the MPA during the 10-year lifespan of this plan.

The following paragraphs set out the **strategic principles** that will guide KMMCA Management in the implementation of this programme and the achievement of the Programme Purpose.

### **Staff are motivated and resources availed for effective MPA operations**

Highly motivated staffs are a vital pillar of institutional strength. The KWS strategic plan 2008-2012 that is based on the Balance Scorecard approach places emphasis on learning and growth and efficient process development perspectives as fundamentally critical to the achievement of the organisational mission and objectives. Under these two perspectives, it is outlined that activities will be focused towards enhancing staff competencies and capacities while streamlining processes. Through these activities staff outputs are to be driven by collective goals, team work and the provision of conducive working environment with a target of enhancing motivation. Currently KMMCA has a

deficit of 33 staff that is at sometimes supplemented by temporarily contracted personnel or in other cases staff has to double up duties. These staff not only require conducive working conditions and facilities, but also the necessary equipment and training to carry out their duties. As discussed above, the scope of work set out in the plan's five programmes is an ambitious undertaking, and will require increases in both the levels of human resources available in the KMMCA, and in the financial resources required to support the implementation of the management actions set out in this plan.

As such, this programme will aim to ensure that KMMCA human resources are of sufficient number and efficiently allocated in order to implement this plan's management actions, and that the financial resources required to deliver the plan's management actions are made available, through expeditious development of the appropriate budgets and their submission to KWS Headquarters and donors as appropriate. Additionally, as a result of the implementation of the Balanced Scorecard the personal goals of staff will be streamlined with the corporate objectives and activities thus clearly demonstrating work output to achievement of organisational goals. Regular appraisal of staff will contribute to improved motivation and morale and compliment existing reward and sanction processes.

## **Good communication and access**

KMMCA covers quite a large geographical area from Shimoni Forest, Shimoni Channel to Nyuli and Wasini and Sii Islands. This wide geographical scope presents the challenge of communicating to diverse and varied stakeholders. Weak involvement of stakeholders in decision making was identified as key ingredient for conflict. Additionally, without the participation and consultation of these stakeholders the implementation of the plan will not be achieved. Thus, good communication and access throughout the KMMCA is essential to support the effective management of the area particularly with respect to security and community outreach activities. Installation of marine radios in patrol boats will enhance and facilitate effective management of rescue and emergency situations. The main mode of communication is by use of the radio which is used to convey official information within KMMCA. Plans to install internet connection should be considered for research purposes as well as to access a pool of information offered through the internet and formation of a dialogue forum.

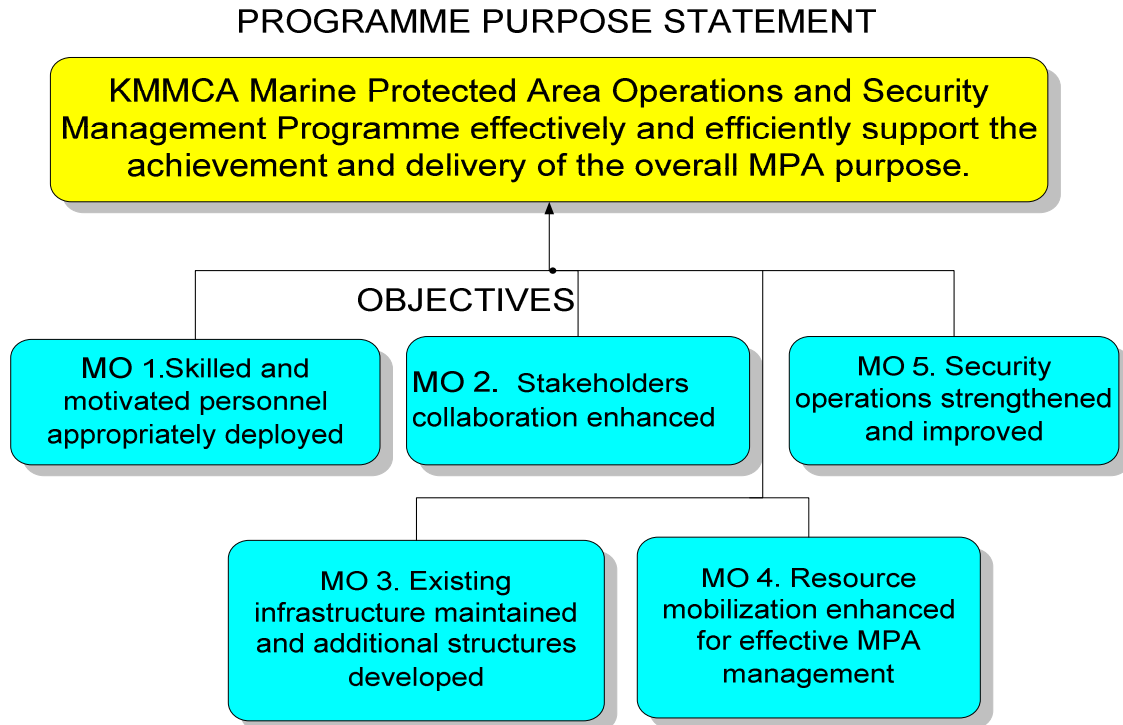
## **Collaboration with key stakeholders is strengthened**

KMMCA management involves a wide pool of stakeholders. Collaboration between stakeholders who operate within the MPA and the area's management has been widely highlighted as an important issue that has to be observed for effective MPA management. Therefore, it is necessary to promote and enhance wider stakeholder collaboration geared towards ensuring that activities by the different institutions and organizations are coordinated and integrated towards achieving the purpose of the plan. The key stakeholders for KMMCA include; Kenya Forest Service (KFS), Fisheries Department (FiD), Kenya Maritime Authority (KMA), BMU, tourism industry partners and other community leaders directly responsible in the general management of KMMCA.

These strategic principles are intended to guide the implementation of the five management objectives (see figure 12) of this Programme geared towards attaining the Programme Purpose.

# Management Objectives

**Figure 12: MPA Operations and Security Management Programme objectives tree**



The following sections describe these management objectives and provide an outline of the management actions needed to achieve them..

## Objective 1: Skilled and motivated personnel appropriately deployed

This will be enhanced through regular staff training, appraisal, staff engagement and capacity building at all levels. A vital tool to achieve this will be done through the comprehensive assessment of training needs, integration of balanced scorecard objects into staff appraisal and deployment schemes for management to implement. Newly employed and deployed staff will be expected to have the relevant skills and competence required for their work. The management actions will seek to cover; staff establishment, staff transfers, staff appraisal, deployment, capacity building and staff welfare issues. The aim is to achieve optimal staffing levels for efficient coverage of the wider geographical scope and effective service delivery.

The desired future state of the KMMCA that this objective aims to achieve is to improve staff performance, efficiency and output. In order to achieve this objective, sixteen management actions have been developed. The actions are further elaborated below.

### **Action 1.1 Lobby for the deployment of appropriate staff not represented in the management structure**

Currently within the KMMCA there are 23 permanent employees while optimum number required is 56 employees based on a study that was conducted in 2007. The deficit is supplemented by employing casuals on short term contracts while others double up in their duties. Sections that are understaffed and require urgent attention include:-

- Education and conservation awareness programme
- Stores section currently has a temporary casual
- Procurement section is headed by a temporary casual
- Community wildlife section is currently headed by an assistant warden<sup>1</sup>
- Research section the Assistant Research Scientist is currently on a study leave
- Tourism Officer - none
- Customer Service Staff - none

The recommendations from the 2007 study will be used as a benchmark in satisfying the optimum staff strength and the shortfalls captured.

### **Action 1.2 Develop initiatives that will enable effective management of Diani Chale Marine National Reserve**

Diani Chale Marine National Reserve is integral to the stability of management interventions in the KMMCA. There is no management office set for the management of Diani Chale Marine National Reserve and the Warden Kisite Mpunguti is expected to oversee its management. However, the limited staff numbers coupled with weak institutional set up and the wide geographical scope of the KMMCA presents a challenge to effectively manage and implement the new plan while at the same time oversee the management of Diani Chale. The current context of there being no warden to steer operations in collaboration with the Warden Kisite increases the complexity of co-management and involving communities in decision making.

In 2005 the Warden in charge of the Diani Chale Marine National Reserve was withdrawn due to conflict between the local communities and KWS management. Since then there has been no substantive attempt at addressing management issues. Currently, the community is engaged with PACT Kenya in ad hoc management of the reserve while a roadmap to establish effective co-management with the community is being developed. KMMCA will liaise with the Assistant Director CCA to review and have a holistic approach to developing effective management structures including basic infrastructure and equipment that will facilitate deployment of staff to the reserve and establishment of long term presence in the conservation area.

### **Action 1.3 Accord appropriate recognition for marine parks as unique and important protected areas**

For a long time marine parks and their associated operations have been perceived in the same manner as terrestrial protected areas. The unique characteristics, issues and challenges of the marine environment and habitats require the separation of

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<sup>1</sup> Currently the Assistant Warden is on Study Leave

perspectives and deployment of resources so as to satisfactorily address these issues and challenges. Issues such as; revenue conflicts with the Locally Managed Marine Areas, reef destruction, concentration of visitors to the tourism sites and high illiteracy levels are the key problems that are affecting the KMMCA.

However, limited attention, understanding, support and facilitation in resources allocation and deployment have augmented threats to the conservation area. In addition, there has been limited appreciation regarding the role of the marine environments relative to terrestrial protected areas. In order to facilitate, support and reinforce the importance of marine parks to conservation and development, specialised marine ranger sections, equipment and personnel will be established to improve the effectiveness and efficacy of management of the park and problem wildlife conflict (PAC) and community outreach activities of the entire Msambweni District. This approach will help disassociate marine issues from terrestrial.

**Action 1.4 Outsource services of qualified personnel whenever necessary to supplement urgent cases**

KWS is expected to manage the MPAs and associated resources there in. Given the diversity of these resources and challenges associated in their conservation, KWS does not have all the capacity and expertise that is required for effective management. For example, the only research office based in Mombasa is understaffed and lacks specialists in most of the marine disciplines.

In order to limit these constraints outsourcing services of professionals as well as that of non essential services on short contracts will be enhanced as an effective medium term remedy. This strategy will enhance the effective delivery of services and the achievement of optimum staffing levels. Thus, measures to facilitate outsourcing will be set up so that in urgent cases services of qualified personnel can be harnessed on supplementary basis.

**Action 1.5 Ensure that transfers are accompanied by relevant skilled personnel**

Due to the limited staff numbers within the organisation, staff transfers are very common from one protected area to another. In most instances these transfers are abrupt and non consultative with and between respective managers. In the past, staff with valuable skill set from marine areas were transferred to terrestrial parks and replaced with terrestrial staffs that have little or no competences in marine issues. The lack of recognition of these unique competences has created a negative perception by staff about transfers making them seem rather discriminatory and disruptive to activity execution in the field while not so meant.

Furthermore, since the staff being transferred and the replacement do not match the skill sets that are required for the task, retraining is necessary thus wasting valuable time and disruption of processes in the immediate term. As a result, in case of transfers, KMMCA management will seek replacements that match competences especially in marine parks and reserves. Where possible, area level managers will liaise with the Human Capital as appropriate during such transfers.

### **Action 1.6 Initiate Marine Staff Competency Certification Schemes and have a database incorporated in KWS Human Capital Section**

As articulated above, marine operations and security require relevant skill set and competences to ensure effective execution. Some of these skills require relevant training, practice and expertise. As such they need to be recognized as primary requirements for staff deployment. In liaison with the KWS headquarters, an inventory (or database) that captures awards and certificates given to personnel who have experience in MPA as well as those with exemplary performance will be developed. This will assist in retention of personnel as marine experts.

### **Action 1.7 Promote skills upgrading**

In order to improve staff performance and output, staff training and capacity building at all levels is very vital for institutional strength. In promoting skills upgrading for KMMCA, emphasis will be placed on integrating best practice field knowledge and techniques of management rather than the theoretical knowledge in order to reduce overdependence on external expertise to assist execution of most activities such as those executed by foreign researchers. KMMCA management will liaise and collaborate with institutions such as; Pilipipa, GVI and Bandari College to design short programmes that enhance staff knowledge and skill upgrading. Active engagement with reputable institutions and individuals through MoU's and associations will encourage sharing and best practice dissemination thus enhancing the success of activity implementation.

Additionally, to enhance the staff skills and productivity regular skills upgrading will be promoted. To achieve this, liaison between the area warden and Human Capital in the conservation area (CCA) will be established to provide short courses. The following training courses are of primary importance for all staff: Computer courses, customer care, GIS courses, MIST, life saving techniques, and first aid. Range practices for rangers will be carried out at least thrice in a year. Ranger competitions which used to act as a motivational tool and enhance experience have been forgotten. A structure to link up the marine personnel in such programs as intercompany competitions will be enhanced.

### **Action 1.8 Introduce marine curriculum training at Manyani Field Training school**

KWS provides field training for its entire disciplined staff at the Manyani Field Training School (MFTS). The curriculum at MFTS provides both for paramilitary and biodiversity training, however explicitly there is no provision for training staff on marine issues either during or after posting, despite of marine parks and reserves constituting about 2% of the total coastal strip and area under KWS jurisdiction. Through the office of the CCA, measures will be undertaken to develop a specialized marine training curriculum and programme for trainees. This will be urgently done and integrated with other international marine training and certification programmes and curriculum such as WIOMSA. Specialization of staff will be allowed in the training curriculum to enable new trainees who have identified themselves with marine issues be taught on the same. Additionally, theoretical knowledge visits to the marine parks and reserves will be included as well as

regular experiential dissemination of knowledge to familiarize them with the management style and techniques.

### **Action 1.9 Enhance staff welfare**

For effective and productive workforce, staff welfare is basis to great work performance in any organization. Staff issues of importance which need to be addressed for KMMCA are: prompt payment of salaries and allowances, provision of decent living and working conditions, good schooling facilities for their children, adequate medical attention, sporting and recreation facilities as morale boosters. Currently there is a shortfall of marine patrol uniforms, staff housing and schooling facilities. Additionally, there is urgent need to streamline and enhance efficiency in the payment of salaries and allowances. Delay in the process is known to have created negative perception among staff who feels that their services are not appreciated by KMMCA management.

Procurement of equipment and uniforms is also centralized in KWS as a policy. This centralization has made prompt access to these services and goods challenging and affected productivity. As a result, the management of the coast conservation region will seek to have the process of requisition of these services and goods streamlined from KWS Headquarters to enable timely and efficient disbursement and allocation of the same to staff in need. Further, uniforms for the staff at the coast will be designed and customized to make them more user and climate friendly.

Recently KWS as a strategic objective embarked on development of staff housing in all protected areas across the country. The problem in KMMCA is as acute as other stations and through this action the development of at least a block of staff housing units will be fast tracked. Currently, accommodation is shared by staff especially the lower cadre resulting in congestion and conflict among families. In some instances this scenario leads to bad relations between, staff, their families and social relations affecting productivity.

In order to ensure that children of KMMCA staff receive quality education, KMMCA management will participate in uplifting the education standards at the Shimoni Primary School. Efforts will be made to ensure that the neighboring school has adequate and up-to-date textbooks and any other essential school equipment.

Stressful environments have often been associated with the work place and this is even more evident in KMMCA where staff live and work in the same compound. This kind of work environments affects productivity as they provide no release factor for either building external networks socially. Further, as a mechanism for encouraging staff interaction and relations KWS began sports development as a strategy for enhancing productivity. However, KMMCA lacks good sporting facilities. KWS has recently introduced sports competition between the eight Wildlife Conservation Areas. At the KMMCA level, participation of staff in sports helps to enhance teamwork among staff in addition to relieving stress. In order to promote sports in the KMMCA, and in line with the recommendations in the KWS Park Management Manual, sports clubs will be formed and these will be provided with the required sports equipment. During this plan period the development of good sporting facilities and equipment in KMMCA will be prioritized to improve staff welfare, collaboration and interaction.

### **Action 1.10 Develop staff recognition, reward and appreciation schemes**

Studies have correctly shown that staff who are well appraised and appreciated have enhanced productivity and dedication to work. The work ethic for KMMCA being the biggest revenue earner in the CCA will be improved and maintained during this plan period. Currently KMMCA management has established an awards committee set up to monitor and evaluate the output of the personnel and awards given. In addition, KWS has an internal policy of annually appraising staff for purposes of determining merit and output. The integration of simple mechanism for rewarding and appreciating staff will serve as a morale booster. During this plan period, the management of KMMCA will initiate staff recognition mechanism such as; staff of the month, letters of appreciation and recommendations for exceptional performance at the field station level and copied to the area Assistant Director.

## **Objective 2: Stakeholder collaboration enhanced and strengthened**

Strengthening of stakeholder collaboration is of utmost importance in the attainment of the overall purpose of this management plan. Therefore, liaising with stakeholders such as NGOs, government agencies, CBOs and interested individuals in the implementation of specific programmes is crucial for the management of the protected area, implementation of this management plan and encouraging ownership of the activities. The establishment of strong stakeholder forum that encourages the effective participation of members can ultimately ease decision making, enhance communication and interaction and resolve resource use conflicts.

Potential management areas to be addressed include:-

- Good coordination, collaboration and networking with other stakeholders
- Lack of KWS involvement in licensing by other agencies
- Collaboration between Fisheries Department
- Collaboration between KFS
- Transboundary collaborative issues
- Delineation of KMMCA MPA boundaries

This objective aims to achieve, ensure and strengthen an extensive collaboration between stakeholders who operate within the MPA. This is paramount towards attainment of the overall purpose of the management plan.

### **Action 2.1 Work together to enhance stakeholder engagement in MPA management**

This management plan for KMMCA has been developed through wider stakeholder participation and it is anticipated that its implementation will be done following the same principle. The implementation of the plan will adopt an effective stakeholder engagement processes that will ensure that all stakeholders are engaged and their inputs valued. The aim here will be to identify good practice in stakeholder engagement in conservation planning throughout the plan implementation period. As a result, the management will

ensure that stakeholders are provided with clarity about what is up for negotiation and what they can influence and contribute towards. To realize this KMMCA management will organize a one day seminar to present the contents of this management plan to the stakeholders and where possible, the stakeholders will identify actions or activities that they can support based on their line of specialization. This will be done immediately once the management plan is approved and launched for implementation. It is also during this seminar that the stakeholders will be facilitated to form the proposed Management Advisory Committee for KMMCA under Action 2.1 below.

### **Action 2.2 Increase networking with managers in the region**

The resources within the KMMCA are managed by different stakeholders from different government institutions. However, there is little information exchange in management issues among the stakeholders hence a big challenge in implementation and enforcement of management actions. At the same time, there are a number of overlapping institutional mandates from the different government institutions operating in KMMCA as each one seek to execute their mandate. For example, issuance of licence to conduct fishing in the marine reserve is bestowed under the fisheries Act yet fishing is conducted in the MPA. This becomes hard to regulate fishing especially given the fact that KWS is not involved in the process of issuing the same.

To ensure limited to no conflict amongst different institutions, KMMCA will liaise with other institutions operating in the region to develop and formalize mechanisms or procedures for stakeholder collaboration. This will include new or additional institutional arrangements that are required for management. The proposed Management advisory committee (Action 2.1 below) will be key in ensuring this action is realized and proper working relationship amongst different stakeholders is realized. Regular forums will be held for managers from the different institutions to meet and exchange information on issues concerning their area of interest. Through these forums, the stakeholders will collaboratively develop shared guidelines and seek opportunities for achieving multiple conservation objectives.

### **Action 2.3 Establish KMMCA management advisory committee**

One of the most significant challenges to effective management of the KMMCA that was identified by all stakeholders was the lack of platform for consultations and advises within the KMMCA. This has contributed to weak coordination, lack of synergy in security and management operations, misunderstanding, prolonged conflict, weak KMMCA vision, among others. The development of this management plan has benefited greatly from stakeholder input and contribution. In order to guarantee the successful implementation of the management plan and its associated activities, it is important that all these players are involved in roll out. The urgent formation and establishment of management advisory committee that coordinates and facilitates the correlation amongst the stakeholders will greatly enhance the conservation success in KMMCA as well as other strategic elements in this management plan including; interagency collaboration, communication between the community, park management and other stakeholders. This committee will primarily comprise of (KWS, Fisheries Department, KEMFRI, KFS, Tourism Ministry, Immigrations Ministry, Kenya Police, KMA, Kenya Navy, tourism industry representatives, BMU, Friends of Shimoni Forest, association of charcoal

dealers, Shimoni Slave Caves, Wasini Board Walk, Health Sector, Local Administration, boat operators, NGOs, private researchers and CBOs.

*Responsibilities of the KMMCA Management Advisory Committee will include the following among others;*

- Implementation of the management plan
- Coordination of activities of different operators
- Volunteering information on security issues when they arise
- Development of regulations to ensure the protection of marine ecosystems
- Fundraising for projects
- Water supply development to KMMCA
- Waste management development in the KMMCA
- Resource use conflicts

The committee will develop its own constitution and will be meeting on quarterly basis or whenever there is an emergency. The station Warden will be the chair of the committee. This committee will be established as soon as the management plan is approved and launched for implementation where its interim resources to facilitate its establishment will be accessed from the KMMCA kitty.

#### **Action 2.4 Re-establish the County<sup>2</sup> Wildlife Conflict Resolution Committee**

Re-establishment of the defunct County Wildlife Conflict Resolution Committee will aim at removing ambiguity on KMMCA representation at national and county levels and facilitate potential wildlife management issues in the entire KMMCA. Linkages between KMMCA Management and the county authority that have jurisdiction over parts of the KMMCA will be enhanced for purposes of improving support for KMMCA management activities. It is important that collaboration with county authorities be streamlined and enhanced to help maximize the benefits from the KMMCA to the surrounding areas and county activities, and to help raise and address issues of mutual concern (such as security, community issues, or any proposed developments).

Currently, KWS participates and is a member of various district committees such as the district wildlife compensation committee and district human wildlife conflict committees (to address cases of death and injuries from crocodiles, buffaloes, elephants) chaired by the District Commissioner (DC). This action will ensure that an officer from the KMMCA attends County committee meetings, or that the counterpart at the county headquarters is adequately briefed on KMMCA activities of concern to county committees. The Warden-KMMCA will also at times attend county committee meetings. To note the District Wildlife Conflict Resolution Committee has been dormant and will be revitalised.

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<sup>2</sup> District (new Constitutional administrative terminology)

### **Action 2.5 Liaise with KMA and Fishery Department to inspect sea worthiness of tour boats and fishing vessels**

Marine operations, security and tourism are fundamentally dependant on boats and sea vessels. Maritime Legislation and regulation require that all vessels that venture into the sea have to be declared sea worthy and duly licensed by either the Fisheries Department or Kenya Maritime Authority (KMA) including those that operate in the KMMCA. All boat operators carrying tourist are supposed to be insured, as well as have tourism trading license which is monitored by both KWS and Fisheries Department. KMA gives licenses allowing vessels go into the sea (certificate of sea worthiness and certificate to operate) while Fisheries Department and KMA collaborate in fishing licensing.

The license by the Fisheries Department allows a fisherman to fish anywhere in Kenyan waters except in marine parks. However, most vessels that are owned by individuals are not fully compliant with the law and present a risk at sea. While some vessels have no insurance or use non seaworthy boats both KWS and the Tourism Department are not involved in licensing despite having the capacity to enforce and monitor these vessels. This plan action will encourage enhanced liaison between KMA, Fisheries Department, and KWS in order to encourage consultation between stakeholders during licensing as well as for enforcement and monitoring activities. The Merchant Shipping Act 2009 presently in place will be used to regulate all issues related to licensing.

### **Action 2.6 Conduct joint patrols with Fisheries Department to inspect use of proper gears in the reserve, landing sites and vessels**

Cases of spear gun and dynamite fishing in the reserve and surrounding waters show that there is a need for sustained enforcement measures to reduce and eliminate this illegal activity. The prevalence of this practice is blamed on foreign fishermen and encroachment of territorial waters. Lack of proper fishing gear, lack of resources to facilitate agencies or the Beach Management Units (BMU) in enforcement further contributes to this complexity.

This plan calls for more collaboration in policing and enforcement by agencies and the BMU of fishing grounds, landing sites and vessel condition. More personnel and equipment will be sourced to facilitate inspection of fishermen vessels as well as contribute to organization of joint patrols. The relevant governmental agencies will also be supplementing each other through the laws and regulations available. Through the established structures such as; KMMCA Management Advisory and County Committees, the organization for joint enforcement can be tackled comprehensively.

## **Objective 3: Existing infrastructure improved, maintained and additional structures developed**

An effective set of infrastructure is crucial for the provision of conservation management services and the facilitation and support of tourism activity within the KMMCA. Naturally, marine protected areas have experienced limited resource allocation for infrastructure development when compared to terrestrial parks. However, the converse is true, as they require comparable resources and provision of equipment to operate optimally.

The aim of this objective is to achieve a situation and environment where the aspect of transportation, tourism and office infrastructure and equipment, MPA management facilities, buildings, communication and protected area utilities issues are addressed. This will ensure appropriate operations in the MPA, improvement of the park's infrastructure and support the realization of the overall purpose while ensuring that all levels of infrastructure are available and maintained.

### **Action 3.1 Procure appropriate transport equipments and deploy skilled mechanics**

In order to carry out management activities in the KMMCA effectively, availability of reliable transport is critical. There are only two vehicles and four boats within KMMCA i.e. one land cruiser for PAC purposes and a Nissan double cab for administration purposes. These vehicles and boats require regular servicing to ensure that they are mechanically serviceable. On the other hand, there are only two boats that are in good working condition while the other two are very old and in need of replacement.

This action will therefore ensure that all KMMCA administration sections have transport available at all times to effectively carry out their duties while the repair and serving is conducted regularly and promptly. For effective achievement of the overall purpose for this management plan the following are equipments will be procured during the plan implementation period;

- A boat for education purposes
- A Land Cruiser for PAC and security operations within the entire Msambweni district
- A 25 seater mini bus for welfare and education purpose
- Three motorbike for PAC to access areas that are not accessible by vehicles
- A water boozler to facilitate water supply and
- A dingy for rescue and emergency purposes within the sea

All uneconomical (unseaworthy boats and unroadworthy vehicles) will be sold through boarding as prescribed in the Public Procurement Act and regulations.

Maintenance of vehicles is done at Shimba Hills workshop which is ill equipped and the skilled personnel widely outsourced. This has over the period hampered adequate delivery and functioning of duties at KMMCA. Prompt service of vehicles and boats

preempts lengthy work disruptions and unnecessary loss of working hours. Staff shortage at the mechanical workshop is also contributing to delays in servicing and repair of vehicles. The personnel who are required include the following; wiring technician, automotive electrician, panel beater, welder amongst others. To ease workload at the workshop, the KMMCA management will lobby for deployment of more mechanics at Shimba Hills Workshop.

### **Action 3.2 Liaise with Kenya Rural Roads Board to prioritize tarmacking of Shimoni-Kanana road**

Kisite Mpunguti Marine Park and Reserve has a 15km classified access road number D543 which connects it to the major Mombasa-Tanzania highway. The highway and road are frequently used as access by tourists visiting Shimoni and the marine park where they board boats to visit the marine park and reserve. This road has not been upgraded to bitumen standards and its condition deteriorates during rainy seasons. KWS has been tasked to maintain the road on behalf of KRB once a year.

There are two rainy seasons in a year hence there is need for the road to be repaired at least twice a year, however the limitation of resources and the frequency of usage of the road regularly leads to its deterioration. Since the road is a classified road KMMCA management and its stakeholders will liaise closely with the Kenya Rural Roads Board for purposes of design and construction of the road to bitumen standards during this plan implementation. Subsequently, feeder roads to different tourism facilities such as hotels within Shimoni will be included in the plan for them to be constructed to standard.

### **Action 3.3 Fast track construction the of a new jetty next to KWS Shimoni office**

In Shimoni, there is only one jetty which serves all the KMMCA purposes. It is utilized by tour boat operators for day to day trips to the park. Local tradesman uses the jetty to load their cargo for example goats or chicken, local daily movement between Shimoni and Wasini Island, among others uses. Such mix of activities reduces the aesthetic perception of the area as the activities take place close to the KMMCA's visitor entrance gate. Furthermore, occasional congestion results in 4-5 boats lined up by the steps of the jetty where they interfere with the activities of other jetty users. There is no designated and coordinated mooring system by that jetty which interferes with the navigation and safety around the jetty. In addition, urgent need in constructional repairs raises concerns over safety of visitors and local users. As a result, therefore, another jetty to facilitate tourist activities and ease pressure from the existing one as well as ensure visitor safety will be constructed next to the KWS Shimoni office. In addition, the new jetty will offer mooring services to local and visiting boats and generate additional income for the maintenance of the jetty.

### **Action 3.4 Upgrade the KMMCA office and construct an additional office block**

The buildings in the park headquarters are situated on a 15 ha piece of land. The current office block and utilities are inadequate to serve the current and future requirements as

proposed in this management plan. The currently store is just an office which is inadequate to hold store materials. On the other hand, there is no wetlab in place. The current office block will be upgraded and another office block constructed to host the proposed additional staff, store, wetlab and a library.

### **Action 3.5 Construct a modern visitor information and education center with a conference facility**

The current information centre is small and not ideal to showcase what KMMCA entails. Its capacity is small and not conducive for visitors since the structure is open and is just next to the office block and the car park. On the other hand, the condition of the available conference facility does not meet the required standards. It has a small capacity and can only be utilised during the dry season because the building does not have walls. The roofing is also in a state of disrepair and leaks when it rains. There is a very high demand for an information and education facility in KMMCA given the number of education groups that visit the area.

To ensure that KMMCA meets the needs of its customers and extend education to visitors and schools, a modern visitor information and education centre will be constructed. The proposed development will be implemented together with the proposed student's hostel (see Action 4.4 of the Community Outreach and Education Programme) for accommodating students. Through liaison with the KWS headquarters, the facility will be constructed to handle community outreach and education programmes of KMMCA. At the same time, the conference facility will be developed with a capacity of at least 50 people. It will be a state of the art facility with a library, video, overhead projector, among others. In addition, it will also serve as a conferencing facility given the high demand for conference facilities in the KMMCA. The facility will be equipped with appropriate facilities as stated above and an Environmental Education Officer posted to run it and be offering conservation education talks and showing videos to visiting education groups and other organized groups.

Once constructed, the existing information centre will be upgraded to a staff canteen. Currently, it is equipped with a DSTV where staff congregates to watch the television. Other indoor sporting facilities will be availed in the canteen.

### **Action 3.6 Ensure provision of adequate staff housing infrastructure and their maintenance**

Staff housing continues to hamper efficient park operations both at the KMMCA headquarters and the field outposts. Resources allocated for maintenance are also limited and rehabilitation has not been conducted for a long period. Some of the existing buildings have been condemned by the public works ministry. This has forced some junior staff to share houses, affecting staff morale and productivity. During the plan period, four ranger housing blocks will be constructed and rehabilitation of the dilapidated residential houses will be carried out.

Outposts set up for the management of the MPA, are rundown, some require urgent maintenance for items such as leaking roofs particularly in Lungalunga and Lower Mpunguti. This calls for an overhaul in development of new structures in the outposts

that comply with both the KWS and the Ministry of Works standards. Construction of new houses will be conducted in order to enhance security presence and effective management such as the construction of an observation post/ tower in Lower Mpunguti. A telescope will be setup in the tower to improve visitor security, observe seascape, wildlife and monitor illegal activities such as encroachment and fishing. Rehabilitation of all staff houses will also be a priority item in the long term so as to support optimal staff numbers and strength either at the park headquarters or the field outposts.

### **Action 3.7 Liaise with WRMA to supply water to the MPA park headquarters, Shimoni, Mkwiro and Wasini**

There is a serious water problem in the Shimoni locality. For KWS use, fresh water can be accessed at a borehole in *Pondo Kidimwi* located 13km away from the KWS station. Alternatively, water boozers are used to pump water to overhead tanks and distributed by gravity which is not always sustainable due to the financial strain. Most of the boreholes located in the Shimoni contain semi-saline water and cannot be utilised for daily consumption. Thus, the lack of fresh water creates an unattractive environment to developers and hoteliers. Furthermore, it is also related to the health and safety problems such as cholera outbreaks that are recorded almost every year in Shimoni sub-location.

Presently there is a proposal to be financed from the CDF kitty to bring in fresh water to Shimoni from Kidimwi. Moreover, Ramisi River is just a few kilometres from Shimoni presenting some potential to harness fresh water from the River. In addition, the sustainability of the groundwater points during the dry season is not clear. Thus, the rain water harvesting either through roof or land surface catchments will be encouraged by facilitating means of funding. In liaison with WARMA, a feasibility study will be conducted to ascertain the best option for supplying water to the concerned areas. Provision of fresh water in Shimoni will eventually attract more developers and ease the problem of lack of adequate accommodation facilities in KMMCA. This action will be implemented with full involvement of local communities in liaison with relevant funding bodies and ministries such as Ministry of Water and Irrigation, Ministry of Tourism and Ministry of Health.

### **Action 3.8 Procure appropriate office equipment and furniture**

In order for efficient and effective service provision to be undertaken, office equipment and furniture are required. At present office equipment in the KMMCA are shared between staff while limited office space has meant that no furniture can be provided. Staffs work on shifts in order for them to utilize existing space, equipment and furniture contributing to lower per capita productivity. Optimal staff numbers will indeed require that an assessment of existing and required inventory of equipment and furniture is conducted. In the short term, provision of one laptop and four desktops, and external hard drive for data storage for the researcher and community warden, tourism officer and store will be of priority. Office tables and chairs will be procured to meet the needs of all the staff.

### **Action 3.9 Improve communication within the KMMCA**

Effective communication both within and outside the KMMCA is essential for efficient management, and key to improving KMMCA management's response to urgent issues. The KMMCA office has phone and e-mail facilities, although at present the connection is unreliable. A radio network also serves the entire KMMCA. It is stated in the KWS Park Management Manual that "*wardens should ensure that there is good communication within and outside the park*", and ensure the following are serviceable: Telephone, Computers with Internet connection (for email) and VHF and HF radios.

The main mode of communication is by use of the radio which is used to convey official information within KWS. Through this action and in line with the KWS Park Management Manual, communication will be improved further through; improved internet access and upgrade VHF radio communication as well as fix VHF maritime radios in all boats. According to KMA, it is mandatory for any boat to have a radio. For internet connection the KMMCA will liaise with KWS HQ to implement internet link through the fibre optic cable. This will enhance and facilitate effective communication. The hand held radios are not adequate to facilitate internal communication and more will be availed during the plan period. At the same time, all outposts will be provided with sufficient radios to efficiently carry out their duties and facilitate emergency responses.

### **Action 3.10 Mark MPA boundaries and facilitate acquisition of KWS Shimoni forest title deeds**

Increased encroachment by foreign and artisanal fishermen and land speculators can partly be attributed to unclear and unmarked protected area boundaries. Cases of unscrupulous persons selling the islands within the park and marine reserve have been reported and noted. To reduce these incidences and stem illegal activities in the KMMCA, the KMMCA boundary will be demarcated. The demarcations will clearly mark the boundaries for the protected areas to inform people when they are in the conservation area. Through liaison with KWS headquarters, the KWS all land parcels belonging in KMMCA will be facilitated to acquire title deed.

### **Action 3.11 Facilitate the protection of the Shimoni forest**

Shimoni Forest is listed as number 129 in a list of 160 Key Biodiversity Areas for the East Africa Coastal Forests Eco-region (EACFE) hotspot. Shimoni forest is home to a wide variety of exceptional biodiversity of importance. Most notable of these are primates such as the Angolan Black and White Colobus monkey (*Collobus angolensis palliatus*) which is a charismatic flagship species for Shimoni Forest, birds such as the Spotted ground thrush (*Zoothera guttata fischeri*) which is categorized as critically endangered by the IUCN and the Fischer's Turaco (*Tauraco fischeri*), among other species of flora and fauna. At the same time, Shimoni forest is culturally important as it is to date used as a Kaya by some of the local residents as well as a source of medicinal herbs.

Despite its enormous ecological, social, cultural and economic benefit it possesses, the Shimoni forest is being lost at an alarming rate to deforestation. The principal threats to the survival of Shimoni forest and biodiversity conservation include charcoal burning, commercial timber cutting, poaching of wildlife, poorly regulated allocation of land to private landowners, private and commercial development and slash-and-burn clearance for agriculture. As such and for the benefit of the present and future generation, urgent measures are required to prevent the wanton destruction and start reforestation programmes.

Currently, the Friends of Shimoni Forest Group is foreseeing its management and trying to prevent further destruction despite lacking legal instruments to do this. As a result and in corroboration with other stakeholders such as the Kenya Forest Service, efforts will be made to initiate the process of gazetting the forest to promote it to a protected area status. However, since the process of gazetting the forest can take long, KMMCA will work closely with Friends of Shimoni Forest to reduce further destruction by organizing joint patrols and assisting in apprehending those caught conducting illegal activities.

### **Action 3.12 Develop and implement mooring buoys programme**

Environmentally safe mooring buoys have been shown to be an effective management tool when used to minimize damage to coral reef and other sensitive marine habitats due to the careless and inappropriate anchoring practices. In addition to minimizing anchor damage, the mooring buoy programme will also help to identify areas for certain activities. Moreover the programme will include the maintenance of the buoys and the markers, where cases of vandalism occur. The programme will also facilitate the deployment of an appropriate number of buoys including specially marked (colour-coded) buoys to identify: general mooring areas, research mooring areas, recreational diving/snorkeling areas, fishing areas. This measure of setting up additional mooring in certain areas will help relieve pressure and destruction of coral beds. Thus, the following activities will be undertaken:

- Identify areas that require mooring buoys within KMMCA
- Develop buoy maintenance programme
- Provide and disseminate clear information on the coding of the buoys and the zonation.

### **Action 3.13 Develop and implement strategy to reduce the environmental impact of domestic litter and marine debris**

Litter from many sources is the problem throughout the KMMCA, in particular close to the water, beach, and locations of attraction to visitors. The environmental impact of litter can be considerable not only in terms of aesthetic impact but also a threat to wildlife. Discarded cans and bottles can trap voles and shrews whilst many plastic are harmful when ingested. Marine debris such as fishing lines, netting, and plastic are of particular hazard to dolphins and turtles. Thus the following activities will be encouraged and supported for an easier implementation:

- Organize regular litter –picking campaigns and encourage local voluntary groups (e.g. schools, tourism operators, local businesses, conservation groups etc.) to adopt parts of Shimoni and other populated places.
- Establish and promote a comprehensive education programme and target schools for practical reduction of solid waste in the KMMCA area.
- Encourage a biodegradable domestic and trade waste to recycle by the way of composting and worm farming.
- Conduct litter surveys in particular in tourist areas to determine whether education and awareness programmes or other controls have led to reduction of litter.
- Increase the number of waste disposal facilities e.g. rubbish bins
- Investigate possibility of building incinerator in Shimoni- as a way to recycle solid waste into building materials. The CBO in Jomvu Jitoni, Changamwe has successfully started and already working on similar project. Thus, the experience can be shared and adapted for Shimoni.
- Develop linkages with stakeholders in the area for partnership.

## Objective 4: Resource mobilization enhanced for effective management

Resource mobilization is a key enabler in the execution of envisaged activities and the realization of the conservation mandate. Adequate allocation of resources is crucial towards ensuring successful implementation of this management plan. This plan sets out the future desired state of KMMCA where resources required for effective management of the area are available, all revenue due to KWS is collected, expenditure is controlled and adheres to approved work plans, the procurement of goods and services is expedited, and supplementary funding is solicited from funding agencies to support conservation projects in the KMMCA. Thus confidence of development partners and donors is expected to remain unshaken through having accountable and transparent systems of management.

This objective therefore addresses issues concerning revenue and expenditure improvement. Furthermore, it seeks other sources of funds to support implementation of activities in this management plan.

### Action 4.1 Adopt and adapt to the new revenue collection system in liaison with HQ

Revenue collection irregularities are reported in different MPAs, this is more prevalent in paper ticket parks relative to areas that use modern revenue collection techniques such as the Smart Card system. The Smart Card system is an electronic mechanism for revenue collection using an IT interface/ platform. The system does not allow for the physical collection of revenue from visitors and revenue is handled virtually. Revenue for KMMCA is collected by use of paper receipts which are issued from the HQs; this is a slow cumbersome process that causes accounting challenges and results in long delays to visitors at points of entry into conservation areas. Handling revenue also increases the risk of pilferage and loss due to mishandling. This plan advocates for the adoption of the

conversion of KMMCA into a smart card system of revenue collection including; the introduction of customer care staff to manage the system and improve visitor handling. In the KMMCA revenue is collected by ranger staffs that are not well trained in revenue collection and management or customer care. As a result, customer care personnel will be deployed as appropriate to replace the rangers so that they can perform other duties. In order to reduce risk of loss of revenue by KWS in KMMCA, the deployment of Ticket Inspection (TIU) personnel will as well be done. Currently, ticket inspection activities taking place in the MPA is done by rangers.

#### **Action 4.1 Adopt and adapt to the new revenue collection system in liaison with HQ**

To ensure that the KMMCA management plan is implemented, all subsequent annual work plans and budgets will be based on the prescribed management actions and activities outlined in this management plan. KMMCA management will in addition liaise with KWS Corporate Planning Section for timely disbursement of funds and in monitoring plan implementation. Further to this, implementation of the Plan will be one of the key factors to be considered while assessing staff performance at the KMMCA. According to the general situation on the ground budgetary allocation is seen as inadequate, hence, it needs to be increased to relate with the implementation of the overall purpose of this plan. Moreover, there is need for the corporate department to consider the opinion of the field station personnel who understand the magnitude of work involved.

#### **Action 4.3 Link with corporate communication and tourism marketing office to extend awareness to internal customers**

The KWS strategic Plan 2008-2012 being implemented through the balanced scorecard approach advocates for robust communication among internal customers. Previous plans were not widely published internally. This meant that most activities were little known by sister departments while activity execution lacked coherency and synergy. This exposed activity execution to the risk of discontinuation in the long term. Through this action, a system will be developed to ensure that the best revenue collecting station is recognized and marketed more as well as rewarded to tap optimal capacity. This will be coupled with the appreciation of staff operating in the area so as to uplift their morale.

#### **Action 4.4 Prepare viable proposals for soliciting funding**

Stations are currently allowed to source for their own funding through the projects section to enhance the development of the respective station. Developing viable proposals is one way of fund-raising for projects. This aims to enhance financial sustainability as one of the perspectives in this plan. It is therefore crucial to identify alternative sources for external funding, mode of approach and execution. This plan will be the primary resource mobilization instrument for the KMMCA as it outlines the priorities that need to be addressed in the immediate, medium and long term.

#### **Action 4.5 Initiate the establishment and formation of friends of KMMCA forum**

Establishment of a forum that brings together supporters and friends of Kisite Mpunguti can improve the perception of ownership and decision making in the KMMCA. Development can be enhanced through the participation of external institutions and persons with interests on the area. This will compliment management efforts and assist in resource mobilization while subsidizing available funds that facilitate the management of the area. KMMCA currently boasts of linkages with stakeholders and other international organizations with interest in the area such as Eden trust. As a result, the KMMCA will be selling the idea of establishing the forum using opportunistic means such as through stakeholder meetings, barazas as well as posting a link in KWS website to promote the same.

### **Objective 5: Security operations strengthened and improved**

Security is crucial for safety of the marine resources and visitors in KMMCA. It is therefore important to ensure that supportive resources are provided to help counter security threats. These resources include vehicles, firearms, and other equipment necessary for security operations. On visitor security, although there has not been a serious breach within KMMCA, there are a number of minor incidences that make visitor security an important facet of management. Incidences and cases of visitor harassment have become increasingly rampant at points of entry i.e the jetty, overcrowding has been reported and an unregulated hawking of curio which results in various operators scramble for the attention of tourists. Unless visitor security is guaranteed, tourism investment within the area will be severely affected. A number of proactive measures need to be taken which include liaising with all security agencies to ensure that law and order is maintained.

This objective therefore aims to make certain that the safety of the KMMCA's natural resources, staff, visitors and assets is ensured, through the delivery of efficient, effective and adequate security services. The focus of the objective is to ensure that the security department of KMMCA is well equipped for law enforcement for the MPA and the KMMCA as well as enhance collaboration with other relevant security agencies. In order to achieve this aim, the following actions have been developed that mainly focus on: developing standards for handling visitors by different groups operating in the KMMCA, creating visitor awareness on park rules and regulations, mapping out poaching hotspot areas, providing adequate security equipments, collaborating with the police and the judiciary in enhancing prosecution of cases, conducting joint or complementary security operations. These are elaborated in the following section.

#### **Action 5.1 Develop local visitor handling standards for tour operators and enhance security enforcement**

An effective and reliable linkage between the different players in the tourism industry and KMMCA management is crucial for the maintenance of a high state of security and

visitor management standards throughout the area. Key players need to be identified i.e. boat owners currently sixteen (16) and boat operators (whose numbers fluctuate) to allow easier interaction and assistance from security agencies. A code of conduct/protocol suited for each group will be developed in the KMMCA for purposes of regulating the local industry. To avoid incidences of non members breaching the protocol, identification and possible registration of players will be conducted. Instruments for self regulation such as provision of; identification tags will be developed and implemented for an easier management. The current trouble in the management of visitor safety stems from disorganization within these different groupings. Following formation of these groups training and capacity building will be conducted for them to improve standards and define mode of collaboration with security agencies.

### **Action 5.2 Create visitor awareness on existing park regulations and rules**

There are wide range of policies, guideline, rules and regulations that govern the KMMCA management activities. A number of new rules may be developed to cover certain issues specific to visitors, protocols for independent scientific researchers' etc. At present the existing rules and regulations are not currently well documented in a single pamphlet or contextualized to fit KMMCA especially with regard to broader national level regulations and guidelines.

As a result, posters and booklets highlighting park regulations and code of conduct as well as maps will be made available for every boat showing the zonation and areas of the diverse interest as a reference guide for both managers and the users of the area. The current code of conduct explains to visitors how to behave around marine ecosystem and marine life such as the dolphins, coral reefs, etc. However, the regulations are old and will be reviewed to improve them and make them more efficient and practical (see Action 5.3 below). The materials to be developed will emphasize on the need for compliance by players to existing rules and regulations especially with regard to crew training, navigation, physical, life saving techniques, basic fire fighting and safety regulations. Other aspects that require to be highlighted are; regulations on visitor handling and park rules and regulations. This will encourage the different operators to police themselves and enforce the rules and regulations.

### **Action 5.3 Review and update the current code of conduct**

Both historical and current code of conduct has a significant impact on the health of the ecological systems and its flora and fauna. Finding a balance between protecting and preserving ecological resources for future use, as well as conserving sources of livelihoods is critical to the success of KMMCA. The existing code of conduct needs to be reviewed and updated to include the sustainable use levels of different resources and low impact activities. This will minimize damage or overuse as well as minimise the conflict of resource interests and human wildlife conflicts. The code of conduct will be a baseline document for reference and adherence. Stakeholders will be aware of the do's and don'ts and of their respective roles in assisting KWS with protection of resources.

#### **Action 5.4 Identify and map out poaching hotspot areas in collaboration with stakeholders**

KMMCA is a refuge to some of the rare, endemic, vulnerable, threatened and endangered species of wildlife such as hawksbills and green turtles, whale shark, the spotted ground thrush and Hildegard's Tomb Bat (*Taphozous hildegardeae*) among others. Poaching of wild animals, is increasingly becoming rampant and commercial in many parts of KMMCA especially in terrestrial areas of the entire Msambweni district, thus seriously impacting on a number of wildlife species. Majority of de-snaring activities in and around Shimoni forest have taken place indicating the pervasiveness of the situation. Poaching, if uncontrolled could lead to extinction of the rare and endangered species. Consequently, KMMCA will strengthen its response to poaching problems in collaboration with stakeholders by establishing security intelligence, remote surveillance systems, poaching (de-snaring) teams that will complement and support one another. This will involve a lot of information gathering, community policing, reward and attitude change among the members of the community. Additionally, poaching hotspots will be clearly identified and mapped out to guide the security operations.

#### **Action 5.5 Provide appropriate equipment to security personnel**

Currently, KMMCA security staff lack essential field equipment which include binoculars, night vision goggles, marine torches, first aid kits, diving kits, GPS (water proof) as well as firearms especially the automatic weapon AK 101. As indicated in Action 3.6 of this programme, existing outposts will be upgraded to enhance patrols in the district. Each outpost will be assigned a patrol area and it will be optimally staffed and provided with basic equipment such as binoculars, GPS and where necessary, a vehicle, to facilitate ground patrols. This will enhance their day to day and night activities.

Consequently, security patrol equipment will be evaluated and additional equipments purchased regularly. Currently field teams have no tents, their sleeping bags need replacement, their uniform and kits need more water bottles, uniforms, boots and more sophisticated equipment such as digital cameras that can be used in marine environments (water proof), night vision goggles to facilitate night patrols in the ocean, rucksacks (44bag), computers and Dictaphones. All these equipments will be prioritised for procurement and regularly replaced as appropriate. Additional transportation equipment, specific equipment to enable rangers to remain on patrols for longer or to enhance the effectiveness of nocturnal operations, and/or equipment needed to strengthen communications between patrol, bases and HQs will be availed.

#### **Action 5.6 Collaborate with police and judiciary in enhancing prosecution of wildlife offences**

KMMCA management expends considerable financial and human resources in an effort to curb illegal activities taking place within the area. When arrests are made they often do not lead to conviction of perpetrators, or result in low penalties accorded upon the convicted. This does not act as sufficient deterrent to perpetrators of wildlife crime. The apparent low success can be attributed on failures from the KWS management, judiciary, political interference and even the local community. Poor drafting of charge

sheet by KWS staff has occasionally led to dismissal of cases on the grounds of improper charges.

Lack of awareness amongst the magistrates on the impacts of wildlife offences on wildlife populations also leads to dismissal of cases, or minimal penalties. There is therefore need for KMMCA management to step up its collaboration with the police and judiciary to improve prosecution rates and awareness created on the impacts of wildlife offences to the population. Training of KMMCA rangers on court procedures and the preparation of effective charge sheets needs to be prioritized while working with the local police to streamline the arrest and prosecution process. KWS staff should also be trained on drafting of charge sheets and court procedures. Under this action security rangers will be trained in the arrest and prosecution process. The training will include drafting effective charge sheets that can sustain a case in court, and handling and producing evidence in court. This training will be offered through rangers' workshops with resource persons drawn from the Kenya Police Force and KWS Headquarters Security Division. This action is expected to increase the number of successful prosecutions and deter repeat offenders.

#### **Action 5.7 Conduct joint or complimentary enforcement activities**

To cut back on cost and ensure adequate surveillance, joint patrols (involving all relevant stakeholders) can be conducted regularly. Joint patrols will complement the lack of/or limited capacity among enforcement officers from different institutions. Government agencies that participate in enforcement activities include the fisheries department, the Maritime police, customs police and the KWS. All these are governed by their respective legislations to conduct their duties. Further regular consultative meetings between enforcement personnel and MPA management will assist in reviewing enforcement approaches with intent to improve them in line with changing fisheries crime dynamics.

Apart from government institutions operating in the area, there are other organized groups and NGOs that participate in enforcement activities. Some of these groups include the BMUs and the Turtle Watch Group. For example, the turtle conservation group are engaged in protecting the endangered sea turtle in collaboration with KWS and fisheries department. As a result, regular joint operations will be organized especially in areas where good relationship already exists between KWS and the local community. This will also improve relations and linkages with various stakeholders. In this regard KMMCA management will be holding periodic barazas/forums within the local communities with the aim of raising awareness and gathering intelligence on poaching techniques and approaches that are dynamic. In addition local administration and community leaders will also be incorporated in any of these operations.

## Three Year Activity Plan 2011 – 2012

The following pages set out the first 3-Year Activity Plan for the MPA Operations and Security Management Programme. The activity plan details the activities, responsibilities, timeframe and extraordinary resource requirements necessary for the delivery of each management action over the first 3-year timeframe of this management plan. In addition, that plan sets out specific and timebound “milestones” that KMMCA management aims to achieve in implementing the plan.

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: Skilled and motivated personnel appropriately deployed														
Action 1.1 Lobby for the deployment of appropriate staff not represented in the management structure														
1.1.1 Liaise with the Regional office for deployment of appropriate staff – Education officer - Procurement - Stores - Research Assistant - Tourism Officer - Accountant Assistant - At least 10 rangers - 1 Coxswain - 2 Drivers	Warden KMMCA, AD-CCA, H-Resource CCA													Three request for appropriate staffing levels made on annual basis  At least 4 additional staff deployed per year
1.1.2 Request for confirmation of existing temporally employees – Drivers, Coxswain, Procurement/Stores officer														
1.1.3 Request for additional temporary staff to cover the deficit prior to appointment of permanent staff														
1.1.4 Outsource services of qualified personnel whenever necessary to supplement urgent cases														
Action 1.2 Develop initiatives that will enable effective management of Diani Chale Marine National Reserve														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.2.1 Formulate a taskforce that includes a wide stakeholder representation	Warden KMMCA, AD-CCA, H-Resource CCA													Task force established by July 2013
1.2.2 Develop ToRs for the taskforce														
1.2.3 Conduct a stakeholder analysis for Diani Chale														Needs assessment report in place by June 2013
1.2.4 Conduct a community and other stakeholders need assessment over Diani Chale														
1.2.5 Establish mechanisms for co-management of the reserve with the community														
Action 1.3 Accord appropriate recognition for marine parks as unique and important protected areas														Two staff trainings conducted bi-annually,  Marine equipments procured by June 2014
1.3.1 Lobby for establishment of a marine department at the corporate level	Warden KMMCA, AD-CCA, H-Resource CCA, Staff Officer quarter master (SOQ), SRS													
1.3.2 Provide adequate uniforms and equipments for marine personnel as per the Armed wing standing orders - Swimming gears - Diving gears (flippers, snorkels, Dive tanks, Masks, Buoyancy Controlled Device (BCD), wet suits, Sinkers, Diving weight, dive knife, dive touches - Clothing (uniform) - Life saving equipments														
1.3.3 Lobby for KMMCA to be upgraded to a Senior Wardens' management level														
1.3.4 Provide appropriate training for marine personnel														
1.3.5 Liaise with AD-CCA to ensure all transfers are accompanied by appropriate replacements														
Action 1.4 Mainstream Marine Staff Competency Certification Schemes and have a database incorporated in KWS Human Capital Section														
1.4.1 Develop a plan for competency certification of marine staff	Warden KMMCA, AD-													

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.4.2 Network with international certifying bodies such as WIOMSA	CCA, H-Resource CCA, SRS													
1.4.3 Develop a database for marine competencies at area level and Human Capital in HQs														
Objective 2: Stakeholder collaboration enhanced and strengthened														
Action 2.1 Work together to enhance stakeholder engagement in MPA management														
Action 2.2 Increase networking with managers in the region														
Action 2.3 Establish KMMCA management advisory committee														
Action 2.4 Re-establish the County Wildlife Conflict Resolution Committee														
Action 2.5 Liaise with KMA and Fishery Department to inspect sea worthiness of tour boats and fishing vessels														
Action 2.6 Conduct joint patrols with Fisheries Department to inspect use of proper gears in the reserve, landing sites and vessels														
Objective 3: Existing infrastructure improved, maintained and additional structures developed														
Action 3.1 Action 3.1 Procure appropriate transport equipments and deploy skilled mechanics														
3.1.1 Procure transport equipment - Water bowser, Land cruiser (PAC and security Ops), two Motor bikes (PAC Ramisi sugar plantations), Two boats (education capacity 15, security patrol) one rubberduck/dingyi, 14 seater Van – education and admin	KMMCA Warden,KWS Fleet manager, AD-CCA													Appropriate acquired by 2014
3.1.2 Liaise with KWs human capital department to have mechanics deployed to the area														
Action 3.2 Liaise with Kenya Rural Roads Board to prioritize tarmacking of Shimoni-Kanana road														
3.2.1 Profile the importance of the Shimoni Kanana road														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.2.2 Liaise with KWS H-Corporate service division for prioritization of the road														
3.2.3 Work closely with local leaders to mobilize														
3.2.4 Lobby jointly with KeRRA for prioritization of tarmacking														
Action 3.3 Fast track construction the of a new jetty next to KWS Shimoni office														
3.3.1 Hold consultation meetings with key stakeholders i.e. Kenya Maritime Authority, NEMA, local county council, Fisheries etc														
3.3.2 Carry out an EIA														
3.3.3 Design and prepare Bills of Quantity and tender documents for the construction														
Action 3.4 Upgrade the KMMCA office and construct an additional office block														
3.4.1 Design and prepare Bills of Quantity and tender documents for the construction of: - office block complete with an office store - library - Visitor information centre - Lungalunga and Msambweni outposts -Mpunguti base -Staff houses														
3.4.2 Request for deployment of a Civil and building maintenance officer														
3.4.3 Ascertain plot ownership in Lungalunga and Msambweni														
Action 3.5 Construct a modern visitor information and education center with a conference facility														
Action 3.6 Ensure provision of adequate staff housing infrastructure and their maintenance														

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 3.7 Liaise with WRMA to supply water to the MPA park headquarters, Shimoni, Mkwiro and Wasini														
Action 3.8 Procure appropriate office equipment and furniture														
3.8.1 Conduct an inventory of office equipments														
3.8.2 Procure equipments and furniture based on priority														
3.8.3 Maintain the office equipments on regular basis														
Action 3.9 Improve communication within the KMMCA														
3.9.1 Implement internet link through the fiber optic cable to enhance communication														
3.9.2 Provide and service mobile telephones to marine operation staffs														
3.9.3 Upgrade VHF radio facilities to digital system														
3.9.4 Establish communication links with other relevant government agencies														
Action 3.10 Mark MPA boundaries and facilitate acquisition of KWS Shimoni forest title deeds														
3.10.1 Procure necessary marine equipments for boundary markings: <ul style="list-style-type: none"><li>• Buoys</li><li>• Stainless chains</li><li>• Under water stainless steel pins</li><li>• Shackles</li></ul>														
3.10.2 Train rangers on mooring installation														
3.10.3 Fast track acquisition of Shimoni forest Title Deed and all other KWS properties														
3.10.4 Instal boundary markers and mooring buoys														
Action 3.11 Facilitate the protection of the Shimoni forest														

Management Action and Activities	Persons responsible	Timeframe												Milestones	
		FY 2011-12				FY 2012-13				FY 2013-14					
		1	2	3	4	1	2	3	4	1	2	3	4		
Action 3.12 Develop and implement mooring buoys programme															
3.12.1 Develop standards for installation and maintenance															
3. 12.2 Geo reference location of moorings															
3.12.3 Design and display signage indicating appropriate anchoring practices at strategic points and on vessels															
3.12.4 Train boat operators on the use of moorings															
Action 3.13 Develop and implement strategy to reduce the environmental impact of domestic litter and marine debris															
3.13.1 Conduct a study on the sources of litter and debris within MPA and environ and its management strategy															
3.13.2 Team up with public health and other relevant institutions and stakeholders to formulate the strategy															
3.13.3 Implement the strategy															
Objective 4: Resource mobilization enhanced for effective management															
Action 4.1 Adopt and adapt to the new revenue collection system in liaison with HQ															
Action 4.2 Prepare KMMCA three year rolling annual work plan as specified in the Management Plan															
Action 4.3 Link with corporate communication and tourism marketing office to extend awareness to internal customers															
Action 4.4 Prepare viable proposals for soliciting funding															
Action 4.5 Initiate the establishment and formation of friends of KMMCA forum															
Objective 5: Security operations strengthened and improved															
Action 5.1 Develop local visitor handling standards for tour operators and enhance security enforcement															

Management Action and Activities	Persons responsible	Timeframe												Milestones
		FY 2011-12				FY 2012-13				FY 2013-14				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 5.2 Create visitor awareness on existing park regulations and rules														
Action 5.3 Review and update the current code of conduct														
Action 5.4 Identify and map out poaching hotspot areas in collaboration with stakeholders														
Action 5.5 Provide appropriate equipment to security personnel														
Action 5.6 Collaborate with police and judiciary in enhancing prosecution of wildlife offences														
Action 5.7 Conduct joint or complimentary enforcement activities														