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SHIMBA HILLS ECOSYSTEM MANAGEMENT PLAN

2023 - 2033





Shimba Hills Ecosystem Managment Plan 2023-2033



Planning Carried out by
Shimba Hills Ecosystem Stakeholders

APPROVAL PAGE

Shimba Hills Ecosystem Management Plan 2023-2033

The Shimba Hills Ecosystem Management Plan (2023-2033) is hereby approved for implementation.

On behalf of the
KENYA FOREST SERVICE



A.L. Lemarkoko, EBS, 'ndc' (K)
Chief Conservator of Forests

KENYA FOREST SERVICE

Date: 24/05/2024

APPROVAL PAGE

Shimba Hills Ecosystem Management Plan 2023-2033

The Board of Trustees and the management of Kenya Wildlife Service have approved the Shimba Hills Ecosystem Management Plan (2023-2033) for implementation.

On behalf of the

KENYA WILDLIFE SERVICE



Dr. Erustus Kanga, HSC
Director General

KENYA WILDLIFE SERVICE

Date: 28/05/2024

ACKNOWLEDGEMENT

The Shimba Hills Ecosystem Management Plan (SHEMP) preparation was a result of concerted efforts from a wide range of individuals, groups, institutions and stakeholders.

Special recognition goes to the Chief Conservator of Forests, Kenya Forest Service Mr Julius Kamau, EBS (former) and Mr. A.L. Lemarkoko, EBS, 'ndc' (K) (current) for bringing in an invaluable team of experts from the Kenya Forest Service (KFS) headquarters who provided the technical advice needed to develop the SHEMP. We are indebted to; the Forest Management Planning office led by Dr. Elizabeth Wambugu (Head of Forest Management Planning), Mr John Rono and Ms Nancy Karugi (Management Plans Officers); the field Officers led by Mr. George Wara and Blessington Maghanga (former and current Kwale County Forest Conservators respectively) and Mr. Edwin Misachi (Kwale Forest Station Manager). We recognize the support and contribution from the former Regional Forest Conservator-Coast, Mr. Andrew Soi and Regional Forest Conservator Ms Nafasi Mfahaya.

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The County Government of Kwale provided relevant information from the County. We therefore would pass our gratitude to Dr. Joseph Indo (Director of Natural Resources and Climate Change) for the invaluable contribution and being part of the Core Planning Team (CPT) and availing information relating to county planning, natural resource management and community conservation enterprises.

Kenya Water Towers Agency contributed to the development of this plan through the CPT, as well as providing recent research data and reports such as the Total Economic Valuation of the Shimba Hills Ecosystem that informed the plan. Special mention goes to Regional Coordinators M/s Florence Mwachoki (former) and Mr. Cornel Omondi (current) for being part of the CPT and providing information related to integrated water resource management for inclusion in the plan.

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A big thank you goes to the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), which funds the project "Public-Private-People Partnerships to Protect the Biodiversity of Endangered Kenyan Coastal Forests in the context of Large Investment Projects" implemented by WWF under the International Climate Initiative (IKI), which also financially supported the preparation of the present management plan.

We are greatly indebted to every stakeholder who participated in the development of this plan. Indeed, the successful completion of the Plan could not have been possible without your efforts and commitment.

FOREWORD FROM WWF-KENYA

The Shimba Hills Ecosystem (SHE) is one of the remaining coastal forests in Eastern Africa hosting species of plants and animals of high biodiversity value. In addition to hosting biodiversity, the ecosystem is a tourist attraction, making it important to the economy of the neighbouring community and residents of Kwale. The ecosystem, however, faces many threats, including the dependence of households and industry on fuelwood, construction materials, and agricultural expansion as well as other goods and services due to population increase. This has accelerated the degradation of natural resources including soils in recent years. This Plan secures the ecological components and processes of the SHE by restoring and conserving it for the benefit of nature and the people of Kwale County.

The preparation of the management plan was supported under the *Public-Private-People Partnerships Project to Protect the Biodiversity of Endangered Kenyan Coastal Forests in the Context of Large Investment* Project. The project is a technical cooperation between WWF and the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV). The overall goal of the project is to promote sustainable forest management (SFM) activities in Kwale towards achieving the requisite forest cover of 10%. The overall project purpose is to develop and strengthen capacities at the County level in SFM activities. The project partnered with forest adjacent communities through SHICOFA, KFS, KWS, MES, County Government of Kwale, and the Kenya Water Towers Agency in the development of Shimba Hills Ecosystem Management Plan (SHEMP) to enhance sustainable forest practices.

The Shimba Hills Ecosystem Management Plan will guide the development and sustainable management, including conservation and rational utilization of the forest, wildlife and allied resources for socio-economic development. At present, only 5% of Kwale County is covered by forests making the Shimba Hills Ecosystem Management Plan critical in providing directions to restore the forest cover for the benefit of the larger Kwale.

WWF-Kenya thus commits to support the implementation of the management plan and urges all other stakeholders to support the KFS, KWS and the forest adjacent community members in the implementation of this management plan, as it addresses key environmental and livelihood challenges in Kwale, as well as contributing to the national development agenda.

Mohamed Awer

Chief Executive Officer

WWF-Kenya

MESSAGE FROM KENYA FOREST SERVICE

Shimba Hills Ecosystem (SHE) comprises the gazetted Shimba Hills Forest Reserve, National Reserve, Mwaluganje Elephant Corridor and adjacent farmlands. Ecologically, it has diverse flora and fauna, which support the provision of ecosystem services that include provisioning, regulating, cultural and supporting services. The services include carbon sequestration, regulation of the flow of several rivers that drain into the Indian Ocean, decomposition, nutrient cycling and provision for wildlife habitats. In terms of economics, SHE provides diverse goods to the adjacent communities such as fuelwood, withies, herbs, grass, mushrooms, and construction materials as well as being a habitat for wildlife.

The ecosystem is an important asset not only to the local community but also to the County and National Governments. However, there are several challenges facing the ecosystem such as illegal harvesting of forest products, poaching of animals, land degradation, forest fires and lack of a framework that guides the management of the community forest. The above critical issues prompted stakeholders, through the support of WWF-Kenya, to prepare an integrated Shimba Hills Ecosystem Management Plan (SHEMP). The stakeholders included KFS, KWS, Kenya Water Towers Agency (KWTA), Kwale County Government, Mwaluganje Elephant Sanctuary and the local community through SHICOFA. The plan was prepared in line with various legislations such as the Forest Conservation and Management Act, 2016 and Wildlife Conservation and Management Act, 2013.

Shimba Hills Ecosystem Management Plan is a management tool to enable the stakeholders to work together and support the communities that directly rely on forest resources for livelihoods in Shimba Hills. The plan's design accommodates the community in the light of seven management programmes namely Forest Conservation, Wildlife, Tourism Development, Community Partnership and Development, Protected Area Operations and Security, and Research and Education. These programmes, if implemented well, will maintain viable populations of the ecosystem, provide ecosystem representation, and protect the evolutionary potential of species and the environment.

The target of stakeholders is to ensure that the Shimba Hills Ecosystem is managed on a sustained yield basis and this is why they developed a management plan with guidelines, principles and strategies that would enhance sustainable management for the Shimba Hills Ecosystem.

A.L. Lemarkoko, EBS, 'ndc' (K)

Chief Conservator of Forests

KENYA FOREST SERVICE

MESSAGE FROM KENYA WILDLIFE SERVICE

Since its establishment in 1989, Kenya Wildlife Service is committed to sustainable protection and conservation of wildlife resources. To succeed in this endeavour, the ecological integrity of wildlife habitats, including national parks and reserves and the wider ecosystems in which they exist must remain healthy and whole. The Organization is thus committed to the formulation of ecosystem management plans.

Shimba Hills Ecosystem (SHE) comprises important conservation areas, namely the Shimba Hills Forest and National Reserve, Mwaluganje Elephant Sanctuary, Mwaluganje Forest Reserve, Mkongani North Forest Reserve and Mkongani West Forest Reserve.

This ecosystem is a biodiversity hotspot area that hosts diverse species of fauna and flora of which the Sable antelope found in Shimba Hills Forest and National Reserve is an endemic and flagship species, while the elephant that is an endangered species is one of the popular mammal species.

Despite the important contribution Shimba Hills Ecosystem plays to the economy of Kenya, it faces a myriad of challenges including poaching, illegal logging and charcoal production, loss of wildlife corridors due to land use change, wildfires and human-wildlife conflicts.

In order to address these challenges, Kenya Wildlife Service in collaboration with other stakeholders committed to the development of the SHE Management Plan and will support the plan implementation for the next 10 years. This plan is expected to lay a firm foundation for the sustainable management of biodiversity in SHE.

This ecosystem management plan is the culmination of four years of earnest labour and dedicated efforts by SHE stakeholders. We acknowledge with gratitude the stakeholders for the resources dedicated to this course. Special mention goes to our conservation Partner WWF for funding the entire planning process.

Dr. Erustus Kanga, HSC

Director General

Kenya Wildlife Service

MESSAGE FROM KENYA WATER TOWERS AGENCY

Shimba Hills Ecosystem is one of the 18 gazetted Water Towers in the country and a key East African biodiversity hotspot along the south coast of Kenya. The ecosystem is a major catchment of several rivers and springs which are a source of water for the people of Kwale County and beyond. Four permanent rivers flow from this ecosystem and include Marere, Mwachema, Mkurumudzi and Pemba. Over 40 springs occur in this ecosystem, chief among them being Marere Spring, which is a major source of water for Kwale and Mombasa towns.

The Agency recognizes that besides being a Water Tower, Shimba Hills Ecosystem is important in the following aspects. The ecosystem is one of the world's 25 biodiversity hotspots with more than 50% of the 159 rare plants in Kenya, including several endangered species of cycad and orchids. The ecosystem is also a nationally important site for birds and butterflies and hosts Kenya's only population of the Sable antelope. As a cultural hotspot, the ecosystem hosts traditional Kaya Forests such as Kwale and Longomwagandi with a spiritual and ceremonial significance to the Mijikenda people of the Kenyan coast. Additionally, Shimba Hills Ecosystem is surrounded by farming communities and as such, its forest resources face tremendous anthropogenic stress including wood extraction, harvesting of edible and medicinal plants and encroachment by human settlements. It is therefore of utmost importance to manage the ecosystem sustainably and restore degraded areas for posterity.

Lastly, the Agency has collaborated with forest-adjacent communities through Shimba Hills Community Forest Association, Kenya Forest Service, Kenya Wildlife Service, County Government of Kwale, World Wide Fund for Nature (WWF) and other stakeholders in the development of Shimba Hills Ecosystem Management Plan (2023-2033). The plan will guide the conservation and management interventions and ensure the sustainable management of the Water Tower for the benefit of the current and future generations.

Prof. Julius G. Tanui, PhD, EBS

Chief Executive Officer

Kenya Water Towers Agency

MESSAGE FROM COUNTY GOVERNMENT OF KWALE

Kwale County is endowed with a wide range of terrestrial, freshwater, estuarine and marine natural capital. These resources are the most valuable assets for the people as they play a fundamental role in their livelihoods and development. In addition, they serve as unique identifiers that give spatial character and provide invaluable environmental and ecosystem services. Environmentally sensitive areas make up a significant portion of the county's total surface area, which includes wetlands, terrestrial forests, mangroves, marine parks, wildlife conservation areas and swamps among other ecosystems.

The County has attained a tree cover of approximately 14% largely through policy development and implementation. The County enacted the Kwale County Forests Conservation and Management Act, 2017 and Wood Fuel Regulations, 2016, which have integrated the community into afforestation and reforestation programs. Kwale County's priority development agenda is to realise 30% tree cover by 2032. This is envisioned in the Environment and Natural Resource Sector Plan 2022-2032.

This Plan is a deliberate strategy to transform the livelihoods of the people of Kwale and improve their quality of life by creating employment opportunities, poverty reduction interventions, improvement of environmental conditions, harnessing the full potential of the County resources and good governance. Being the first management plan for the Shimba Hills Ecosystem, the impact and outcome of its strategies are expected to stretch beyond its 10-year span. The long-term projects proposed within Shimba Hills Ecosystem Management Plan (SHEMP) will have lifelong effects on improving the forest resources, economy, environmental health and social well-being of the community.

The successful implementation of SHEMP is very much dependent on the capacity of institutions to fulfil their roles and resource mobilization to augment capacity development. We, therefore, call for continuous support from our development and strategic partners to buy into this Plan, which articulates our priorities and where resources are urgently needed.

I am happy to reaffirm the County Government's commitment to achieving the SHEMP overarching goal. This is demonstrated in the current County Integrated Development Plan (CIDP) 2022-2027 which recognizes Shimba Hills as one of the environmentally significant areas underpinning Kwale's sustainable development agenda to achieve its vision for 'A competitive, industrialized and socio-economically self-sustaining and secure County'

Saumu Beja

County Executive Committee Member - Environment & Natural Resources

Kwale County Government

MESSAGE FROM MWALUGANJE ELEPHANT SANCTUARY

The spatial description and extent of Shimba Hills Ecosystem, which has a total area of **259km²,** encompasses Shimba Hills Forest and National Reserve **192.5km²**, Mkongani North Forest Reserve, Mkongani West Forest Reserve **13.6km²**, Mwaluganje Elephant Sanctuary **24.7km²**, and Mwaluganje Forest Reserve **17.15km²**. The Shimba Hills Forest and National Reserve has been gazetted as a protected area since 1903 and later through legal notice No. 298 of 16th September 1968. Since then the management mandate of the reserve was placed under both the Wildlife and Forest departments. The legal protection of the reserve was necessitated by the need to maintain the integrity of wildlife habitats and especially the Sable antelopes and elephants. The Mkongani North and West Forest areas, which are adjacent to Shimba Hills Forest and National Reserve were gazetted as Forest Reserve vide legal notice No. 406 of 1956 and placed under the management of the forest department.

Mwaluganje Elephant Sanctuary was established in the early 1990s as a measure to stem the perennial human-wildlife conflict problem occasioned by a continued population increase for both humans and elephants. The history of human-wildlife conflicts relates to the destruction of crops by elephants as the farming areas encroached on the migratory corridor between the Shimba Hills Forest and National Reserve and the Mwaluganje Forest Reserve. Elephants, therefore, pose a threat to food security forcing farmers to attack them in retaliation for destroyed food crops.

Discussions were initiated between the community, the government and other stakeholders in a bid to resolve the conflict. A major outcome of the negotiation was the agreement of the community that they would forgo farming within their farms in exchange for a community-managed elephant sanctuary whose tourism proceeds would compensate for lost farming opportunities. Mwaluganje is registered with **KWS** as a community conservancy and is also a member of **SHICOFA** and **Kenya Wildlife Conservancies Association (KWCA)**.

Mwaluganje Elephant Sanctuary would like to take this opportunity to thank the core planning team and the various stakeholders of Shimba Hills Ecosystem for participating in the realization of this vital management plan.

I will also not forget to thank our Donors **WWF-Kenya for providing** financial support in ensuring that the plan became a reality.

Since all the programs in this plan are aligned with Vision 2030, it will ensure that the funding of these activities will be achieved.

Salim Said Mwayogwe

Chairperson

Mwaluganje Elephant Sanctuary

EXECUTIVE SUMMARY

The management plan describes the scope and activities that will facilitate the realization of conservation, restoration and sustainable management of the Shimba Hills Ecosystem. The plan will be implemented over a 10-year period from 2023 to 2033 in line with the legal provision of the Forest Conservation and Management Act, 2016, and Wildlife Conservation and Management Act, 2013. In addition, the Acts provide for the mandatory preparation and management plans for all forests, national parks and reserves respectively.

Shimba Hills Ecosystem is one of the largest coastal lowland forests in East Africa located in Kwale County. The size of the ecosystem is 25,904 ha. It consists of Shimba Hills Forest and National Reserve (19,250 ha), three forest reserve blocks; Mkongani West (1,360ha) and Mkongani North (1,110ha), Mwaluganje Forest Reserve (1,715ha), Mwaluganje Elephant Sanctuary (2,470ha) and a 5km buffer area. The ecosystem is a source of several rivers that include Marere, Mukurumudzi, Mkanda, Mwele, Manolo, Manjera, Ramisi, and Mwachele. It is endowed with a number of springs that supply water to the community.

The ecosystem has high levels of endemism making it one of the biodiversity hotspots in the world. Furthermore, it provides ecological functions such as carbon storage, nutrient cycling, water and air purification, as well as social and cultural benefits. Despite the aforementioned benefits, the ecosystem faces serious threats associated with human activities such as illegal harvesting of forest resources, poaching, human-wildlife conflict, forest fires, climate change impacts and inadequate management of resources among others, hence the need for protection and conservation for future generations.

This management plan was prepared in a participatory way, with wide consultation among stakeholders. A review of past research and available data was carried out, followed by stakeholder workshops in which the plan's vision, purpose, ecosystem zonation and management programmes were developed. The management plan envisions 'a sustainably conserved ecosystem for provision of all ecological functions and social economic benefits to the people,' and to 'protect and conserve an ecosystem'. The vision will be achieved by a combination of actions and activities focusing on essential conservation and management issues.

The plan consists of six chapters which are summarized as follows:

The first chapter provides the plan foundation: justification, vision, purpose, overall objectives, participation in planning and approach to plan development.

The second chapter describes Shimba Hills Ecosystem in terms of geographical location, legal and administrative status, and biophysical description mainly; topography and geology, soils, hydrology and climate. Biodiversity values including faunal and floral diversity as well as aesthetic value are described.

The third chapter analyses the socio-economic situation. It details literacy levels, household incomes, settlement patterns and trends, land tenure and utilization and local economic activities.

The fourth chapter identifies legal and policy frameworks backing the preparation and implementation of the plan. It details the relevant articles of national legislation and multilateral environmental agreements.

The fifth chapter of the plan details the programmes, programme objectives, and the strategies for implementation and states the activities to achieve the objectives. It discusses the overall forest management prescriptions planned for the next 10 years. It includes planned programmes, and a schedule of activities to achieve the overall objective of the plan. The plan prescribes a zonation scheme and seven management programmes as outlined below;

1. Forest conservation and management programme
2. Wildlife conservation management programme
3. Tourism develoment and management programme
4. Water resources conservation and management programme
5. Community participation and development programme
6. Protected area operation and security management programme
7. Research and education

The sixth chapter is on Implementation Monitoring and Evaluation which details the way implementation of activities will be monitored and reported.

A substantial amount of financial, technical and human resources is required for the implementation of the ecosystem plan for the period 2023-2033.

Programme Summary

Programme	Purpose	Objectives
Forest Conservation and Management	To conserve and protect the SHE natural forest and its rich biodiversity for sustainable use of goods and services for all stakeholders.	1. Natural forest resources managed and utilized sustainably and degraded forest areas restored 2. Exotic plantations converted to natural forests
Wildlife Conservation and Management Programme	The ecological components and processes of the SHE are understood, restored and conserved, and threats to the area's key ecological features are reduced.	1. Threats to SHE habitats reduced and ecosystem connectivity maintained. 2. Conservation of key wildlife species in SHE enhanced. 3. Scientific approaches to reduce human–wildlife conflicts explored 4. Ecological monitoring and research information dissemination strengthened
Water Resource Management Programme	Water resources in SHE are sustainably conserved and managed to meet the domestic, agricultural and commercial needs of Kwale County and its environs.	1. Water resource use regulated and controlled 2. Sustainable water management enhanced and natural flow regimes protected
Tourism Development and Management Programme	To ensure that SHE offers memorable tourist experiences based on the unique biodiversity, scenic and cultural values in the area.	1. Tourism developments are coordinated to ensure proper standards, distribution and sustainability 2. Local communities adequately engaged to build local capacities and ensure optimum benefits from tourism 3. Tourism products in SHE diversified to offer visitors greater experience and variety 4. Local and global marketing of SHE as a tourist destination modernised to attract high-end local and international tourists to different attractions
Community Participation and Development Programme	Enhance community participation in conservation management and sustainable use of natural resources and livelihoods improvement.	1. Community participation in natural resource management enhanced 2. Problem animal control (PAC) techniques promoted and enhanced 3. Community livelihood sources from nature-based enterprises diversified and promoted 4. Local communities engaged in forestry and wildlife conservation-related activities 5. Appropriate agroforestry practices in farmlands promoted

Programme	Purpose	Objectives
SHE Operations and Security Management Programme	To ensure that SHE's operational systems and structures effectively and efficiently support the implementation and achievement of all SHE management programmes' objectives.	1. Institutional collaboration formalised and strengthened 2. Capacity, performance and motivation of SHE staff improved 3. SHE natural resources and visitors safeguarded 4. Infrastructure to support SHE management improved
Research and Education Programme	To identify researchable issues, carry out research, avail the findings and disseminate the same to the ecosystem managers and relevant stakeholders for effective conservation.	1. Ecological research and monitoring strengthened 2. Research on forest and allied resources enhanced 3. Research on invasive species control conducted 4. Hydrological flow regime to balance both environmental and socio-economic needs established

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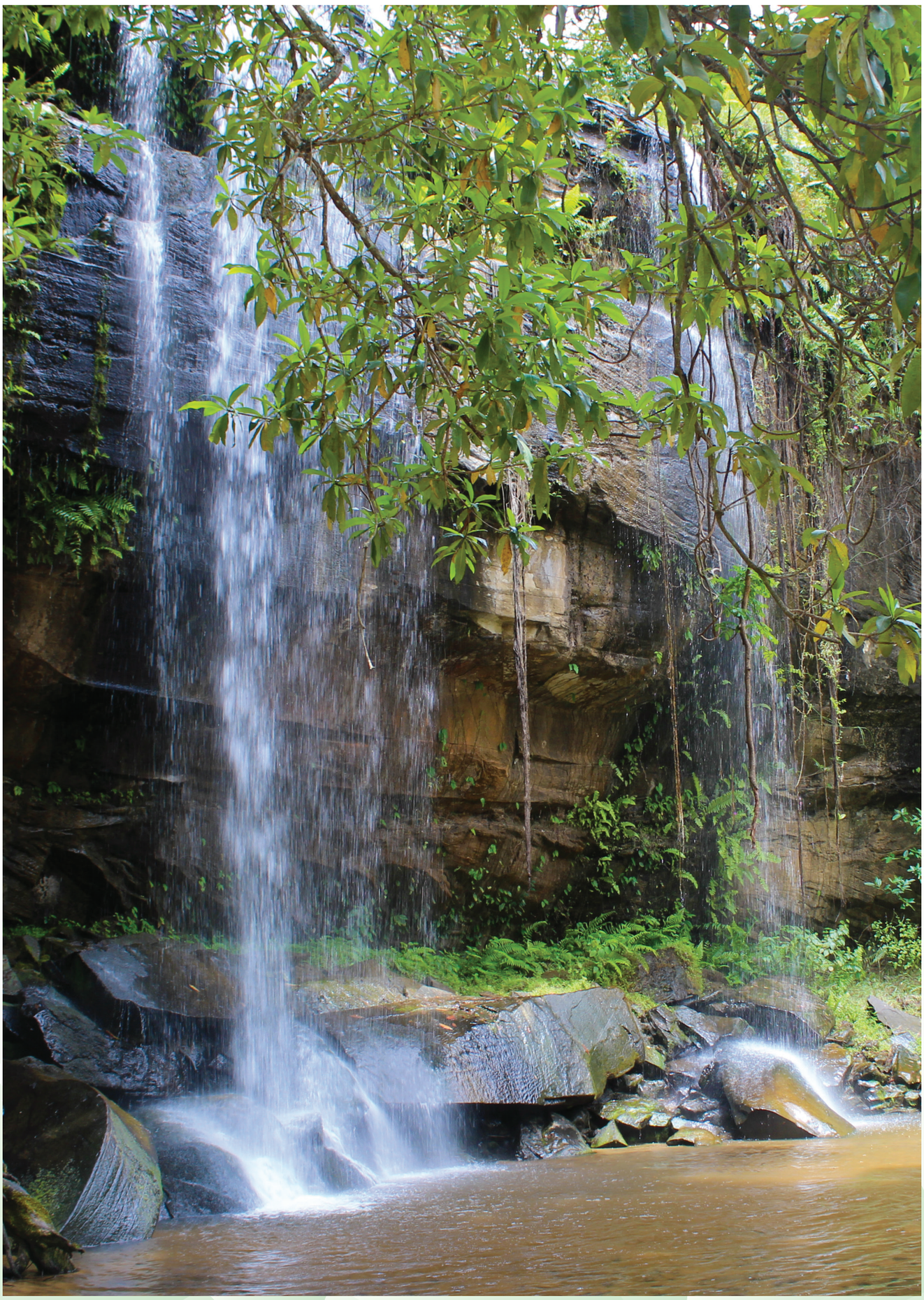
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ACRONYMS

CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CGK	County Government of Kwale
CIDP	County Integrated Development Plan
CFA	Community Forest Association
CPT	Core Planning Team
EA	Environmental Audit
EAC	East African Community
EMCA	Environmental Management and Coordination Act
EMP	Ecological Monitoring Plan
EN	Endangered
ERVs	Exceptional Resources Values
FACs	Forest Adjacent Communities
FCMA	Forest Conservation and Management Act
FFS	Farmers' Field School
FR	Forest Reserve
HECs	Human Elephant Conflicts
HODs	Heads of Departments
HWCs	Human Wildlife Conflicts
ICT	Information and Communications Technology
ICZM	Integrated Coastal Zone Management
IBAs	Important Bird Areas
IEC	Information Education Campaign
IGAs	Income Generating Activities
IUCN	International Union for Conservation of Nature
KALRO	Kenya Agricultural and Livestock Research Organization
KCDP	Kenya Coastal Development Program
KEFRI	Kenya Forest Research Institute
KFS	Kenya Forest Service
KM	Kilometre
Km2	Kilometre squared
KEMRI	Kenya Medical Research Institute
KSH	Kenya Shillings
KWS	Kenya Wildlife Service
KWTA	Kenya Water Towers Agency
MO	Management Objectives

MoAs	Memorandum of Associations
MoU	Memorandum of Understanding
MEAs	Multilateral Environmental Agreements
MES	Mwaluganje Elephant Sanctuary
NBEs	Nature Based Enterprises
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NLC	National Land Commission
NMK	National Museums of Kenya
NR	National Reserve
NRA	Natural Resources Assessment
NT	Near Threatened
NWFPs	Non-wood Forest Products
OCA	Organizational Capacity Assessment
PAs	Protected Areas
PAPF	Protected Area Planning Framework
PAC	Problem Animal Control
PFM	Participatory Forest Management
PFMP	Participatory Forest Management Planning
SCMPs	Sub-Catchment Management Plans
SDGs	Sustainable Development Goals
SHE	Shimba Hills Ecosystem
SHEMP	Shimba Hills Ecosystem Management Plan
SHICOFA	Shimba Hills Conservation Forest Association
SHIFOGA	Shimba Hills Forest Guides Association
SHFNR	Shimba Hills Forest and National Reserve
SLMP	Sustainable Land Management Practice
UNFCCC	United Nations Framework Convention on Climate Change
V	Vulnerable
WCMA	Wildlife Conservation and Management Act, 2013
WED	World Environment Day
WRA	Water Resources Authority
WRUAs	Water Resource Users Associations
WSMP	Water Supply Master Plan
WWF-Kenya	World Wide Fund for Nature Kenya



CHAPTER ONE

PLAN FOUNDATION

1.1. The Plan

This 10-year (2023-2033) management plan for the Shimba Hills Ecosystem (SHE) has been developed in accordance with the Wildlife Conservation and Management Act, 2013, and the Forest Conservation and Management Act, 2016. The formulation of this plan has also been guided by the Kenya Wildlife Service (KWS) Protected Areas Planning Framework (PAPF) and the Kenya Forest Service (KFS) Participatory Forest Management Planning (PFMP) Framework. In line with these planning frameworks and relevant legislative instruments, this plan has been developed in a highly participatory manner, incorporating and building on ideas from a broad cross-section of SHE stakeholders. Management plans have the potential of playing a vital role in ensuring the coherent and coordinated development and management of protected areas (PAs) and that the impacts from the intensifying diversity of threats impacting PAs are mitigated. Although there is a long history of PAs planning in Kenya, many of the management plans developed have not been used effectively, and have often ended up as reference materials rather than a practical guide for PA management.

The plan is therefore designed as a practical management tool for supporting SHE resource managers in executing their duties. In order to achieve this function, the plan sets out strategic guidance on the goals (the purpose statements) towards which management is scheduled to use for the next 10 years, as well as a series of prescriptions and management actions that need to be implemented.

The following sections on the plan functions, plan structure and stakeholder participation in the plan's development provide an overview of the practical application of this planning framework.

1.2 Plan Justification

The development of the plan complied with legal requirements under sections 44 of the WCMA, 2013 and 47 of the FCMA, 2016. The WCMA, 2013 requires that every national park, marine protected area, wildlife conservancy and sanctuary be managed in accordance with a management plan that complies with the requirements prescribed by the Fifth Schedule. Similarly, the FCMA, 2016 mandates that every public forest, nature reserve and provisional forest be managed in accordance with management plans that comply with requirements prescribed by regulations made by the Cabinet Secretary. The plan also considered other existing policies relating to the environment, water and land use, as well as to the Constitution of Kenya, 2010, which provides for prudent management of natural resources and the environment.

The plan provides the protected area managers and stakeholders with a framework for decision making and conflict mitigation. It supports wildlife and habitat protection, and promotes sustainable utilization of forest products. The plan embraces stakeholder participatory approaches in conservation that enhances ownership of conservation initiatives by stakeholders.

1.3 The Planning Process

1.3.1. Participation in Planning

The planning process has been designed to ensure a high degree of stakeholder participation in the development of the management plan. This was achieved through a multi-layered approach involving a variety of mechanisms designed to ensure that all stakeholders meaningfully contributed to the plan development. The principle mechanisms used to enable this participation were the CPT, stakeholder workshops, and expert working groups. The SHE planning process adopted the aforementioned approaches to ensure that a broad spectrum of stakeholders were involved in the planning process. A detailed list of stakeholders who participated in the SHE plan's development

and the specific events that they contributed to is in Annex 1. On the other hand, Annex 2 shows the matrix used to identify the various stakeholders.

1.3.2. Approach to Plan Development

The development of this ecosystem management plan was based on participatory approaches, taking into consideration the interests of all stakeholders. WWF – Kenya funded the development of this plan while KFS and KWS facilitated the plan through the implementation of various activities. First, a preliminary planning meeting was held on 13th -15th March, 2019 at Leopard Beach Resort, Diani, comprising officials from KFS, KWS and WWF-Kenya. The officials agreed on a plan of action for the development of the Shimba Hills Ecosystem Management Plan (SHEMP). The areas discussed were as follows: management planning process; key management issues in SHE; existing management plan draft; geographical scope of the SHEMP; core planning team (CPT) representation; and KWS and KFS planning frameworks. The existing draft management plan was reviewed and possible management programmes for inclusion identified. The SHFNR, MES, Mkongani North and West, and Mwaluganje forests were proposed as the geographical scope of the plan. Officials from KFS, KWS, KWTA, WWF, MES, local community, CGK, SHICOFA, and WRA were tasked to be part of the CPT of the plan development.

The CPT then met on 3rd to 5th April, 2019 and discussed further on the geographical scope of SHE to comprise SHFNR, MES, Mkongani North and West, and Mwaluganje Forest and a 5km radius buffer zone. The CPT also identified stakeholders based on the following institutional categories: government; non-government organizations; private sector; community based organizations; and research institutions.

The CPT then organized a meeting on 9th-12th July 2019 for the development of SHEMP-2023-2033 Zero Draft. Group discussions were undertaken regarding 5 management programmes (Forest, Wildlife, Community, Tourism and Protected Area Operations). The Groups worked together to identify purposes, objectives, management actions, and activities for each management program

The CPT organized an activity to review/update the SHE maps, zonation scheme, socio-economic survey presentation, and incorporation of information into the zero draft. The activity was carried out between 29th July and 19th August 2019 in Shimba Hills forests. A meeting was held and agreements reached to use Survey 123 in resource survey and mapping. Actual fieldwork and resource survey was undertaken within SHE that was used to update existing maps and SHE zonation (Biodiversity Conservation Zone; Tourism Zone; Plantation Zone; Cultural Use Zone; Subsistence Use Zone; Intervention Zone)

The CPT organized community sensitization meetings in all the 11 villages adjoining Shimba Hills forests and accomplished the following objectives: to inform the community about the newly drafted SHEMP; to gather community inputs for incorporation into the plan and to obtain community consent/position on SHEMP. These objectives were all met and the community approved the draft plan.

The CPT organized a proofreading and editing Workshop on 17th – 25th September 2019 at Royal Court Hotel, Mombasa and KFS Kwale offices. The community inputs during sensitization meetings were integrated into the draft plan.

The SHEMP CPT subjected the plan to a review to gain plenary comments from senior managers of KWS and KFS for incorporation into the final draft pending validation and approval. A two-day review workshop was held on 25th -26th November 2019 at Pride Inn, Mombasa. Representatives from KFS, KWS, WWF, MES, and SHICOFA participated in the exercise.

Following the plenary review of SHEMP on 25th and 26th November 2019, it was necessary to update the draft based on the reviewers' comments in preparation for document validation. The activity

that was held on 17th-19th February 2020 at KFS office in Kwale incorporated plenary comments into the SHEMP draft in preparation for stakeholders' validation. Stakeholders validated the SHE plan on the 23rd -24th November 2020 at PrideInn Ukunda (plate 1).



Plate 1: Dr. Elizabeth Wambugu of KFS and Anastacia Mwaura of KWS share their remarks during validation at PrideInn Ukunda, November 23rd – 25th 2020

This ecosystem management plan was developed with funding support from the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) implemented by WWF-Kenya. The process was based on participatory approaches and methodologies where key partners were involved as the core planning team, participation in stakeholders meetings and workshops and working groups as per Table 1 and Annex 3 on list of participants.

Table 1: Summary of planning mechanisms used

Mechanism	Functions and Membership
Core Planning Team	Providing overall guidance and oversight to the planning process
	Members included KWS, KFS, WRTI, MES, CGK, KWTA, WRMA, SHICOFA and WWF-Kenya.
	The team met at intervals throughout the process and also kept in frequent contacts through emails, online meetings and phone communications.
Stakeholder Workshops	Stakeholder workshops were held throughout the process and culminated in the agreement on the format to be adopted in the preparation of the management plan.
	During the workshops, stakeholders identified the key problems and opportunities that the plan needed to address to enhance the management of the Shimba Hills Ecosystem.
	Stakeholder presentation workshops were held at the end of the plan development process to enable stakeholders to review, provide comments and suggestions and endorse the final contents of the draft management plan.
Working Groups	Working groups were important in the provision of information on the current status of different management programmes and their desired future conditions (DFCs).

Between 9th -15th May 2021 CPT met at Prideinn Ukunda to prepare the plan for submission for approval by the two institutions (plate 2).



Plate 2: SHEMP (2023-2033) preparation for submission to CCF-KFS & DG-KWS held at Prideinn Ukunda, 9th - 15th May 2021



CHAPTER TWO

DESCRIPTION AND VALUE OF SHIMBA HILLS ECOSYSTEM

2.1. Geographical Location

Shimba Hills Ecosystem (SHE) is located in Kwale County, approximately 30Km southwest of Mombasa town. It lies within longitudes 39^0 17'and 39^0 30'East, and latitudes 4^0 09' and 4^0 21'South. Shimba Hills Ecosystem borders the Tsavo-Mkomazi Ecosystem to the North and South, respectively. The ecosystem covers approximately 25,905ha, including 19,250ha for Shimba Hills Forest and National Reserve (SHFNR), 1110ha for Mkongani North Forest Reserve, 1,360ha of Mkongani West Forest Reserve of 1,715ha Mwalunganje Forest Reserve; 2,470ha of Mwaluganje Elephant Sanctuary and the 5km buffer area (Figure 1).

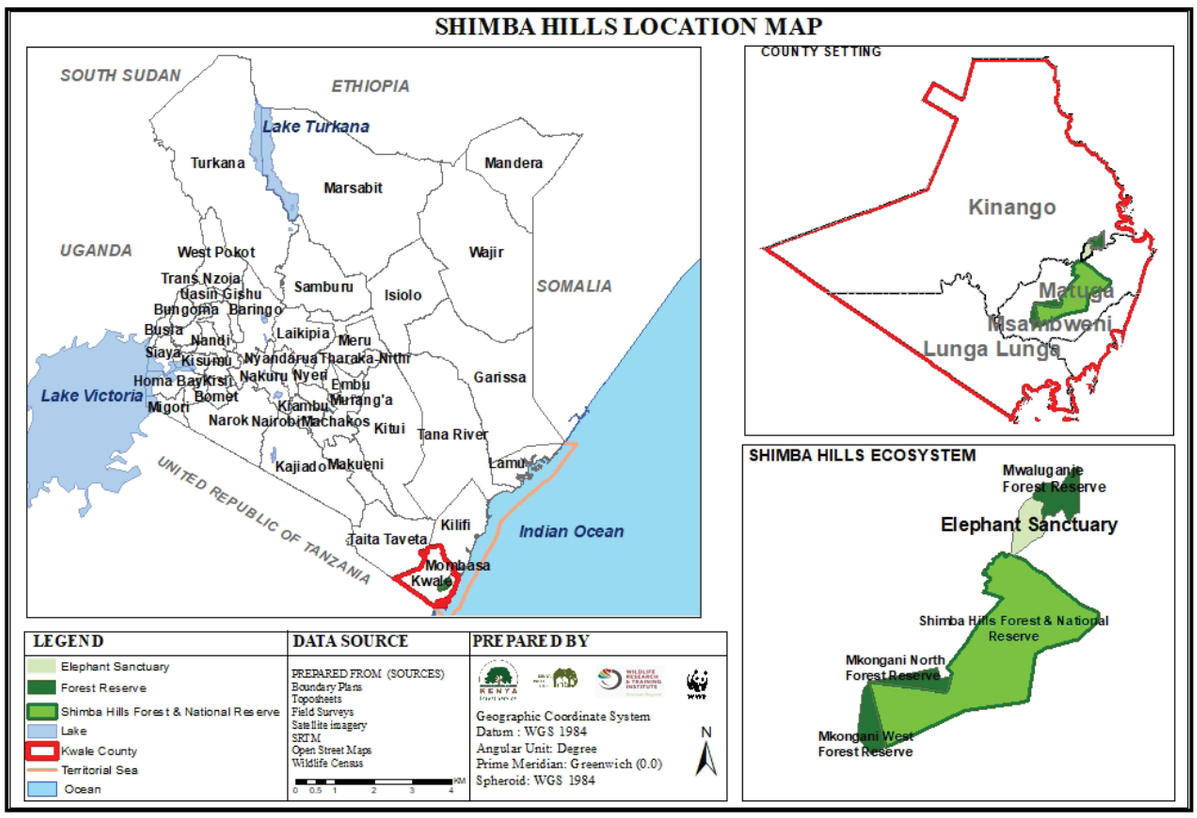


Figure 1: Location of Shimba Hills ecosystem (MAP)

2.2. Legal and Administrative Status

The Shimba Hills Forest was gazetted as a Forest Reserve Vide legal Notice No. 407 in 1956 and declared a central forest vide Legal Notice No.174 of 20th May 1964. Further, on 16th September 1968 it was gazetted as a National Reserve vide Legal Notice no. 228, and placed under the management by then Wildlife Conservation and Management Department (WCMD) now succeeded by the Kenya Wildlife Service (KWS). Due to the dual gazettement status, the management for the reserve has been under both the Forest and Wildlife Departments, the current Kenya Forest Service (KFS) and Kenya Wildlife Service (KWS), respectively. The legal protection as a national reserve was necessitated by the need to maintain the integrity of wildlife habitats especially for the endemic Sable antelopes and elephants.

In 1941, Mwaluganje was gazetted as a Forest Reserve under legal notice No.107 of 1941 and its management also falls under KFS. Thereafter, the adjacent Mkongani North and West forest areas were gazetted as forest reserves vide Legal Notice No. 406 of 1956 and placed under the management of the Forest Department. The SHE ecosystem also includes Mwaluganje Elephant Sanctuary, which is a registered Limited Company. The sanctuary lies within community land and it is managed by a management committee under supervision of a Board of Directors comprising representatives drawn from KWS, KFS, County Government of Kwale, Sheldrick Wildlife Trust and the local community. The 5Km buffer area is community land under private ownership. The components of SHE and total areas are as summarized in table 2 below:

Table 2: SHE components and proportion of the areas

SHE Components	Legal Notice No.	Legal Notice No.(year)	Area (ha)	Proportion (%)	Management
Shimba Hills Forest Reserve	407	1956	19,250	74.3	KFS & KWS
Shimba Hills National Reserve	298	1968			
Mkongani North Forest Reserve	406	1956	1,110	4.3	KFS
Mkongani West Forest Reserve	406	1956	1,360	5.3	KFS
Mwaluganje Forest Reserve	107	1941	1,715	6.6	KFS
Mwaluganje Elephant Sanctuary	Ungazetted	NA	2,470	9.5	Community
Total Area			**25,905**	**100.0**	

2.3. Biophysical Description

2.3.1 Topography and Geology

Shimba Hills Ecosystem lies within the coastal uplands and the Nyika plateau topographic features in the County. It is characterized by valleys and rolling escarpments rising from about 120 metres on the foot plateau to about 450 metres above sea level at Pengo Hill, the highest point in the area. The coastal uplands area is made up of sandstone hills that include the Shimba Hills and Tsimba. The foot plateau has a flat plain surface and some sandy hills. Geologically, the ecosystem is underlain by the Karoo sediments also called Duruma Sandstones on the north to central parts, and the Jurassic rocks including Kambe limestone on the North Eastern parts of the ecosystem.

2.3.2 Soils

Soil composition within the ecosystem is classified as *Shimba Grit* and *Mazeras/Duruma* sandstone. The hills are underlain by massive coarse sandstones and grits, and vary from deep sand (aerosols) to derived coarse-grained sandstone. Pliecone Magarini sands dominate the areas to the north central part of the ecosystem near Kwale town and yield soils with a higher cation exchange capacity, base saturation and larger water storage capacity in some of the areas like Longomwagandi. Soils of the plateau region are derived from Magarini sands, which accounts for their slight difference in colour and fertility. The valley soils are composed of alluvial material, mainly clays and the fertility status is poor due to sandy top soil, low organic matter content and excessive leaching.

2.3.3 Hydrology

Four permanent river systems drain the SHE and flow into the Indian Ocean. These are Marere, Mkurumudzi, Pemba and Mwachema rivers. Several permanent and seasonal springs occur within SHE, the famous one being Marere with a discharge capacity of 9,087m^3. Marere constitutes an important source of fresh water for Kwale and Mombasa towns, Ukunda/Diani and Kinango areas. The wildlife within the ecosystem is dependent on the permanently flowing rivers and a few man-made and several natural water holes for watering purposes. There are also dams within and around SHE such as Base Titanium Company dam, Pemba and Mkanda. The hydrology of SHE is shown in figure 2.

Shimba Hills Ecosystem hydrology has been adversely affected by the decrease in forest cover attributed to changes in climate, and human activities in adjacent areas and riparian lands. Consequently, some major rivers such as Marere and Mkurumudzi have experienced a decrease in river flow volumes and increased turbidity whereas others have changed course or even dried up completely due to siltation.

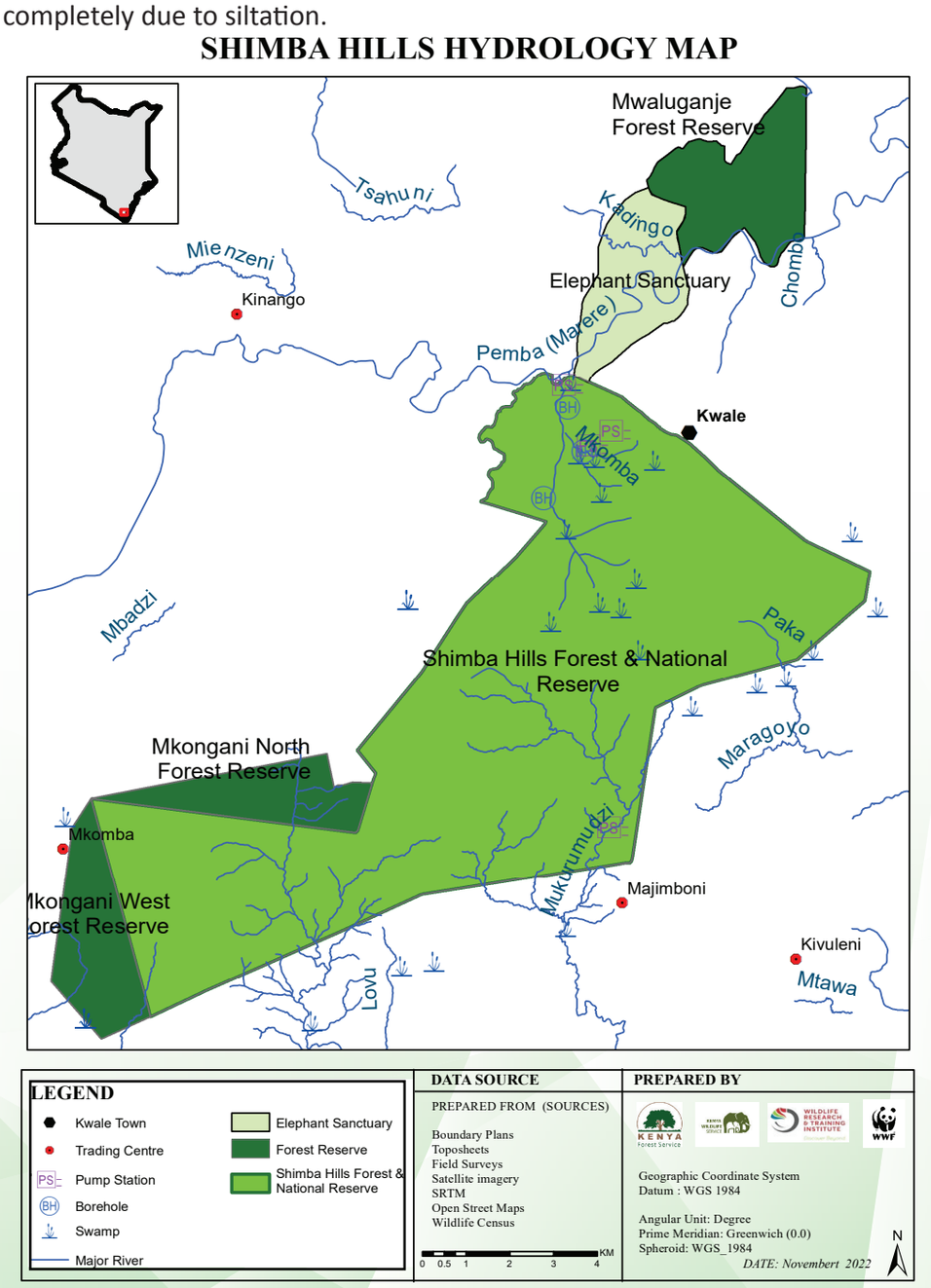


Figure 2: Shimba Hills Ecosystem hydrology map

2.3.4 Climate

The ecosystem experiences a monsoon type of climate, which is hot and dry from January to April/ May and the coolest from June to August. Average temperature within the ecosystem ranges from 25^{0}C to 27.5^{0}C. Rainfall is bimodal with short rains experienced from October to December and long rains from March/April to July. The total annual precipitation ranges from 900mm to 1500mm per annum and decreases with intensity to the north of the ecosystem. The eastern slopes of the reserve have a potential to receive minimal relief rainfall amounts throughout the year due to the ocean conventions. The rainfall trend in SHE is shown in figure 3 below:

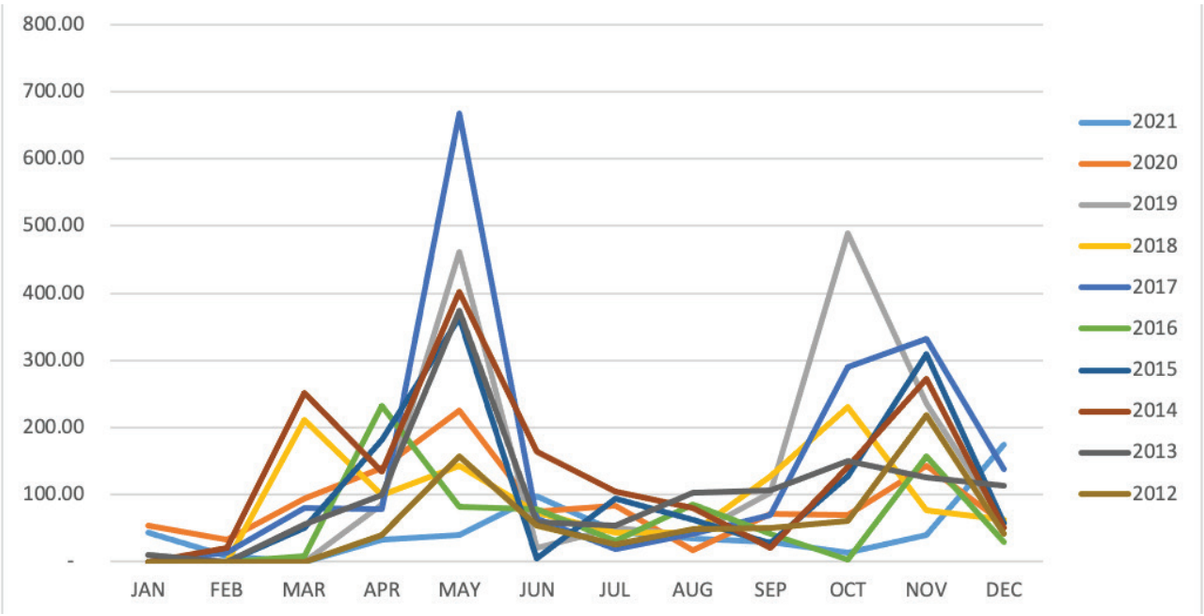


Figure 3: Rainfall trend in SHE (2012-2021)

2.4. Biodiversity values

2.4.1. Faunal Diversity

Shimba Hills ecosystem's significance stems from its recognition as one of the remaining large coastal forests in Eastern Africa. It is an important habitat for more than 53 species of both large and small mammals, 164 species of invertebrates, 50 species of reptiles and amphibians, 620 species of plants and 112 species of birds (Omar *et al.*, 2014). The ecosystem harbours a significant population of the African elephant and hosts the only sable antelope (*Hippotragus nigerroosevelti*) population in Kenya. It is recognized as an Important Bird Area (IBA) due to its rich coastal forest bird fauna which include the endangered Sokoke pipit (*Anthus sokokensis*), the Southern Banded Snake Eagle (*Circaetus fasciolatus)* and the Fischer's turaco *(Tauraco fischeri)* that are listed as near threatened under the IUCN Red List. Other wildlife species found in the ecosystem include the buffalo, warthog, waterbuck, reedbuck, Harvey's duiker, bush pig, leopard and spotted hyena.

There are also primates including Yellow baboons, colobus, vervet, and sykes monkeys. The ecosystem is also home to impala, a male Maasai giraffe and one male hartebeest introduced in the early 1990s, 2008 and 2013, respectively. Small mammal species such as the black and rufous elephant shrews (*Rhynchocyon petersi*) and the vulnerable Sokoke dog mongoose *(Bdeogale omnivora)* occur in the ecosystem. Amphibians found in the area include the forest spiny reed frog (*Afrixalus sylvaticus*) and the endangered Shimba Hills Reed Frog (*Hyperolius rubrovermiculatus)* that is endemic to the ecosystem. The butterfly population is very diverse, hosting about 35% of Kenya's total butterfly population, including the endemic *Charaxes acuminatus shimbaensis.*



Plate 3: SHE dwelling African elephants



Plate 4: Sable antelopes

Threatened Species

The SHE is home to threatened and rare species of wildlife. The African elephant (*Loxodanta africana*) and the Leopard (*Panthera pardus*) which are listed as Vulnerable (V) on the IUCN Red List are found in the ecosystem. The Endangered (EN) Sokoke pipit (*Anthus sokokensis*) and spotted ground thrush (*Geokichla guttata*) as well as the Near Threatened (NT) Southern Banded Snake Eagle (*Circaetus fasciolatus),* East Coast Akalat *(Sheppardia gunningi),* Plain-backed Sunbird *(Anthreptes reichenowi)* and Fischer's turaco *(Tauraco fischeri)* are found in the ecosystem. Other animal species of conservation concern include the vulnerable Sokoke dog mongoose *(Bdeogale omnivora) and the* endangered *Hyperolius rubrovermiculatus and Afrixalus sylvaticus* frog *species.* Table 3 provides a detailed description of the species and their conservation status based on the IUCN species list.

Table 3: Species of Special Concern as Shown in the IUCN Red List

Species	Conservation Status	Distribution in the Ecosystem
African elephant (*Loxodonta africana*)	Vulnerable	Within Shimba Hills Forest and National Reserve and MES
Leopard (*Panthera pardus*)	Vulnerable	Within Shimba Hills Forest and National Reserve.
Southern Branded Snake Eagle (*Circaetus fasciolatus)*	Near-threatened	Fairly common resident
Fischer's Turaco (*Tauraco fischeri)*	Near-threatened	Common in taller forest areas
Spotted Ground Thrush (*Zoothera guttata*)	Endangered	Recorded in Mkongani
Sokoke Pipit (*Anthus sokokensis)*	Vulnerable	Recorded in Mkongani
East Coast Akalat (*Sheppardiagunningi*)	Near Threatened	Patchily distributed in tall closed canopy forest. Occur in Mkongani, Longomwagandi
Plain-backed Sunbird (*Anthreptesreichenowi*)	Near Threatened	Fairly common in closed canopy forest
Sokoke dog mongoose *(Bedogale omnivora)*	Vulnerable	
Hyperoliusrubro vermiculatus frog species	Endangered	
Afrixalus sylvaticus frog species	Endangered	

Endemic Species

The Sable antelope (*Hippotragus nigerroosevelti*) (plate 4) was widely distributed in the Coastal region in Kenya. The species range used to extend as far north as Mwangea Hill near Malindi and Mrima Hill near the Tanzania border. However, the species has witnessed considerable reduction in population and distribution in the past few decades due to many possible factors, including subsistence poaching, inbreeding, malnutrition, habitat loss, predation, diseases, and interspecies competition. A remnant population of the species is currently nationally restricted in SHFNR. Other wildlife species endemic to the ecosystem include the Shimba Hills Reed Frog (*Hyperolius)* and butterfly species, *Charaxes acuminatus shimbaensis.*

2.4.2 Floral Diversity

Recent and past biodiversity surveys consider SHE as one of the most diverse terrestrial ecosystems in coastal Kenya. It holds about 1,400 plant species, representing 21% of the country's estimated plants. At least 35 plant species within the ecosystem are regarded as of conservation concern as per the IUCN Red Plant list and National Endemism Categorization (EA). Four (4) of the 35 species are listed as endangered, 16 vulnerable, 6 rare and 3 as Near Threatened plant species. The ecosystem has a considerable plant endemism with 31 plant species being endemic; 7 of which are nationally endemic and 24 regionally endemic. *Cephalosphaera usambarensis* is a rare tree endemic to the Shimba Hills Forest and National Reserve.

SHE has four main vegetation types, which include forests, grasslands, scrub/shrublands and plantations. The vegetative cover in the drier leeward western slopes of the ecosystem consist of forests of an undifferentiated type tending more to deciduous associations of *Scorodophloeus fischeri*, (Mysore thorn) *Caesalpinia insolita, Drypetes usambarica* and *Cola minor*. Within the river valleys occur the stands of *Cephalosphaera usambarensis*, *Aporrhiza paniculata, Pouteria alnifolia* and *Xylopia parviflora*. In areas such as Longomwagandi, the forest is mature with tree species that include *Quassia undulate, Newtonia paucijuga, Antiaris toxicaria, Lovoa swynnertonii, Cordia africana* and *Celtis mildbraedii*.

The ecosystem hosts significant population of economically important tree species such as *Milicia excelsa, Erythrophleum suaveolens, Newtonia buchananii, Brachystegia spiciformis* and *Afzelia quanzensis* which are valuable hardwood timber trees as well as C*ombretum schumanii, Dalbergia melanoxylon and Brachyleana huillensis* which are used in carving.

2.5 Shimba Hills Ecosystem Exceptional Resource Values

The Shimba Hills Ecosystem's 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 that are especially important for maintaining the area's unique qualities, characteristics and ecology in the long-term. The following sections describe the SHE ERVs that have been prioritised by stakeholders, their importance to the area and, where appropriate, relevant sections of the management plan that relate to the ERVs in question. These sections have been set out according to the four categories of ERVs identified: Biodiversity, Scenic, Social and Cultural. Table 4 below Exceptional Resource Values for Shimba Hills Ecosystem.

Table 4: Exceptional Resource Values for Shimba Hills Ecosystem

Category	Exceptional Resource Value (ERV)
Biodiversity	**a) Unique coastal forest ecosystem** • Water catchment, Climate and carbon sequestration
	b) Faunal diversity • **Endangered species:** Sable antelopes (locally), African elephants • **Large mammals:** African elephants, Black and Rufous elephant shrew, buffaloes, leopards, spotted hyenas, Sable antelopes, warthog, bush pig, Sokoke dog mongoose, Sokoke pipit • **Birds:** Fischer's turaco bird • **Reptiles and amphibians:** Forest banana/spiny reed frog, *Hyperoliusru brovermiculatus* • **Insects:** *Charaxes acuminatus shimbaensis* butterfly
	c) Floral diversity: • **Endangered tree species**: *Milicia excelsa*, *Tabernae montana piciformis* plant, *Dalbergia melanoxylon* (Mpingo), *Afzelia quazensis*, *Brachylaena huillensis* • **Forest plantation species:** *Pinus carribea and Araucaria cunninghamii*
	d) Natural self-regulating habitats • **Rivers**: Manolo/ Pemba, Mkurumudzi and Mwachema • **Forest reserves** • **Mosaic of bushland and grassland** • **Swamps and Wetlands:** Zobe Mkongani North, Tagasira Mkongani North, Chiazi Mkongani North, Mvuni Mkongani North, Laika Mkongani North, Majimoto, Mkongani South, Chizia Mwamwiri and Mkongani South
Scenic/Aesthetic	• Sheldrick falls • Bird watching sites • Chitsanze falls • Caves: Ngomeni caves • Cliffs • Giriama point • Pengo Hill (highest point) possible to view Mt Kilimanjaro, • Sundowner point (near Pengo Hill, Shimba Lodge and Shimba Green Lodge) • Sable Valley (near Mazumalume) • Ocean View Point • Daraja la Mungu • Jiwe la Saa • Kidongo Hill with a water filled crater

Category	Exceptional Resource Value (ERV)
Socio-Economic	• Tourism • Nature trails • Non-timber forest products (gums, resins, mushrooms, traditional herbs and medicines) • Butterfly farming • Firewood • Carbon sequestration • Apiculture honey • Education and Research • Food security • Water hygiene and sanitation • Infrastructure: hotels, bandas, roads etc • Recreation: camping and picnic sites • Education and research numerous folk tales and myths
Cultural and Spiritual	• Sacred forests and monuments (Mijikenda Kaya Forests), Kaya Kwale, Kaya Chitsanze, Kaya Mtae) natural groves (Longomwagandi), Njembe Grove • Historical sites e.g. World War I and II sites, Historical monument near Kwale Law Courts, Mwazang'ombe

Scenic/Aesthetic Value

Scenic sites are beautiful natural and man-made features or scenes that are attractive to visitors. In Shimba Hills ecosystem, these features include the following: landscape like hills and valleys; the coastal rainforest; Sheldrick Falls (Plate 5); bird watching sites; Chitsanze falls; Ngomeni caves; Cliffs; Giriama point; Pengo hill (highest point) possible to view Mt Kilimanjaro; Sundowner point (near Pengo Hill, Shimba lodge and Shimba Green Lodge); Sable valley (near Mazumalume); Ocean view point; Daraja la Mungu; and Jiwe la Saa.



Plate 5: The Sheldrick Falls

The viewpoints offer splendid views of the hilly and forested countryside as far as the Indian Ocean and Chale Island to the east, Tsavo plains, and Taita Hills to the west. Since the scenic beauty of Shimba Hills Ecosystem is one of the tourist products of the reserve, its value is part and parcel of the fee visitors pay when visiting the Reserve. SHE visitation trends for the last ten years are as shown in Figure 4.

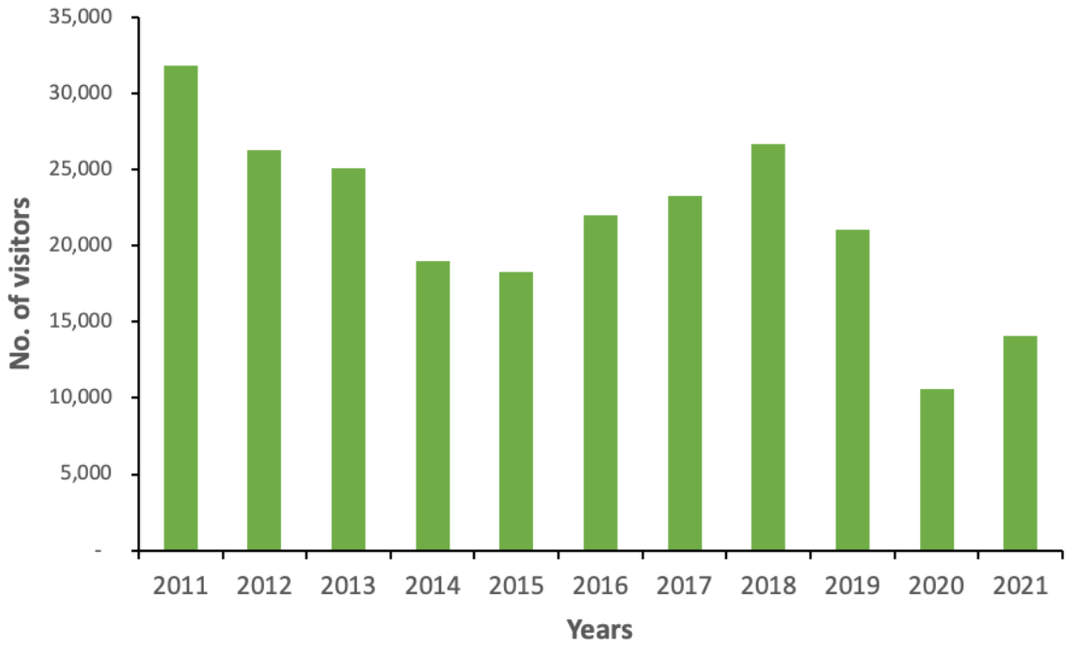


Figure 4: Shimba Hills Forest and National Reserve Visitation Trend (2011- 2021)

2.5.1 Socio-economic Value

There are several socio-economic values attributed to SHE. The ecosystem's high wildlife diversity, unique coastal forest, sceneries, and picnics and camping sites make it a tourism destination and as such, a source of income through employment. Income is also accrued from education and research on biodiversity (flora/fauna) conservation and folk tales/myths linked to conservation (indigenous knowledge). Other areas of benefit for the FACs include non-timber products (resins, gums, traditional herbs and medicines), dead wood (firewood), commercial beekeeping (apiculture) and butterfly farming. Agriculture has also been promoted due to the water catchment status and food security guaranteed for the FACs.



Plate 6: Shimba Lodge in SHE

Cultural Values

The Mijikenda community depends on the forest for cultural and religious practices. The presence of caves, shrines and natural groves in various parts of the forest are evident of these claims. Thus, upholding values and practices held by this community is important in the management of the forest. Due to these cultural and spiritual practices held by the local community, some parts of the ecosystem have been gazetted as national monuments under the National Monument and Antiquities Act, 2015 by the National Museums of Kenya (NMK). These sacred forests are Kaya Kwale, Kaya Mtae and Chitsanze. Natural groves include Longo Mwagandi and Njembe, while historical sites are World War I and II sites, and historical monuments near Kwale Law Courts, Mwazang'ombe.



Plate 7: Kaya elders display the rich cultural/spiritual practices of the Digo community

2.5.2 Infrastructure and Human Resources

a. Kenya Forest Service and SHICOFA

Human resources is an important component in the management of the Shimba Hills Forest. There is one Forest Station Manager (FSM) managing Shimba Hills Forest. There are 12 forest rangers. The human resources, infrastructural and equipment needs of the forest are inadequate to carry out basic forest operations such as firefighting and general patrols against illegal activities. The available human resources and infrastructure in KFS and SHICOFA are as indicated in Tables 5 and 6 below. Figure 6 shows the resources found in SHE.

Table 5: Human resources in KFS and SHICOFA

Institution	KFS			SHICOFA		
	Current No.	Requirement	Deficit	Current No.	Requirement	Deficit
Human Resource						
Station Forest manager	1	1	0	0	0	0
Assistant Station Forest Manager	0	1	1	0	0	0
Sgt. Forest Ranger	1	1	0	0	0	0
Corporal Forest Ranger	2	1	0	0		
Constable Forest Ranger	9	50	41	0	0	0

Institution	KFS			SHICOFA		
Driver	0	2	2	0	2	2
Record management officer	1	1	0	0	0	0
Store Man	0	1	1	0	1	1
Community Scouts	0	0	0	20	20	0
Tour Guides	0	0	0	15	15	0
Nursery attendants	2	10	8	0	4	4

Table 6: Infrastructure resources in KFS and SHICOFA

Institution	KFS			SHICOFA		
	Current No.	Requirement	Deficit	Current No.	Requirement	Deficit
Office	1	1	0	1	1	0
Vehicle	1	2	1	0	1	1
Motorbike	5	0	5	1	2	1
Outposts	11	15	4	0	0	0
Tree nursery	1	5	4	0	1	1
ICT facility	0	1	1	0	1	1
Water supply	1	2	1	0	1	1
Electricity installation	1	1	0	1	1	0
Tractor	0	1	1	0	1	1
Observation tower	0	6	6	0	1	1
HF Radio	0	8	8	0	1	1
HF Handset	0	12	12	0	4	4

b. Kenya Wildlife Service

The Human Resources in Shimba Hills National reserve play a critical role in wildlife conservation and management within the reserve as well as in the adjacent areas. The current staffing levels and the deficits are shown in Table 7. The infrastructural development in Shimba Hills Forest and National Reserve is shown in Fig 5. Improvements will be made on the roads and airstrip within the Reserve.

Table 7: Human resources in KWS

CADRE	AVAILABLE	REQUIREMENT	DEFICIT
Senior Warden	1	1	0
Warden I	0	1	0
Warden II	1	2	1
Assistant Warden I	0	1	1
Assistant warden III	2	4	2
Senior Sergeant Ranger	1	3	2
Sergeant Ranger	1	5	4
Corporal Ranger/Radio Operator	1	1	0
Ranger/Radio Operator	1	2	1

CADRE	AVAILABLE	REQUIREMENT	DEFICIT
Corporal Ranger	11	14	3
Rangers	22	74	52
Senior Principal Accountant Assistant	1	1	0
Principal Accounts Assistant	1	1	0
Senior Mechanical Superintendent	1	1	0
Chief Principal Motor Vehicle Mechanic	1	1	0
Senior Motor Vehicle Mechanic	1	0	0
Mechanical Superintendent	0	1	1
Panel Bitter	0	1	1
Motor Vehicle Mechanic	3	4	1
Spray Painter	0	1	1
Welder	1	1	0
Clerical Officer	0	2	2
Superintendent Roads	1	1	0
Clerk of Works	0	1	1
Senior Superintendent Telecommunication	1	1	0
Senior Telecom Superintendent	1	1	0
Telecom Technician	0	2	2
Customer Care Supervisor	1	1	0
Customer Care Assistant	1	2	1
Fence Technician	0	1	1
Groundsmen - Fence	38	40	2
Plumber	1	1	0
Electrician	0	1	1
Office Administrator	1	1	0
Principal Assistant Human Resource Officer	1	1	0
Office Assistant	3	3	0
Principal Groundsmen	2	3	1
Drivers	11	11	0
Principal Supply Chain Mgt. Assistant (Procurement)	1	1	0
Principal Supply Chain Mgt. Assistant (Store)	1	1	0
Senior Principal Groundman (Bandas & Campsites)	2	3	1

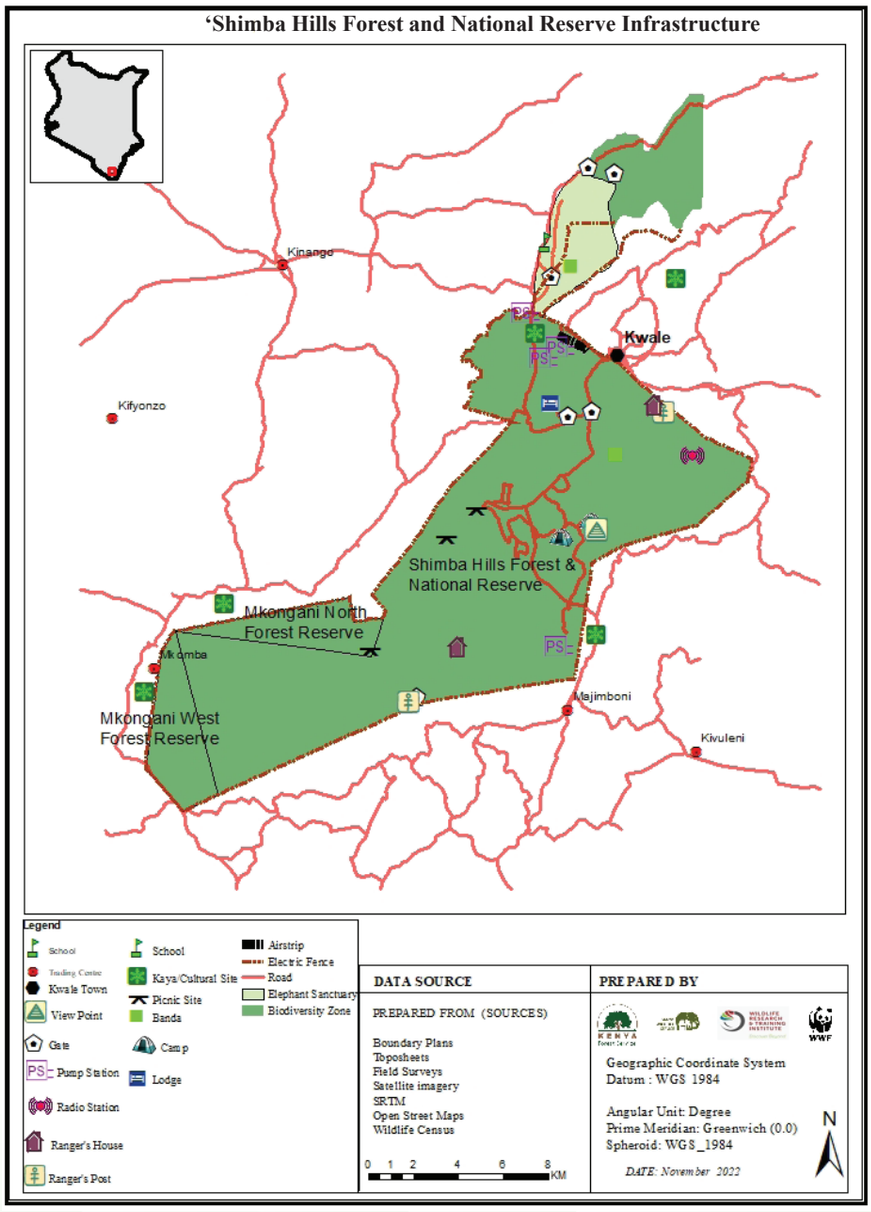


Figure 5: Shimba Hills Forest and National Reserve Infrastructure

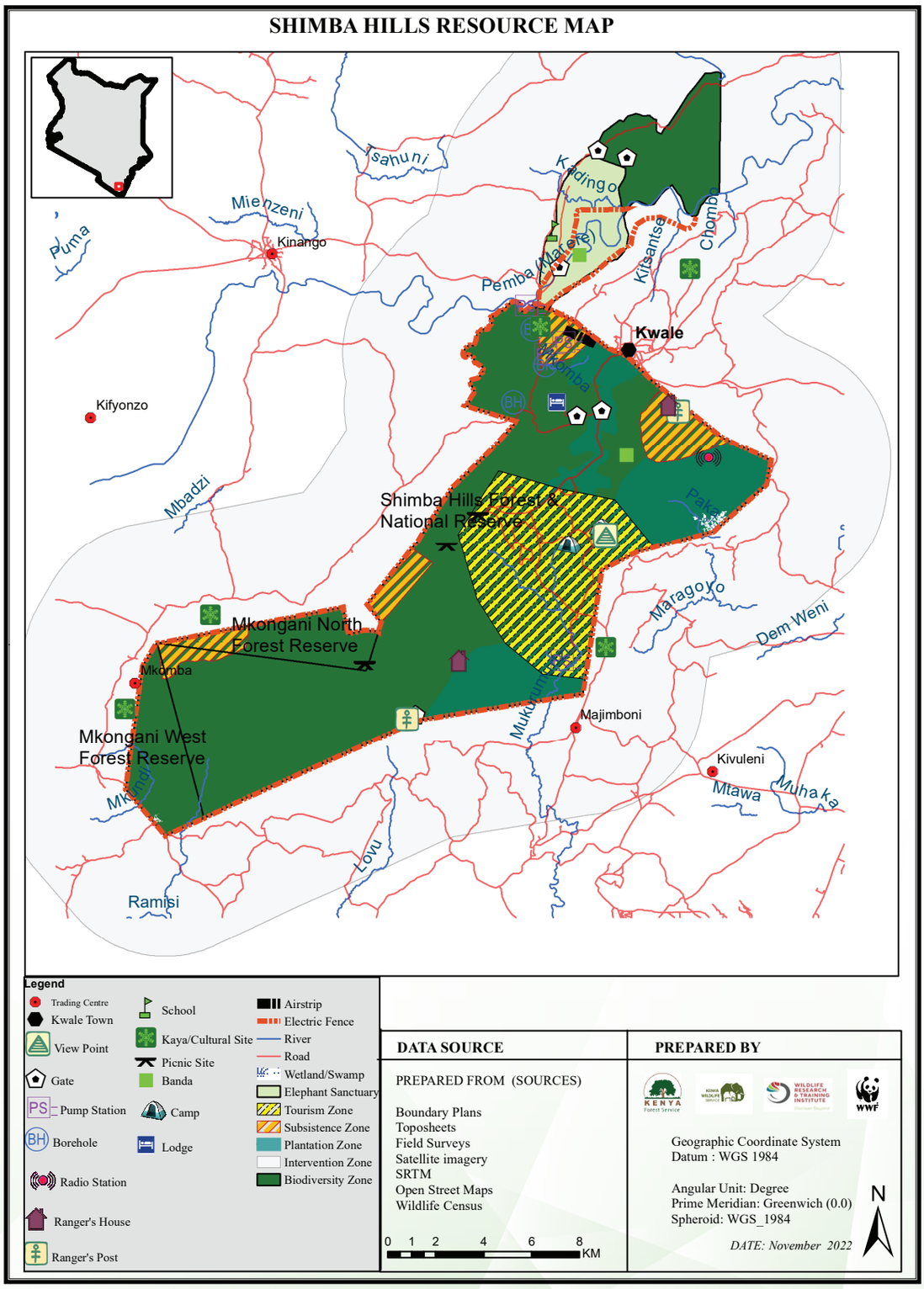


Figure 6: SHE resources

CHAPTER THREE

SOCIO-ECONOMIC SITUATION

3.1 Overview of the Forest Adjacent Communities (FACs)

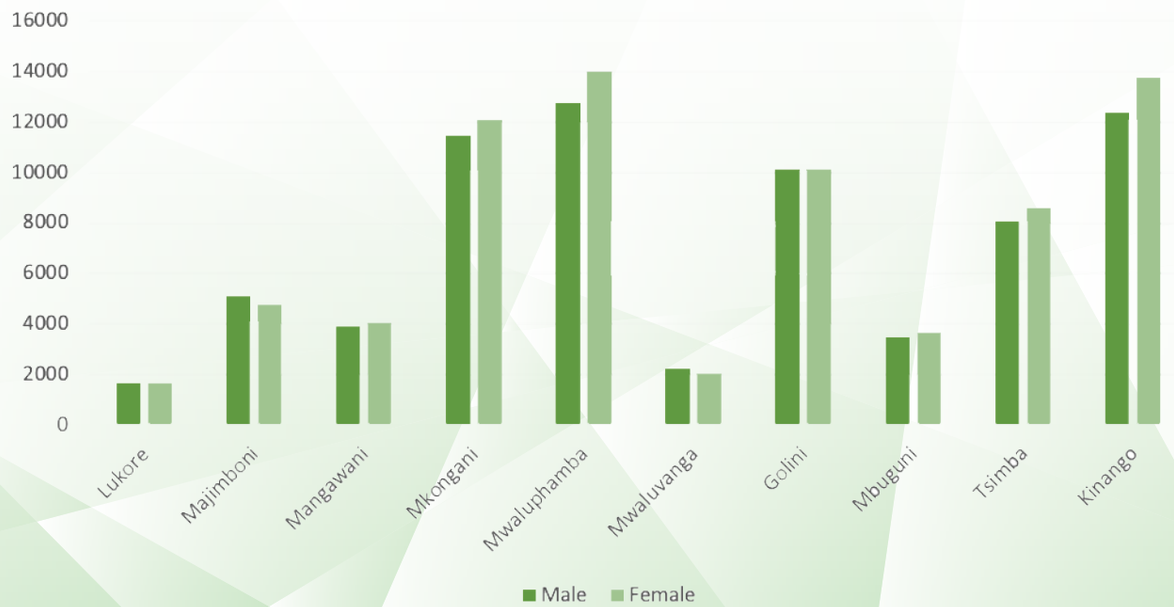
Forest Adjacent Communities are defined as the community members living adjacent to forest ecosystems within a 5km radius. The Shimba Hills Ecosystem encompasses 11 locations namely; Tsimba, Golini, Majimboni, Lukore, Mwaluphamba, Mkongani, Mangawani, Mwaluvanga, Kinango, Mbuguni and Gandini locations.

Rapid urbanisation and population growth in the adjacent communities has increasingly exerted pressure on the forest and its resources. Table 8 and Figure 7 below show the population of FACs in SHE.

Table 8: Population of forest adjacent communities in SHE

Location	Total Population	Male Population	Female Population	No. of Households
Lukore	3373	1692	1681	754
Majimboni	9907	5115	4792	2157
Mangawani	7971	3901	4070	1538
Mkongani	23538	11460	12078	4079
Mwaluphamba	26742	12729	14013	4592
Mwaluvanga	4323	2247	2076	1017
Golini	20275	10130	10145	4962
Mbuguni	7160	3492	3668	1168
Tsimba	16,682	8087	8595	3058
Kinango	26144	12374	13770	5040
Total	**146115**	**71227**	**74888**	**28365**
		0.487472	0.512528	

Figure 7: Population of FACs in SHE



Source: 2019 Kenya Population and Housing Census: Volume IV

The Shimba Hills Ecosystem is predominantly populated by the Digo and Duruma people who belong to the larger Mijikenda ethnic group of the coastal region. Other ethnic groups interacting with the ecosystem include the Kamba, the Taita and the Somali among others. Historically, the Mijikenda communities are known for their respect and preservation of their culture that has helped in the conservation of the sacred *Kaya* Forests. Islam is the most dominant religion accounting for approximately 71% of the area's population (Omondi, 2016). The ecosystem is important to these communities in the provision of both consumptive and non-consumptive products.

3.1.1. Literacy Level

Education attainment is an important indicator of socio-economic development and the capacity of people to participate in development activities. The literacy level in Kwale County has been recording an increasing trend in the last few years, currently standing at 57%. However, the female literacy level stands at 47.4% against 66.6% for male. The community identified low levels of formal and informal education as one of the highest contributing factors to poverty and low levels of understanding on sustainable forest management practices (CGK CSP 2018-2028).

3.1.2. Household Incomes

The local population earns their income from subsistence farming, tourism, trade and industry. A recent socio-economic survey revealed the following earnings (in Kenya Shillings); 14% of the households earn below 5,000 per month; 27% earn 5,001–10,000; 37% earn 10,001–15,000 and 22% earn more than Kshs 15,000 per month. The average household income is about Kshs 9,000 per month, which amounts to approximately Kshs 300 per day.

3.1.3. Settlement Patterns and Trends

Human settlement patterns around the SHE play a critical role as agents of growth by providing favourable conditions for productive investment, transforming rural areas into modern centres and bringing new technologies for economic development. The SHE is located in a very productive area and as a result, it has attracted many people to settle in the adjoining areas. Towns such as Kwale, Kinango and Ukunda have seen a rise in settlements as they provide a conducive environment such as available land and cheap labour. Other local centres such as Lutsangani, Kombani, Shimba Hills and Tiribe have experienced an influx of people who settle and undertake various economic activities. The road network is also fairly good and this has encouraged movement of people to settle around the ecosystem.

3.1.4. Land Tenure and Utilisation

Besides the gazetted areas, land ownership in the buffer area is largely under private ownership (freehold or lease). However, there are quite a number of households who do not have titles to the land they occupy since the land adjudication process is still ongoing. The utilization of the land for the forest adjacent communities is varied based on the size of the land, rainfall distribution pattern and whether it is rural or urban. People residing in areas such as Majimboni still hold a large size of land used for agricultural production. However, land near Kwale town is reducing in size per household. This is because of the rising demand for land for construction of residential houses for new people who moved to Kwale since the formation of counties as engines of development. Land is therefore being subdivided into plots and sold to the developers. This has created environmental concerns as increased rates of tree cutting have been witnessed to provide timber for the booming construction industry.

3.1.5. Local Economic Activities

The local economic activities in the SHE include agricultural production, livestock production, mining, commerce and trade, and tourism. The area receives two rainy seasons and as such the main crops grown include maize, beans, green grams and cassava. Cashew nuts are also grown and sold to the local market. Coconut trees are found in the farmlands especially in Matuga and Kubo areas. Citrus and mango trees are a common feature in the ecosystem and their fruits are sold in the local markets during harvest time. Livestock keeping is also an important activity especially in the drier areas of Kinango with cows, goats and sheep being kept by locals for milk production and also for sale to boost their incomes.

3.1.6. Wood Fuel Sources

The most common source of energy in Kwale County is wood fuel used by 71.7% of the households for cooking, 0.5% for lighting and 12.2% of the households use charcoal for cooking.

The major source of energy is firewood largely extracted from the forests and farmlands as shown in the Figure 8 below. Charcoal production poses a big threat to existing natural forests as it uses specific preferred species, which leads to unsustainable harvesting (Mugo, F. and Ong, 2006).

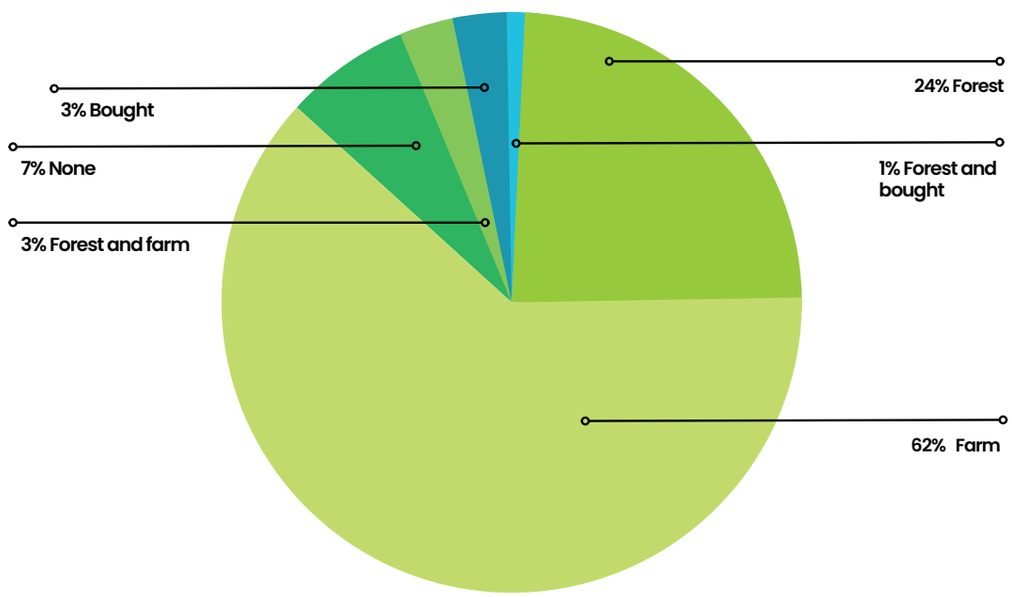


Figure 8: SHE local communities' Sources of firewood

3.2 Major Conservation Issues of Concern

Considerable resources and efforts have been invested to improve conservation of the SHE. While some successes have been achieved, tremendous threats and other conservation pressure on the ecosystem remain. These threats have resulted in depletion and degradation of resources in the ecosystem. The depletion and degradation of resources are mainly due to unsustainable utilization of resources as a result of poverty, rapid rural population growth, and weak management institutions and systems. Some of the key threats to SHE include tree and wildlife poaching; human wildlife conflicts and un-prescribed fires. The major conservation issues of concern in the SHE are as follows:

3.2.1. Illegal Logging

Tree species of a high economic value occur in the forest and national reserves and are targeted by illegal loggers. These include *Milicia excelsa, Dolbergia melanoxylon, Tabermaemontana piciformis, Afzelia quanzensis* and *Brachylaena huillensis* (a valuable tree that is used for carving). Tree poaching has the direct impacts of reducing the biodiversity of the ecosystem, causing soil erosion and inducing secondary succession by inferior or invasive species. Illegal harvesting of trees is driven by different factors in the ecosystem, including demand for building materials like poles and timber, charcoal burning, wood carvings, and home-made farm and household implements.

3.2.2. Human-Wildlife Conflicts

Human Wildlife Conflicts (HWCs) , particularly those caused by elephants, have reduced over the years after the construction of the 141Km electric fence along the perimeter of the protected areas (Fig 8). However, increasing human settlements and unregulated farming practices in neighbouring agricultural lands create potential for conflict between humans and elephants in future. Human-elephant conflicts have also intensified in dispersal areas and wildlife migration corridors joining SHE and neighbouring conservation areas.

Other wildlife species responsible for human wildlife conflicts in the ecosystem include; buffaloes, baboons, monkeys, birds and bush pigs. The species randomly raid neighbouring farmlands causing loss of farm produce and subsequent economic loss to farmers, damage to infrastructure, injuries and/or death to people as well as livestock. Mitigating these conflicts is therefore important to protect local community livelihoods and ensure peaceful co-existence between people and wildlife in the ecosystem. Trend of HWCs in SHE is shown in Figure 9 below.

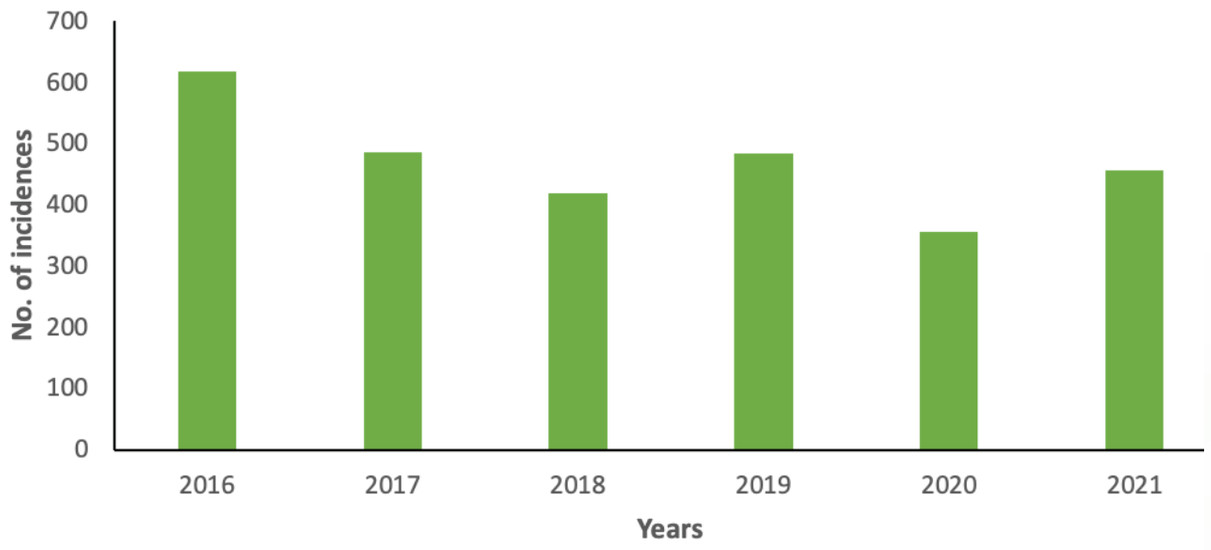


Figure 9: Human wildlife conflict trend in SHE (2016 – 2021)

3.2.3. Poaching of Wildlife

Sporadic wildlife poaching for bush-meat occurs in SHE. Poaching of wildlife is mainly executed through wire snares often used to trap, kill or inflict injuries on wildlife. Other methods used include blinding using blight torches and occasional use of firearms for elephant poaching. Wildlife poaching mostly occurs along and close to the boundary of the reserve where poachers burn grass in order to attract wildlife to graze on fresh shoots. The most targeted species are small and medium sized herbivores including duikers, buffalos, bushbucks, waterbucks and sable antelopes. Although trophy poaching targeting elephants has significantly reduced in the ecosystem, there is still potential for

re-emergence due to the external factors that often drive elephant ivory demand.

3.2.4. Wildfires

Poachers deliberately light wildfires to burn vegetation before the onset of the rains. This results in the emergence of fresh shoots that attract herbivores making them easy targets. Other forms of fire that occur in the ecosystem include accidental fires from farms adjacent to the protected areas. These human induced fires continue to cause degradation to the SHE.

3.2.5. Invasive species

The most common invasive species recorded in the ecosystem is *Lantana camara* that is spreading in grassland areas and contributing to the reduction of wildlife pastures. A major characteristic of *Lantana camara* is the ability to coppice rapidly thus hampering efforts to eradicate it. It is also resistant to fire, and quickly grows in and colonises burnt areas. It can become a serious obstacle to the natural regeneration of important indigenous plant species. The other invasive species is *Solanum incanum* that is found in the intervention zone.

3.2.6. Visitor Impact on the Ecosystem

Potential environmental impacts of tourism activities include altering the behavioural patterns of animals, promoting soil erosion through trampling on vegetation and clearing of forest areas for construction of tourist facilities (lodges and camping sites) which also further affects the migration patterns of animals.

3.2.7. Population Increase

The increasing human population in areas adjacent to the reserves will continue to exert pressure on land for settlement and farming in areas regarded by local people as highly productive in terms of agriculture. As more people settle close to the protected areas, there is a potential for increase in land use conflicts.

Farmers neighbouring the ecosystem engage in cultivation practices that threaten conservation by:

- Practices that encourage soil erosion e.g. vegetation clearance, farming on hill slopes
- Incompatible land use patterns
- Use of pesticides

3.2.8. Constraints to Conservation

- Inadequate staff for both KWS and KFS
- Inadequate skills in forest products conversion and utilization technologies
- Inadequate funds to operationalize SHEMP
- Inadequate capacity to develop and implement PFMPs and PAPs
- Inadequate baseline and updated information on wildlife and forest resources
- Inadequate monitoring and information systems
- Local communities tend to perceive conservation of natural resources as depriving them of their livelihoods and are therefore not likely to support them
- Lack of benefit sharing mechanism
- Forest and wildlife resources are undervalued
- Inadequate political good will

3.3 History of the Forest Ecosystem and Community Forest Association

3.3.1 History the Forest Ecosystem

The Shimba Hills Ecosystem has a cultural and historical significance that merits consideration in management planning. According to local traditions, the forests historically sheltered small fortified villages of various tribal groupings when they first appeared in the region three centuries or more ago. It is presumed that as conditions became more secure, particularly since the late nineteenth century, the groups left the forest refuges and began to clear and cultivate further away. The Digo went first to Shimba Hills where they settled and established Kaya Kwale. Cutting of trees and destruction of vegetation around these sites was prohibited to preserve the surrounding Kaya forests (Kaya means homestead) as a screen or buffer from enemies; thus, the Kayas are very botanically diverse and have a high conservation value as determined by various biological studies. Within the Shimba Hills area, secondary Kayas were spawned by Kaya Kwale, including Mtae (Duruma), Longomwagandi, Fufuni, Ziani, Tswaka, and Mbondoni.

Poverty has been a major problem for the communities living around the SHFNR. From the forest areas, communities obtain a wide range of products including fibre for ropes and maps, fodder for livestock, medicinal plants and tubers, honey, mushrooms and wild animals. Although access to the fenced reserve is not allowed, occasionally people obtain livelihood essentials from the forest. The economy of the local community is mainly agriculture-based. Nevertheless, tourism, fisheries, livestock keeping, palm wine tapping, cooperatives and small-scale businesses limited to the main market centres of Kwale and Kinango also contribute significantly to the economy of the local communities. Formal employment opportunities are limited and are mostly in the Civil Service such as teaching, nursing, wildlife conservation and protection and forest management. Some community members are employed by NGOs in conservation and environmental management programmes, as well provision of humanitarian assistance especially relief food in the drier areas of Kinango and Mwaluganje.

3.3.2 Mwaluganje Elephant Sanctuary

The spatial description and extent for Mwaluganje Elephant Sanctuary consists of 36 Km^2 or 6,000 acres of land. The Sanctuary borders SHFNR. It was established in 1993 as a measure to stem perennial human-wildlife conflicts occasioned by continued population increase for both human and elephants. Discussions were initiated between the communities, the government and other stakeholders in a bid to resolve the conflict. A major outcome of the negotiations was the agreement with the community that they would forgo farming within their farms in exchange for a community managed elephant sanctuary and Mwaluganje was born. The agreement was that the proceeds from tourism activities would be used to compensate for the lost farming opportunity. The company has therefore been under the management of a limited liability company since 1994. The communities who own the land in Mwaluganje are compensated annually from the profit accrued in the Sanctuary.

3.3.3 Shimba Hills Community Forest Association (SHICOFA)

More inclusive, people-oriented and community-based approaches to conservation were in part a reaction to the failures of exclusionary conservation, in an environment in which social and economic factors were increasingly seen as key to conservation success. This led to the formation of SHICOFA with representatives from Shimba Hills, Mwaluganje, Mkongani North and Mkongani West Forest Reserves. It also extended its membership to Mwalungange Elephant Sanctuary (MES). SHICOFA was initiated and registered under the Societies Act, Cap 108 in the year 2010. This was initiated by KFS to mainstream Participatory Forest Management (PFM) as part of the implementation of the

Forests Act, 2005 and its successor Forest Conservation and Management Act, 2016.

SHICOFA began with 14 groups that engaged in tree nursery production and recruited over 60 groups. SHICOFA has grown from a tree nursery enterprise to include other enterprises such as bee keeping, ecotourism, *Aloe vera* herbal products, fruit processing, chilli pepper and fish farming. SHICOFA has 11 Community Wildlife Conflict Mitigation Committees in all 11 locations within the Shimba Hills ecosystem. This committee links together with the resource managers i.e. KFS and KWS in reporting stray wildlife, illegal activities in the forest and in promoting conservation to the members of the community. Table 9 shows the forest user groups under SHICOFA.

Table 9: Shimba Hills Forest User Groups and CFA Membership

S/N	Name of Group	Location	No. of Members	Status & activities
1	Chitsanze Falls Conservation Group	Golini	17	Tree nursery, tourism & conservation education
2	Shimba Hills Forest Guides Association	Golini	20	Conservation education & ecotourism
3	Pet Mazumalume CBO	Tsimba	15	Bee keeping, tourism & conservation education
4	Lima Self Help Group	Tsimba	20	Nature base & enterprise
5	Vitendo Women Group	Golini	23	Bee keeping & tree nursery
6	Jamii Action Centre	Golini	19	Talent management, enterprise development & peace and cohesion
7	Green And Clean Conservation Group	Majimboni	17	Tree nursery/planting
8	Pasha Community Group	Golini	21	Tree nursery & tree farming
9	Kipepeo Self Help Group	Golini	15	Butterfly farming
10	Mawazo Agroforestry	Mwaluphamba	17	Tree nursery/tree farming
11	Mkanda 3 Development Group	Lukpore	23	Passion farming & tree nursery
12	Kenya Union for the Blind (KUB)	Lukore	13	Conservation and Tree Nursery
13	Enuka Conservation Group	Mkongani	17	Conservation and Tree Nursery
14	Mwaluganje Sanctuary	Kinango/Golini		Conservation and Tree Nursery
15	Majimboni Disabled CBO	Majimboni	30	Conservation and Tree Nursery
16	Muungano SHG	Waa	20	Conservation and Tree Nursery

S/N	Name of Group	Location	No. of Members	Status & activities
17	Amkeni Women Group	Majimboni	15	Conservation and Tree Nursery
Shimba Hills CFA and Community Wildlife Conflict Mitigation & Conservation Committee (CWCMC) per Location				
18	CWCMC-Forest Adjacent Community Group	Tsimba	10	Bee keeping & tree planting
19	CWCMC-Forest Adjacent Community Group	Golini	10	Bee keeping & tree planting
20	CWCMC-Forest Adjacent Community Group	Mbuguni	10	Bee keeping & tree planting
21	CWCMC-Forest Adjacent Community Group	Gandini	10	Bee keeping & tree planting
22	CWCMC-Forest Adjacent Community Group	Ng'onzini	10	Bee keeping & tree planting
23	CWCMC-Forest Adjacent Community Group	Mwaluphamba	10	Bee keeping & tree planting
24	CWCMC-Forest Adjacent Community Group	Lukore	10	Bee keeping & tree planting
25	CWCMC-Forest Adjacent Community Group	Mwaluvanga	10	Bee keeping & tree planting
26	CWCMC-Forest Adjacent Community Group	Majimboni	10	Bee keeping & tree planting
27	CWCMC-Forest Adjacent Community Group	Mkongani	10	Bee keeping & tree planting
28	CWCMC-Forest Adjacent Community Group	Mangawani	10	Bee keeping & tree planting
29	Kinango Ndogo	Mwaluvanga	24	Conservation, tree nursery
30	Vumirira Women Group-Kinarini	Golini	21	Tree nursery & firewood

Source: SHICOFA Membership Register, 2019

CHAPTER FOUR

PLANNING CONSIDERATIONS

4.1 Policies and Legal Framework

The preparation, planning and implementation process of the Shimba Hills Ecosystem Management Plan (SHEMP) should recognize the policy and legal instruments that protect forests, wildlife and govern the utilization of these resources whether for consumptive or non-consumptive uses. The National Forest Policy 2015 and Forest Conservation and Management Act 2016; the Sessional Paper No. 01 of 2020 on Wildlife Policy, the Wildlife Conservation and Management Act, 2013; and the Environmental Management and Coordination Act 2015; were therefore adequately considered in the development of this plan.

For planning considerations, it is envisaged that the relevant laws pertaining to protection of the ecosystem will be enforced and where they are weak they will be reviewed or supplemented with appropriate institutional engagement instruments e.g. Memorandums of Understanding (MoUs) to assist in implementing the ecosystem plan. Communities living adjacent to the ecosystem will be sensitized on their roles and responsibilities in participatory natural resource management within the context of this ecosystem plan.

The preparation, planning and implementation process of the Plan takes into cognizance the existence of the National Forest Policy 2015 and the Forests Conservation and Management Act 2016, the Sessional Paper No 01 of 2020 on Wildlife Policy, Wildlife Conservation and Management Act, 2013 and others that pertain to the conservation of the environment as follows:

4.1.1. The Constitution of Kenya

Being the supreme law of the country, the Constitution has made various provisions for sustainable management of natural resources, forests and wildlife included. Under the rights and fundamental freedom, Article 42 provides for the right to a clean and healthy environment and its protection for present and future generations. Further,

Article 61 (e) provides for sound conservation and protection of ecologically sensitive areas;

Article 69 provides for sustainable utilization, management and conservation of natural resources, attainment of a minimum forest cover of 10% as well as the protection of biological diversity. This Plan upholds these obligations through its programmes.

4.1.2. Environmental Management and Coordination Act

Environmental Management and Coordination Act plays a supervisory role over all the environmental related legislation in the country. It provides legal and institutional frameworks and procedures for management of the environment as well as modalities for conflict resolution. Article 54 of EMCA recognizes ecological significant areas which also include community conservation areas while Article 55 institutionalises integrated coastal Zone management (ICZM) as a tool for protection and conservation of coastal and marine environment. The Plan is well guided by the provisions of the Act in its development and implementation of programmes, as well as in monitoring environmental impacts.

EMCA is a framework law for environmental management in Kenya. It confers statutory rights to a clean and healthy environment in Kenya. Section 43 (1) of EMCA promotes the prescription of measures by NEMA, for co-management of critical habitats within or around a lake basin; wetland, forest or coastal zone and that such measures shall take into consideration the interests of the community resident therein. In consultation with the lead agencies, NEMA is mandated to exercise general supervision and coordination over all matters relating to the environment and working

together with other agencies to prescribe measures for attainment of 10% tree cover. The Act provides for environmental protection through;

- Environmental impact assessment
- Environmental audit and monitoring
- Environmental restoration orders, conservation orders and easements.

4.1.3. Draft National Forest Policy, 2020

The Forest Policy provides a framework for improved forest governance, resource allocation, partnerships and collaboration with state and non-state actors to enable the forestry sector to contribute in meeting the country's growth and poverty alleviation goals within a sustainable environment. The National and County governments have to play their part in providing an enabling environment, effective extension service, forestry research and allocation of funds to the sector. Meaningful participation of stakeholders will continue to be sought through regular consultation and discussions, in order to attain the most efficient, sustainable and equitable use of forest resources.

The main features of the draft forest policy which relate to forest include;

- The devolution of forest conservation and management, implementation of national forest policies and strategies, deepening of community participation in forest management by the strengthening of community forestry associations, and the introduction of benefit-sharing arrangements.
- The preparation of a national strategy to increase and maintain forest and tree cover to at least 10% of the total land area and for the rehabilitation and restoration of degraded forest ecosystems, and the establishment of a national forest resource monitoring system.
- The adoption of an ecosystem approach for the management of forests, and recognition of customary rights and user rights to support sustainable forest management and conservation.
- The establishment of national programs to support community forest management and afforestation/reforestation on community and private land.
- The introduction of a chain-of-custody system for timber and wood products, and legal origin and compliance certificates for exporters of timber and wood products.

4.1.4. The Forest Conservation and Management Act No. 34 of 2016

This is an Act of parliament to give effect to Article 69 of the Constitution with regard to forest resources; to provide for the development and sustainable management; including conservation and rational utilization of all forest resources for the socio-economic development of the country.

- Section 47 (1) states that every public forest, nature reserve and provisional forest shall be managed in accordance with a management plan.

- Section 47 (2) states that the Service shall be responsible for the preparation of the management plan with each public forest, nature reserve and provisional forest.

The Forest Conservation and Management Act, 2016 provides for community participation in forest management through registration of Community Forest Associations (Section 48). Section 48 (1), (2), (4) provides as follows; -

- A member of a forest community may, together with other members or persons resident in the same area, register a community forest association in accordance with the provisions of the Societies Act Cap 108.

- A community forest association registered in accordance with this section may apply to the Service for permission to participate in the conservation and management of a public forest.

- Where the service grants permission in accordance with this section, it may impose such conditions as it may deem fit including the development of a forest management plan in accordance with this Act.

4.1.5 The Wildlife Policy 2020

The Wildlife Policy embodied in Sessional Paper No. 01 of 2020 aims to create an enabling environment for conservation and sustainable management of wildlife for current and future generations. The key elements of this Policy relevant to SHE may be summarized as follows:

- The Act promotes effective and integrated management of coastal resources;
- Supports the development and implementation of ecosystem based management Plans for key wildlife landscapes;
- Promotes; wildlife conservation education and public awareness, the use of indigenous knowledge in conservation and management of wildlife resources, human wildlife co-existence and physical developments to mitigate against wildlife in important wildlife habitats;
- Promotes collaborative frameworks for wildlife conservation and management.

4.1.6. The Wildlife Conservation and Management Act, 2013

The Wildlife Conservation and Management Act, 2013 provides for the protection, conservation, sustainable use and management of wildlife in Kenya and for connected purposes.

One of the key functions of KWS as stipulated in the WCMA, 2013 is to coordinate the preparation and implementation of ecosystem management plans. Section 44 of the WCMA, 2013 provides that protected areas shall be managed in accordance with management plans that comply with the requirements prescribed by the Fifth Schedule.

Section 48 of the WCMA, 2013 prohibits the carrying out of any activity which negatively affects the survival of endangered, vulnerable and nearly threatened and protected species. The Act stipulates that a genuine victim of human-wildlife conflict has a right to seek compensation. Owners of crops, property or livestock destroyed by wildlife get compensated for their loss; those not satisfied may appeal to the National Environment Tribunal or Environment and Land Court. The loss of life, injury or property damage must be reported to the nearest KWS office within 48 hours. Making a false report to the committee regarding a human wildlife conflict compensation claim is illegal. The Act provides for the establishment of Community Wildlife Associations (CWAs) to ensure participation of the local community in the conservation and management of the ecosystem. The Plan outlines activities which are aimed at promoting preservation of habitats and biodiversity.

4.1.7. Tourism Act, No 14 of 2011

Section (5) of the Tourism Act gives the CS mandate to formulate and publish a national tourism strategy which prescribes the principles, objectives, standards, indicators, procedures and incentives for the development, management and marketing of sustainable tourism. This plan shall therefore be implemented to implement the following subsections:

(c) Measures to facilitate and enhance domestic and regional tourism taking cognizance of the county governments;

(g) National tourism research and monitoring priorities and information systems;

(h) Measures necessary to ensure equitable sharing of benefits in the tourism sector.

The Act also stipulates one of the functions of the Tourism Regulatory Authority which will of concern to this plan;

(a) Formulate guidelines and prescribe measures for sustainable tourism throughout the country; and The Tourism Board which;

(c) Identify tourism market needs and trends and advise tourism stakeholders accordingly;

(d) Determine, in consultation with lead agencies, the carrying capacities of the various tourism destinations and conservation needs and priorities;

(f) Research on sustainable tourism and other emerging areas;

(h) Organise symposia, conferences, workshops and other meetings to promote the exchange of views on issues relating to tourism research and analysis;

(i) Publish, annually, research findings and communicate recommendations to the relevant lead agencies, institutions and other stakeholders in the tourism sector;

Part (iv) 61 establishes a Tourism data-base through The Institute which, in consultation with relevant lead agencies and stakeholders, ensures that data is collected in accordance with any harmonized national standards that may be prescribed under this Act or regulations made thereunder. It also stipulates that the Institute shall, in respect of the data and information that it holds, progressively make the data and information available and accessible, through any means, to all the stakeholders and the general public. Prescribe regulations to carry out the purposes of this section.

4.1.8. Energy Act, No. 12 of 2019

The Act promotes the development and use of renewable energy including providing an enabling framework for efficient and sustainable production, distribution and marketing of biomass and other forms of renewable energy. Section 75 (2) (c) of this Act promotes the use of fast maturing trees for energy production including bio-fuels and the establishment of commercial woodlot plantations. It also promotes the development and exploitation of renewable energy sources through harnessing opportunities offered under Clean Development Mechanisms which include, but not limited to, carbon credit trading under Section 75 (2) (g).

4.1.9. Water Policy and Legislation

This is an Act of parliament that provides for the regulation, management and development of water resources, water and sewerage services in adherence to Constitutional requirements. Section 9 states that" *every person has a right to access water resources*" while Section 10 stipulates that *"the Cabinet Secretary responsible for water shall formulate a National Water Resource Strategy which shall contain measures for protection, conservation, control and management of water resources and approved land use for the riparian areas".* It places emphasis on the value of water towards the attainment of national development aspirations and millennium development goals. The country's vision is to achieve sustainable management and the development of the water resources as a basis for poverty alleviation and promotion of social economic development. The policy direction includes;

- Treat water as a social and economic good
- Preservation, conservation and protection of the available water resources
- Sustainable, rational and economic allocation of water resources.
- Supplying an adequate amount of water meeting acceptable standards for various needs
- Ensuring safe waste disposal for environmental processes

Developing a sound and sustainable financial system for effective and efficient water resources management, water and sanitation and water borne sewage collection, treatment and disposal

The Act establishes the Water Resources Authority (WRA), the National Water Harvesting and Storage Authority, the Water Services Regulatory Board, the Water Sector Trust Fund and the Water Tribunal. The objective of the new WRA is to protect, conserve, control and regulate use of water resources through the establishment of a national water resource strategy. In addition, the WRA is responsible for:

- formulation and enforcement of standards, procedures and regulation for the management and use of water resources;
- policy development;
- planning and issuing of water abstraction permits; and
- setting and collecting permits and water use fees.

4.1.10. National Monument and Antiquities Act, 2015

Historically, the Mijikenda community depends on the Shimba hills forest for cultural and religious practices. Presence of caves, shrines and natural groves in various parts of the forest are evident of these claims. Thus, upholding values and practices held by this community is important in the management of the forest. Due to these cultural and spiritual practices held by the local community, some parts of the ecosystem have been gazetted as national monuments under the National Monument and Antiquities Act, 2015 by the National Museums of Kenya (NMK). These sacred forests are Kaya Kwale, Kaya Mtae and Chitsanze. Natural groves include Longo Mwagandi and Njembe, while historical sites are World War I and II sites, and historical monuments near Kwale Law Courts, Mwazang'ombe.

4.1.11. Land Policy and Legislation

Article 11 of Land Act (2012) mandates the National Land Commission to take appropriate action in maintaining public land that has endangered or endemic species, and critical habitats or protected areas, in consultation with institutions dealing with conservation. As part of ecosystem protection, fragile ecosystems are to be managed through development of integrated land use plans so as to prevent degradation and climate change. This Plan acknowledges and addresses the important role played by SHE in biodiversity conservation and management; livelihood enhancement and that it is to be managed in an integrated manner. Section 12 provides that public land that falls within a forest, wildlife reserve, mangroves, and wetlands shall not be allocated and EIAs should accompany land development plans (Section 17).

4.1.12. National Land Policy, 2009

National Land Policy aims at guiding the Country towards a sustainable and equitable use of land. It calls for immediate actions to address environmental problems that affect land such as degradation, soil erosion and pollution. For instance, the Policy stipulates the principles of conservation and management of land-based natural resources and the principles of protection and management of fragile and critical ecosystems including wetlands and arid lands.

To manage natural resources sustainably, the government is mandated to facilitate the preparation of participatory environmental action plans by communities and individuals living near environmentally sensitive areas in order to take into account cultural and socio-economic values. Land matters cut across every sector of the economy.

4.1.13. Land Use Policy, 2017

Chapter 2 under section 2.5.7 of this policy recognizes the importance of natural resources and the environment. According to this policy, natural resources include forests, wildlife, water and water bodies which are important for soil conservation, regulation of microclimate, water catchment and source of income and livelihood.

National Land Use Policy is anchored by values and principles such as; ecological sustainability, equity, inclusivity and transparency in decision making and effective public participation. Specifically, this policy offers a framework of recommendation and principles designed to ensure the maintenance of a land use system that will provide for:

Environmental management and sustainable production in the utilization of land resources, in this case, forest resources.

Coordination and integration of institutional linkages in planning at sectoral and cross- sectoral levels to foster collaboration and decision making among different land users.

Chapter 3 under section 3.13 of this policy realises environmental and natural resource conservation as key in the realization of any socio-economic development in a country. To protect natural resources and prevent environmental degradation to foster sustainable development, the government shall; -

- Identify, map and document the land area encompassing key natural resources.
- Ensure reclamation of degraded natural resources and environment.
- Enhance capacity of regulatory and enforcement agencies who include NEMA, KFS, KWS, WRA and KWTA.
- Prohibit settlement and other activities within sensitive ecological zones.

Under section 3.14 on biodiversity conservation the government has a task in conserving and sustaining Kenya's biodiversity, and therefore, shall; -

- Identify and map each major habitat type and ensure that where more than 80% of the original extent of a particular habitat has been lost naturally that no further loss is permitted and the restoration is undertaken to reach a minimum 20% target.
- Promote integrated ecosystem management approaches in land use management
- Provide incentives for community participation in conservation of natural resources and environment.

4.1.14. Others

The other policies and legislations relevant to SHEMP are summarised in Table 10.

Table 10: Other policies and legislations in the planning considerations

The Agriculture and Food Authority Act, 2013	The Act in essence gives directions on development; preservation and utilization of agricultural land so as to ensure that there is conservation of soil, prevention of deforestation and protection of water catchment areas.
Agriculture (Farm Forestry) Rules, 2009	The Act provides guidance on development and practice of farm forestry activities in Kenya with an aim to preserve and sustain the environment in combating climate change and global warming. Since the area under the Plan extends to private farmlands, it envisions promoting farm forestry so as to sustainably exploit forest produce and reduce exploitation pressure on forests, while contributing to the national objective of obtaining at least 10% forest cover.
The National Government Co-ordination Act, No. 1 of 2013	The Act establishes an administrative and institutional framework for coordination of National government functions at the National and County levels. The key role of the staff of the Ministry of Interior is to enforce law and order and disseminate National Government policies. In the conservation and management of forests; the ministry has been useful in promoting participatory forest management through community and sensitization barazas. This Act is also useful when dealing with demarcation and alignment of forest boundaries, dispute resolution outside gazetted forests and use of resources on public land for local community development.
The County Government Act, 2012	The Act makes provisions for, among others, facilitation of effective public participation in governance of county governments including sustainable management and utilization of natural resources. Some of the objectives to county planning include but not limited to; facilitating the development of a well-balanced system of settlements and ensure productive use of the scarce land, water and other resources for economic, social, ecological and other functions across a county and maintaining a viable system of green and open spaces for a functioning ecosystem.
Physical Planning Act of 2012, Cap 286	The Act provides for the preparation and implementation of physical development plans. Sections 4 and 5 (36) of the Act provide for protection of the environment and that development should be in harmony with environmental considerations.
Crops Act, No. 13 of 2013	Seeks to promote and maintain stable agriculture, to provide conservation of the soil and its fertility and to stimulate development of agricultural land in accordance with the accepted practices of good land management and good husbandry.
Public Benefits Organizations Act of 2013	It provides an administrative and regulatory framework within which public benefit organizations can conduct their affairs and connected purposes. In the Plan, CFA and its affiliate user groups fall under the jurisdiction of this Act.
Climate Change Act (No. 11 of 2016	The objective of the Act is to "Enhance climate change resilience and low carbon development for sustainable development of Kenya." Section 24 (1) allows for public participation when developing strategies, laws and policies relating to climate change. Article 24 (2) states that public consultations are undertaken in a manner that ensures the public contribution makes an impact on the threshold of decision making.

4.2 Links to Multilateral Environmental Agreements

4.2.1. Sustainable Development Goals (SDGs)

The Plan is set to largely contribute to the SDGs which are set to steer towards protection and development of forestry resources, environmental conservation, poverty eradication, food security, among others. In particular, several aspirations of SDGs are recognized in the Plan with ecological and socio-economic importance of the forest ecosystem falling under its scope. They include:

- SDG 1 - End Poverty. As a result of involving the community in the management and conservation of the forest resources, they are entitled to some benefits which improves their livelihoods. These benefits include user rights like beekeeping and honey harvesting, and collection of herbal medicine. They can also get support from donors and engage themselves with income generating Nature Based Enterprises (NBEs).
- SDG 6 - Clean Water and Sanitation; that ensures availability and management of water and sanitation for all.
- SDG 12 - Sustainable consumption and production patterns; every year, the world loses about a third of all the food it produces. To feed the world sustainably, producers need to grow more food while reducing negative impacts on the environment such as soil, water and nutrient loss, greenhouse gas emissions and degradation of ecosystems.
- SDG 13 - Climate Action; by taking urgent action to combat climate change and its impacts.
- SDG 15 - Life on Land where forests are the main target; the goal seeks to restore, protect and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss.

4.2.2. The Global Forest Goals (2017-2030)

The UN Forum on Forests developed a Strategic Plan for Forests (2017-2030) which features 6 Global Forest Goals to be achieved by 2030. The strategic plan was adopted by the UN Forum on Forests to provide a global framework for actions at all levels to sustainably manage all types of forests and trees outside forests and halt deforestation and forest degradation.

The Global Forest Goals are as follows;

- Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, aforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing climate change.
- Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest dependent people.
- Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.
- Mobilize significantly increased new and additional financial resources from all sources for the implementation of sustainable forest management and strengthen scientific and technical cooperation and partnerships.
- Promote governance frameworks to implement sustainable forest management, including through the UN Forest Instrument, and enhance the contribution of forests to the 2030 Agenda.
- Enhance cooperation, coordination, coherence and synergies on forest-related issues at all levels, including within the UN System and across Collaborative Partnership on Forests member organisations, as well as across sectors and relevant stakeholders.

4.2.3. Convention of Biological Diversity (CBD)

The objective of CBD is to ensure that all forms of biodiversity are conserved, including the sustainable use of its components and the fair and equitable distribution of its benefits arising out of utilization of the genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over these resources. The CBD's principle gives States a right to exploit their own resources pursuant to their own existing environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction. It also promotes in-situ as well as ex-situ conservation of the components of biological diversity. Shimba Hills Ecosystem is endowed with diverse species of plants and animals, some which are endemic. The plan would, therefore, endeavour to conserve, sustainably use and manage the resources for their existence in the future.

4.2.4. The United Nations Framework Convention on Climate Change (UNFCCC)

The convention on Climate Change sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that anthropogenic activities contribute to emission of greenhouse gases that are major drivers of climate change. Its overall goal is; stabilization of the greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Section 4 on commitments states that parties shall promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal protocol, including biomass, forests, and oceans as well as other terrestrial, coastal and marine ecosystems. Under the Kyoto Protocol of the UNFCCC, the parties to the convention are expected to initiate strategies that aim to enhance carbon sinks as one of the climate change mitigation strategies, while giving impetus for carbon trading ventures.

4.2.5. East African Community Treaty (EAC)

The Treaty provides a legal and institutional framework under which the regional management of the trans-boundary ecosystems can be addressed, through the community's policy organs, such as the committee on environment and natural resources. It is imperative to take into cognizance the fact that the area under the jurisdiction of this Plan is near the common border with Tanzania and issues like cross border trade in forestry and allied natural resource products are common. This treaty articulates procedures and operation mechanisms under which such cross-border commerce should be conducted. The treaty also recognizes the importance of biodiversity conservation and ecosystem management and at the same time meeting the livelihood needs of the people that depend upon these ecosystems. The framework established by the treaty provides a forum for harmonizing policies in the management of shared ecosystems within the signatory states.

4.3 Links to National Planning

4.3.1. Vision 2030 Development Blueprint

Vision 2030 is Kenya's development blueprint aiming at making the country a newly industrializing middle-income nation, providing high quality of life for all the citizens. It is based on 3 pillars: economic, political and social (environment/ forestry) and further recognizes the role of forests in supporting and stimulating national development. Thus, the relevance of conservation, rehabilitation and sustainable utilization of forest resources, as well as improvement of livelihood activities tackled in this Plan through activities in the management programmes. These activities are aimed at achieving the Plan's goals and subsequently largely contributing to the achievement of the Vision 2030 social pillar (which captures environmental issues). The vision also lays foundation of the Big 4 Agenda (2018) which establishes priorities for 2018 to 2022 of ensuring food security, affordable housing, increased manufacturing and affordable healthcare.

4.3.2. Kwale County Integrated Development Plan (2018-2022)

This is a development master plan of Kwale County; the document articulates environmental, social and economic development within the County in a holistic manner. It offers a roadmap towards ensuring sustainable development of all sectors in the County to realize her vision through strategic platforms. Among them are;

- Ensure there are more prospects for research, extension services and facilitate improvements in production, processing and marketing of agricultural related products to ensure the county is food secure and provides more opportunities for job creation among the urban and rural populations.
- Land and environment. Taking cognizance of the squatter problem and adverse competition in terms of natural resource use which often breeds conflicts, the county government will engage the National Land Commission to address the land tenure issues while strengthening the capacity of natural resources management institutions to provide sustainable environmental stewardship.
- Job creation through increased investments in the county would create income generating opportunities for young people which would deter them from engaging in crimes.
- Kwale has diverse social and cultural assets which can be harnessed to create wealth to the people. The county government will therefore initiate social and cultural investment programs to tap the great potential the sector offers.

4.4 SHE Zonation Scheme

The zonation scheme provides a framework for the management of the ecosystem. The importance of zoning in any particular ecosystem is critical as it guides the different management strategies and future planning of particular areas that can sustainably be attained without having adverse conflicts with adjacent areas. Zones refer to areas where the achievement of one or more management objectives take priority over the others and generally provide direction for daily management as well as long term decision making. Consideration has been given to the capability, suitability and feasible opportunities available that can be supported in different zones with respect to the land use/cover patterns in the ecosystem. The SHE is divided into five zones which are distinct in the type of activities that will be allowed and the species of fauna and flora each zone supports (Figure 10). The six zones for the ecosystem are;

- Tourism Use Zone
- Biodiversity Conservation Zone (indigenous forest)
- Plantation Zone
- Cultural Use Zone
- Intervention Zone
- Subsistence Use Zone

4.4.1. Tourism Zone

The dominant vegetation type in this zone is open grassland and bushland-grassland. The open type of vegetation allows unobstructed viewing of the wildlife that utilises this zone. Tourist activities which do not have a negative impact on the environment are allowed in specific interest areas of this zone.

4.4.2. Biodiversity Conservation Zone

The protection zone includes Makadara Forest, Longo Mwagandi Forest and a section of the Southern Forest. These forests are rich in plant and animal species and thus important for biodiversity conservation. No exploitation of the forest resource will be allowed in this zone but low impact tourist activities such as picnicking and nature walks will be allowed.

The primary focus of management in this zone is the conservation of forests, bushland and grassland habitats. A secondary focus of the zone is on tourism. Consumptive use of biodiversity is not permitted in this zone.

4.4.3. Plantation Zone

This zone refers to the exotic forest plantations consisting mainly of *Pinus caribaea* and Eucalyptus spp covering 910ha established between 1960's and early 1990's. The plantations straddle the forest reserve areas of Shimba Hills, Mkongani and Mwaluganje. This plantation zone will be phased down gradually to allow for natural regeneration.

4.4.4. Cultural Use Zone

The cultural use zone includes sites used by the local communities and those gazetted under the National Museums and Heritage Act, 2006 for the protection of sites of historical, cultural or religious significance to the local communities. These sites include the Kayas (Kwale, Mtae, Chitsanze and Longomwagandi shrine) that are still considered sacred by the Mijikenda community. These zones could also serve the purposes of biodiversity conservation and eco-tourism as no consumptive uses are allowed.

4.4.5. Intervention Zone

The intervention zone is the 5Km buffer around the PA boundary set aside for conservation activities, nature based enterprises and other income generation activities that addresses the needs of the local communities depending on the forest resources.

4.4.6. Subsistence Use Zone

This zone is located in Kivumoni and Mkongani North areas. Local people can collect firewood, building poles and medicinal herbs from these areas provided that they have been licensed by KFS.

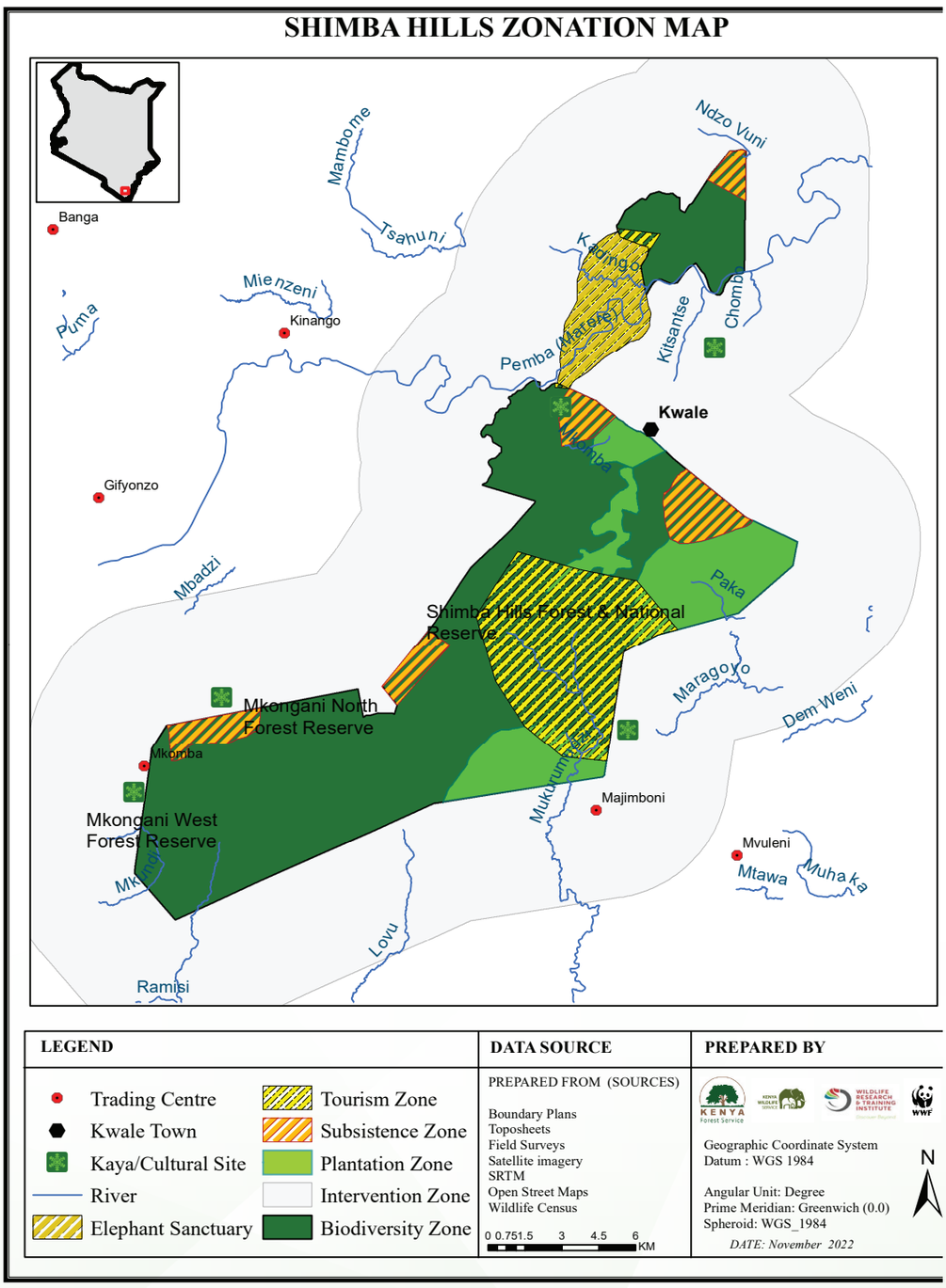


Figure 10: SHE zonation scheme

CHAPTER FIVE

SHE MANAGEMENT PROGRAMMES

5.1 Forest Conservation and Management Programme

5.1.1. Programme Purpose and Strategy

The purpose of the Forest Conservation and Management Programme is:

To conserve and protect the SHE natural forest and its rich biodiversity for sustainable supply of ecosystem goods and services.

Shimba Hills Ecosystem is regarded as one of the most diverse forest ecosystems in the Coast Region of Kenya. The natural forests cover 25,905ha consisting of 14,000.4ha of indigenous forest, 9,894ha of bushland, 1,100ha of grassland and 910.7ha plantation as shown in Figure 11.

The forest is an important water catchment and source of four permanent rivers, namely Marere, Mwachema, Mkanda and Mkurumudzi. In addition, the forest hosts high value tree species such as the *Milicia excelsa*, *Erythrophleum suaveolens*, *Newtonia buchananii*, *Brastigia spiciformis* and *Afzelia quanzensis*.

The natural forests are important to the local community for provisioning services such as fuel wood, non-timber forest products such as resin, honey and medicinal herbs. The ecosystem also provides regulatory services such as water regulation, soil and water conservation and carbon sequestration. Provision of cultural services is exemplified by the presence of Kwale and Longomwagandi 'Kayas' that are important to the Mijikenda communities in the area for traditional religious practices. This ecosystem has 910.7ha of *Araucaria Cunninghami* and *Pinus caribbea* plantations. The local community and forest industry have been harvesting resin from the latter to support construction industry.

Despite the importance of this forest ecosystem, it has been degraded through illegal logging, wildfires and the resultant invasive species which threaten the ecological integrity of SHE.

To address these issues holistically, KFS has embraced the Participatory Forest Management (PFM) approach in the management of its forest resources in Kwale. It is envisaged that stakeholder participation will significantly contribute towards reduction of threats and subsequently enhance sustainable management of forest resources. This Programme aims to address the threats that are impacting on the most important values of the SHE, and to provide a guiding framework for the long-term forest resource conservation in the area.

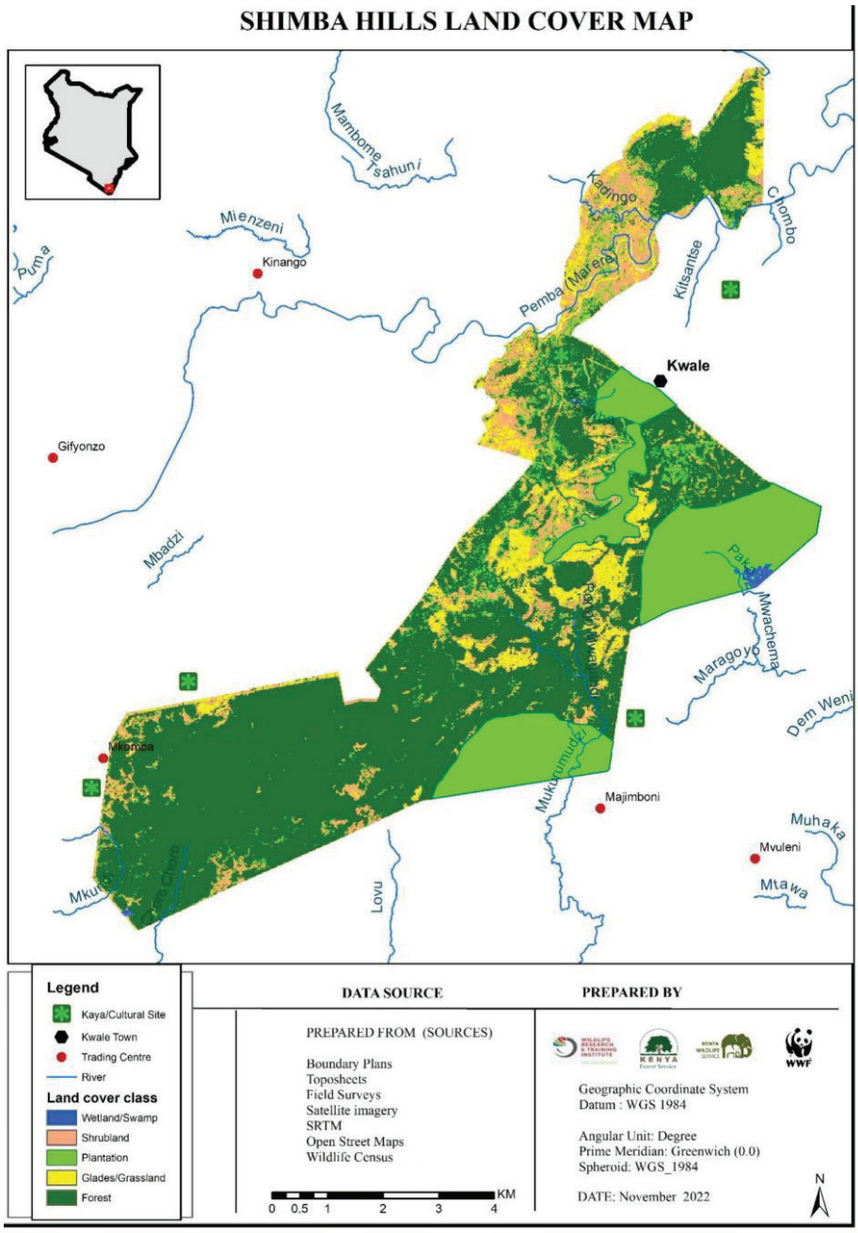


Figure 11: SHE land and vegetation cover

5.1.2. Guiding Principles

The following sections set out the guiding principles that are designed to guide SHE managers and stakeholders in the implementation and the achievement of this Programme Purpose. In implementing the Forest Management Programme, SHE Management will strive to ensure that:

- *The forest ecosystem provides provisioning, regulatory, cultural and supportive services*
- *The integrity of the natural forests is improved through protection of natural forest areas*
- *Local communities are actively involved in forest conservation and management*
- *Forest fires are effectively managed and monitored*
- *Plantations areas revert to natural forests*

5.1.3. Management Objectives and Actions

Objective 1: Manage, utilize forest resources sustainably and protect all forest areas

The future desired state of SHE is where the forest areas are sustainably managed to fulfil social, economic, ecological, cultural and spiritual needs of the present and future generations. The SHE forests have been threatened by illegal logging of selected high value indigenous tree species. The magnitude of this threat has however been declining and is no longer comparable to the situation in the 1990s when the ecosystem experienced indiscriminate and wanton destruction of the forest through logging. This significant reduction in forest destruction through illegal logging can be attributed to community involvement and intensification of forest patrols by KFS and KWS management. It is vital that forest management be enhanced and degraded areas are restored to improve the ecosystem value and integrity which is the chief reason for its protection.

To achieve this objective, several management actions have been developed relating to preparation of a participatory forest management plan for Shimba hills forest reserve, Mwaluganje forest, Mkongani North and Mkongani West forest blocks; carrying out natural resource assessments, regulation of utilisation of wood and non-wood forest products, carrying out an assessment of degraded forest areas and enrichment planting. The following management actions will be implemented to achieve this objective.

Management Actions

1. Strengthen SHICOFA to include communities from these other forest blocks
2. Preparation of a participatory forest management plan for Shimba Hills Forest Reserve, (Mwaluganje, Mkongani North and Mkongani West forest reserves)
3. Carry out Natural Resource Assessment Survey (NRA)
4. Conduct ecosystem valuation in SHE
5. Promote sustainable utilisation of Non-wood Forest Products (NWFPs)
6. Carry out an assessment of degraded forest areas
7. Carry out enrichment planting in mapped degraded forest areas
8. Establish tree nurseries at Kinarini, Mutsangatamu, Kirewe, Majimboni
9. Raise indigenous suitable seedlings for enrichment planting and rehabilitation

Objective 2: Revert 910.7ha of exotic plantations areas to natural forest

SHE has 910.7ha of *Pinus carribea and Araucaria cunninghami* tree plantations (Annex 4) that were established between 1960 and early 1990.

The purpose for the plantations was to provide round-wood for the timber industry in Kwale. However, it has not been easy to harvest them since they fall within the Shimba Hills Forest and National Reserve where consumptive use of natural resources is prohibited. Further, the plantations have been heavily damaged by wildlife. Consequently, they have continued to lose their economic value due to game damage, ageing, forest fires and lack of silvicultural treatment.

The future desired state for the SHE in regard to the plantations is where they are gradually converted to natural forests. The natural forests will thereafter be sustainably managed to provide ecosystem services to the present and future generations. The following management actions will be implemented to achieve this objective.

Management Actions

1. Carry out joint assessments of forest plantations
2. Prepare and implement recommendations of the assessment reports
3. Prepare and implement the restoration plan for plantation areas proposed to revert back to indigenous forest areas
4. Increase capacity of KFS and community tree nurseries to supply indigenous tree seedlings
5. Rehabilitate the area reverted to indigenous forest areas

Ten Year Action Plan 2023 – 2033: Forest Conservation and Management Programme

The management objectives, actions, responsibilities and timeframe necessary for the delivery of each management action over the ten years of this management plan is as shown in Table 11.

Table 11: Ten Year Action Plan: Forest Conservation and Management Programme

Management Actions	*Unit*	10-year targets	Means of Verification	Annual Targets (Years)										Lead Agencies
				1	2	3	4	5	6	7	8	9	10	
Objective 1: Manage, utilize forest resources sustainably and restore the degraded forest areas														
1. Strengthen SHICOFA to include communities from these other forest blocks	No.	1	Strengthen CFA -Records	1										KFS, SHICOFA, Strategic partners
2.Prepare a PFMP for Shimba hills with SHICOFA	No.	1	Prepared PFMP -Records		1									KFS, SHICOFA, Strategic partners
3.Carry out Natural Resource Assessment (NRA) survey	No.	1	NRA report		1									KFS, Strategic partners
4.Conduct ecosystem valuation in SHE	No.	1	Report on the value of the ecosystem			1								KWS, KFS, CGK, WWF, WRTI, SHICOFA, Universities and other strategic partners
5.Promote sustainable utilisation of Non-wood Forest Products (NWFPs) like resin, honey, herbal medicine, ecotourism, water bottling, butterfly farming	No.	5	NWFPs sustainably used		1	2	3							KFS, SHICOFA, Strategic partners
6.Carry out an assessment of degraded forest areas	No	1	Assessment report		1									KFS, KWS, WRTI,C-GKWWF, SHICOFA
7.Carry out enrichment planting in mapped degraded forest areas	%	100	-Records			100	x	x	x	x	x	x	x	KFS, SHICOFA, Strategic partners

Management Actions	*Unit*	10-year targets	Means of Verification	Annual Targets (Years)										Lead Agencies
8.Establish tree nurseries at Kinarini, Mutsangatamu, Kirewe and Majimboni	No.	4	Nurseries established		2	2								KFS, KWTA, CFAs and Strategic partners
9.Raise indigenous suitable seedlings for enrichment planting and rehabilitation ('000')	No.	2000	No. of seedlings raised		200	200	200	200	100	100				KFS, KWTA, CFAs and Strategic partners
10.Carry out rehabilitation of degraded forest areas	No	1	Assessment report					1						KWS, KFS,WRTI,CG WWF, SHICOFA
11.Maintenance of rehabilitated sites-3000Ha (1,500-Enrichment planting,1,500 planting)	Ha	3000				400	400	400	400	400	500	500		KFS, KWS, CFAs and Strategic partners
12.Protection for natural regeneration	Ha	2000	-Area Protected -Records	400	400	400	400	400						KFS, KWS, CFAs and Strategic partners
13.Monitor, prevent and control forest fires	No	10	Reduced forest fire incidences	1	1	1	1	1	1	1	1	1	1	KFS, KWS, CFAs and Strategic partners
14.Control invasive species	%	100	Reduced/ eliminate invasive species	100	x	x	x	x	x	x	x	x	x	KFS, KWS, CFAs and Strategic partners
Objective 2: Revert 910.7ha of exotic plantations areas to natural forest														
Carry out joint assessment of forest plantations	No.	1	Joint assessment report		1									KFS, KWS, CFA and strategic partners
Prepare and implement recommendations of the assessment report	No.	1	Reports on implementation		1	x	x	x	x	x	x	x	x	KFS, KWS, CFA, SHICOFA and Strategic partners
Prepare and implement the afforestoration plan for plantation areas proposed to revert back to indigenous forest areas	No.	1	Rehabilitation plan	1										KFS, KWS, Strategic partners

Management Actions	*Unit*	10-year targets	Means of Verification	Annual Targets (Years)										Lead Agencies
Increase capacity of KFS tree nursery to meet the demand for indigenous tree seedlings ('000')	No.	1000	KFS tree nursery capacity		200	200	200	200	200					KFS, SHICOFA
Rehabilitate the area reverted to indigenous forest areas	Ha	1000	Indigenous seedlings raised			200	200	200	200	200				KFS, KWS, SHICOFA, Strategic partners

5.2 Wildlife Conservation and Management Programme

5.2.1. Programme Purpose and Strategy

The purpose of the wildlife conservation and management programme is to ensure that:

The ecological components and processes of the SHE are understood, restored and conserved, and threats to the area's key ecological features are reduced.

Shimba Hills Ecosystem has a wide array of flora and fauna with immense ecological, social and economic importance. Ecologically, SHE has rich faunal diversity, with Sable antelope as a species of special conservation interest due to its national endemism. Forest dwelling African elephants also occur in the ecosystem along with diverse birdlife (Figure 12 and Table 12). The ecosystem is particularly important for harbouring the endangered Sokoke pipit (*Anthus sokokensis*), the Southern Banded Snake Eagle (*Circaetus fasciolatus*) and the Fischer's turaco (*Tauraco fischeri*) that are listed as near threatened birds under the IUCN Red List. The ecosystem is also an important water catchment due to the presence of an expansive coastal rainforest cover. This coastal rainforest harbours 21% of all Kenya's flora and over 50% of the rare plant species known to occur in the country (Quintine Luke, 2004), and is thus a vital botanical research area. SHE is therefore regarded as a biodiversity hotspot. This exceptional wildlife undoubtedly makes SHE an important area for tourism and research in the region that has the potential of generating revenue for both the local and national economy.

Other socio-economic values associated with the forest include: non-wood products such as honey, herbal medicine, and wild fruits; firewood; and sacred areas (Kayas) which are cultural sites. However, successful management and conservation of this biodiversity faces several threats, including subsistence and trophy poaching, human-wildlife conflicts, inadequate information on ecosystem functioning, climate change impacts and habitat loss. The wildlife conservation and management programme, therefore, focuses on restoration and conservation of key wildlife species and habitats, securing ecosystem connectivity between SHE and adjacent ecosystems, as well as improving ecological understanding to support adaptive management.

5.2.2. Guiding Principles

In implementing the SHE's Wildlife Conservation and Management Programme, the programme will strive to ensure that:

- *Ecosystem connectivity between SHFNR and adjacent areas is secured through an ecosystem based management approach*
- *Shimba Hills Ecosystem habitats are rehabilitated and restored*
- *Viable populations of threatened and endangered wildlife species are maintained*
- *Understanding ecological components and processes to support adaptive management is improved*
- *Human-Wildlife coexistence promoted and conflicts minimized*

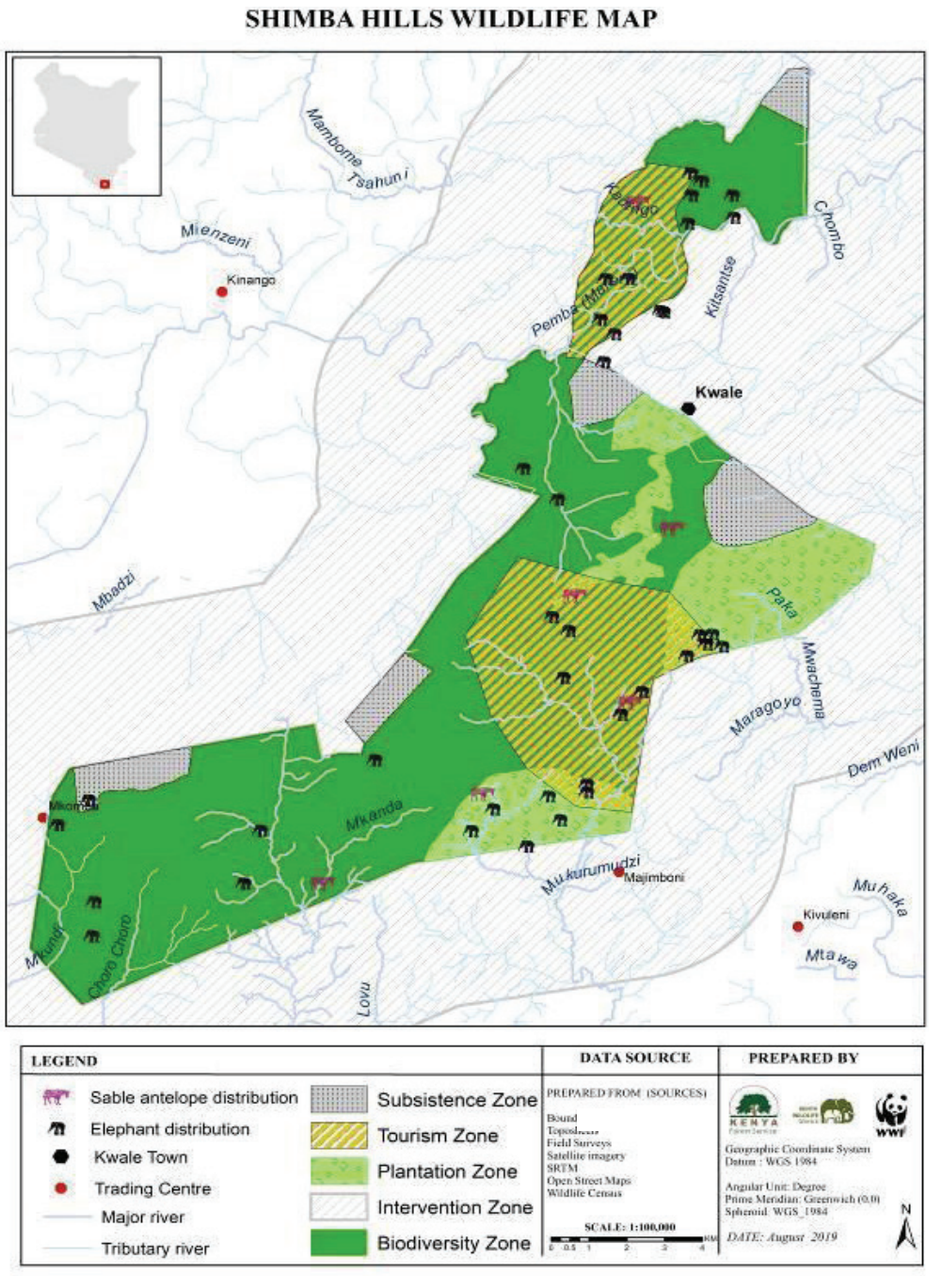


Figure 12: SHE habitat use map

5.2.3. Management Objectives and Actions

Objective 1: Threats to SHE habitats reduced and ecosystem connectivity maintained

Several threats hinder successful management and conservation of SHE habitats. The major threats to SHE habitats include: illegal logging, charcoal production, loss of wildlife corridors due to land use change, wildfires, poor implementation of prescribed burning and invasive plant species. Extraction of wood products through illegal harvesting to obtain building poles, timber, and energy (wood fuel) remains a major threat to SHE habitats. These human induced threats have contributed to degradation of Shimba Hills' habitat and overall biodiversity loss, as well as increased cases of human

wildlife conflicts. Elephants utilize wide home ranges and use specific migratory routes to traverse different habitats. However, land use change in some of these migratory corridors has resulted in increased human elephant conflicts.

Wild fires also contribute to degradation of SHE habitats. Most fires occur during the dry season as local communities prepare their farms for the planting season. Prescribed fire is however used to maintain Sable antelope habitats, though it is implemented without a management plan. Potentially putting management of grassland habitats in the ecosystem at risk due to lack of monitoring and adequate control. Invasive plant species such as *Lantana camara* common within the interface between PAs, and farmlands or human settlements are a threat to wildlife habitats in the ecosystem. However, there is a general lack of baseline information about these species that is required to effectively manage and control their spread. Essentially, continued loss of SHE habitats would mean extinction of already threatened and endemic species and loss of livelihood activities to the adjacent communities depending on the forest. The goal of this objective is therefore to restore degraded areas and maintain existing habitats to enhance ecosystem resilience.

Management Actions

1. Identify and establish wildlife corridors between SHE and adjacent ecosystems
2. Support formation of wildlife conservancies to safe guard wildlife corridors
3. Initiate new and support existing habitats protection, restoration and rehabilitation measures
4. Develop and implement a SHE fire management plan
5. Undertake prescribed burning in the SHE for habitat management
6. Develop and implement a site specific invasive species management plan

Objective 2: Conservation of key wildlife species in SHE enhanced

SHE hosts several wildlife species of global, regional and national conservation interests. Key animal species in this category include the African elephant (*Loxodonta africana*) and the nationally endemic Sable antelope (*Hippotragus nigerroosevelti)*. Although the elephant population has shown a stable trend over the years, the species remains highly threatened by trophy poaching often driven by illegal trade in ivory and changing land use. However, the Sable antelope has witnessed considerable decline in population and distribution in its former range and is currently restricted in SHFNR. The dramatic decline in the Sable antelope population has been attributed to both ecological (predation, diseases and inbreeding) and human induced factors. In response, a Sable Antelope Recovery and Action plan (2020-2030) is being developed and on completion will be implemented to aid its population recovery.

The uniqueness of SHE is further emphasized by the presence of diverse bird species, which makes it a focal bird watching and ornithological research area. Birdlife is an indicator of a thriving ecosystem; their successful conservation would culminate in the realization of ecosystem stability. However, there is inadequate bird monitoring and documentation of species needed for their conservation initiatives. SHE is also characterised by diverse plant species, some of which are classified as rare, endemic, vulnerable or endangered. These plants contribute to the ecosystem's importance in national plant conservation while also offering socio-economic benefits to the local community. There is however a general lack of information on the conservation status of these plant species and other key wildlife species in the ecosystem, including Mwaluganje Elephant Sanctuary (MES).

This objective focuses at enhancing conservation of these key wildlife species by ensuring that their conservation and management are directly contributing to the national conservation strategies' goals. Additionally, it will strive to gather more baseline information for other species and increase research targeting existing information gaps for effective management of the species.

Management Actions

- Monitor population dynamics of elephants
- Assess, review and recommend appropriate land uses in elephant migratory corridors and dispersal areas
- Complete and implement the Sable Antelope Recovery and Action plan
- Establish and implement a bird monitoring program
- Establish the status of threatened species in the ecosystem in collaboration with other partners
- Support capacity building of Mwaluganje Elephant Sanctuary (MES) on wildlife conservation

Objective 3: Scientific approaches to reduce human-wildlife conflicts explored

Human wildlife conflicts especially those involving elephants continue to occur in the area thus threatening their population and local community livelihoods. Though human-elephant conflicts have been minimized in the ecosystem through construction of electric fences, they still occur in dispersal areas and wildlife corridors connecting SHE and neighbouring conservation areas due to ongoing changes in land use. Other key animals that cause conflicts in the area include baboons and bush pigs.

Management Actions

1. Undertake research on approaches to reduce human wildlife conflicts
2. Collar elephants in dispersal areas and corridors for monitoring purposes
3. Monitor and enhance effectiveness of wildlife barriers

Objective 4: Ecological monitoring and research information dissemination strengthened

The desired state of the SHE in regard to ecological research and monitoring is where key ecosystem components such as wildlife, vegetation, hydrology and climate are monitored to discern ecosystem functioning and changes in habitat components; so that timely and appropriate management intervention measures can be taken by protected area managers. Currently, research and monitoring in SHE entails collection of skewed baseline data by WRTI and scientific studies by research institutions and universities. Although there has been long-term research and monitoring programs in the ecosystem especially in the protected areas, their impact on ecosystem management has been minimal. This is because ecological research and monitoring in the SHE face many challenges, including lack of adequately defined research protocols leading to inconsistency in data collection methods making data collected on similar aspects by different researchers impossible to compare.

Ecological databases are inadequate as well as capacity and resources to conduct research; while research ouxtputs are poorly disseminated. There is also inadequate use of indigenous knowledge in research and monitoring. Some of the proposed priority research areas under this program include: monitoring pests, determining the carrying capacity of elephants in the ecosystem; determining elephant ranging patterns; natural resource inventories; and establishing the causes of decline in the Sable antelope population.

The management actions that have been designed to realize the objective focus on establishing a long term ecological program, establishing an ecological database, carrying out priority research, strengthening SHFNR research substation and promoting collaboration with research institutions and universities in carrying out research in the ecosystem. The following actions will be implemented to achieve this objective:

Management Actions

1. Undertake natural resource inventories
2. Identify and conduct priority management-oriented research
3. Conduct research and ecological monitoring in collaboration with WRTI, other research institutions and universities

4. Develop and implement a SHE ecological monitoring programme, protocols and database
5. Monitor impacts of elephants on the structure of critical habitat
6. Undertake disease surveillance on key wildlife species
7. Control and monitor tsetse flies and ticks densities
8. Implement climate mitigation and adaptation strategies
9. Establish watering points for wildlife
10. Develop and equip a fully-fledged research sub-station
11. Integrate citizen science in ecological monitoring and research
12. Organise dissemination forums for research and monitoring outputs



Ten Year Action Plan: Wildlife Conservation and Management Programme

The following pages set out the ten-year action plan for wildlife conservation and management programme. The action plan details the management objectives and actions, responsibilities, timeframe necessary for the delivery of each management action over the ten years of this management plan. In addition, the plan sets out specific and time bound "milestones" that SHE management aims to achieve in implementing the plan (Table 12).

Table 12: Ten year Action Plan: Wildlife Conservation and Management Programme

Management Objectives and Actions	Unit	10-Year Target	Means of Verification	Annual targets										*Lead Agencies*
				1	2	3	4	5	6	7	8	9	10	
Objective 1: Threats to SHE habitats reduced and ecosystem connectivity maintained														
Identify and establish wildlife corridors between SHE and adjacent ecosystems	No	2	Map of corridors			2								KWS, WRTI, CGK, MES, Strategic Partners
Initiate new and support existing habitats protection, restoration and rehabilitation measures	Ha		Maps of rehabilitated and restored sites			2		2		2			2	KWS, WRTI, KFS, CGK, MES & Strategic partners
Develop and implement a SHE fire management plan	No	1	Fire management plan			1								KWS, WRTI, KFS, MES, CGK & Strategic partners
Undertake prescribed burning in designated areas for habitat management	No	10	Fire management reports	1	1	1	1	1	1	1	1	1	1	KWS, WRTI
Develop and implement a site specific alien and invasive species management plan	No	1	Site specific invasive species plan		1									KWS, WRTI KFS, CGK & Strategic partners
Objective 2: Objective: Conservation of key wildlife species in SHE enhanced														
Monitor population dynamics of elephants	No	2	Census report			1					1			KWS, WRTI, Strategic Partners
Assess, review and recommend appropriate land uses in elephant migratory corridors and dispersal areas	No	1	Assessment report			1								KWS, WRTI, CGK & Strategic partners
Complete and implement the Sable Antelope Recovery and Action Plan	%	100	Completed action plan Level of implementation	100	x	x	x	x	x	x	x	x	x	KWS, WRTI, Strategic partners
Establish and implement a bird monitoring program	No	1	Bird monitoring program		1									KWS, WRTI & Strategic partners
Establish the status of threatened species in the ecosystem in collaboration with other partners	No	2	Report		1				1					KWS, WRTI, Strategic Partners
Support capacity building of Mwaluganje Elephant Sanctuary on wildlife conservation	No	10	Training reports	1	1	1	1	1	1	1	1	1	1	KWS, WRTI, KFS, CGK, MES & Strategic partners
Objective 3: Scientific approaches to reduce human-wildlife conflicts explored														

Management Objectives and Actions	Unit	10-Year Target	Means of Verification	Annual targets										*Lead Agencies*
				1	2	3	4	5	6	7	8	9	10	
Undertake research on approaches to reduce human wildlife conflicts	No	2	Research publications		1					1				KWS, WRTI, Strategic Partners
Collar elephants in the dispersal areas and corridors for monitoring purposes	No	20	Elephants collared	2	2	2	2	2	2	2	2	2	2	KWS, WRTI, MES, Strategic Partners
Monitor and enhance effectiveness of wildlife barriers	No	10	Monitoring reports	1	1	1	1	1	1	1	1	1	1	KWS, WRTI, KFS, MES
Objective 4: Ecological monitoring and research information dissemination strengthened														
Undertake natural resource inventories	No	2	Inventory report		1						1			KWS, WRTI, KFS, NMK, CGK, MES, Strategic Partners
Identify and conduct priority management-oriented research	No	10	Research publications	1	1	1	1	1	1	1	1	1	1	KWS, WRTI, Strategic partners
Conduct research and ecological monitoring in collaboration with research institutions and universities	No	5	Collaborative research and monitoring implemented		1		1		1		1		1	KWS, WRTI & Universities
Develop and implement a SHE ecological monitoring program, protocols and database	No	3	Monitoring program Protocol Database		3									KWS& WRTI
Monitor impacts of elephants on the structure of critical habitat	No		Monitoring report	X	x	x	x	x	x	x	x	x	x	KWS, WRTI, Strategic partners
Undertake disease surveillance on key species	No	10	Disease surveillance report	1	1	1	1	1	1	1	1	1	1	KWS, WRTI
Control and monitor tsetse flies and ticks density	No	20	Reports and control measures implemented	2	2	2	2	2	2	2	2	2	2	KWS, WRTI
Implement climate mitigation and adaptation strategies	%	90	Reports on implementation	x	x	x	x	x	x	x	x	x	x	KWS, WRTI, Strategic partners
Establish watering points for wildlife	No	10		1	1	1	1	1	1	1	1	1	1	KWS, WRTI, Strategic partners
Develop and equip a fully-fledged research sub station	No	1	Equipped research sub station			1								KWS, WRTI, Strategic partners
Integrate citizen science in ecological monitoring and research	%	100	Level of citizen science integration	x	x	x	x	x	x	x	x	x	x	KWS, WRTI, KFS, CGK, WWF, SHICOFA, Strategic partners
Organise dissemination forums for research and monitoring outputs	No	10	Conferences and exhibitions	1	1	1	1	1	1	1	1	1	1	KWS, WRTI, Strategic partners

5.3 TOURISM DEVELOPMENT AND MANAGEMENT PROGRAMME

5.3.1. Programme Purpose and Strategy

The purpose of the Tourism Development and Management Programme is:

To ensure that the SHE offers memorable tourist experiences based on the unique biodiversity, scenic and cultural values in the area.

Shimba Hills Ecosystem is symbolized as the "Paradise of the Sable antelope". This is because it is the only known home in Kenya to the locally endangered Sable antelope whose population has been declining over time. SHE has attractive sceneries that are highly appreciated by tourists for their ambient opulence. It attracts both domestic and international visitors, including nature trail hikers, birdwatchers, and game viewers.

The key animals of interest include elephants, buffaloes, and antelopes. Other animal species found in the area are; elephant shrew, bushy tailed mongoose, and small mammals like the fruit bats. Among the primates are the black and white Colobus monkeys, Sykes monkeys and baboons. Carnivores include leopards, hyenas, and genet cats.

The forest is an important bird area and is endowed with forest birdlife while the grasslands hold localized species such as red-necked-Spurfowl, croaking cisticola and Zanzibar red bishop. The Sheldrick Falls is one of its kind in the region and provides a scenic beauty that amazes the visitors due to its hidden location in the middle of a dense natural forest.

The dense Mwaluganje forest is also another attraction that can be explored by nature lovers who wonder at the trees 'standing' which look as if they were once a grown plantation. Other attractions include Mwaluganje Elephant Sanctuary, which is a breeding ground for elephants. The sanctuary is popular with elephants due to their strategic ecological role in the ecosystem. Surrounding caves, cultural sites such as Longo Mwagandi (shrine), Kaya Chitsanze, Kaya Mtaa and Mkongani World War II Cemetery are all found within the ecosystem. Community members adjacent to SHE benefit from tourism activities through tour guiding and performing cultural dances for the visitors.

Management challenges facing tourism in the ecosystem include narrow ecosystem product range for visitors, poor infrastructure in certain sites and underutilized flagship sites.

This programme sets out four management objectives and actions that when implemented will over the next 10 years support the realization of SHE's full tourism potential.

5.3.2. Guiding Principles

In implementing the SHE's Tourism Development and Management Programme, SHE Management will strive to ensure that:

- *Product development and diversification cope with modern and evolving customer needs*
- *Investment regulations and control conform with the overall ecosystem plan and national standards*
- *Infrastructure development promotes tourism outside the national reserve*
- *Marketing modernization and intensification are promoted at the ecosystem level*

5.3.3. Management Objectives and Actions

Objective 1: Tourism development is coordinated to ensure proper standards, distribution, and sustainability

The proposed tourism development activities for SHE includes establishment of a tourism infrastructure plan, development of an ICT system to promote tourism, maintenance of infrastructure for tourism facilities (roads), and development of new infrastructure for proposed tourism sites. The development of new picnic sites, bandas and campsites will be prioritized including construction of

accommodation facilities (in and around the ecosystem) to tap into both domestic and international tourist markets. The objective aims at developing and expanding existing and potential tourism facilities and infrastructure. The following management actions will be implemented to achieve this objective.

Management Actions

1. Develop guidelines for tourism development in SHE, including infrastructure and facilities
2. Prepare a tourism development plan
3. Enhance implementation of tourism policies and standards
4. Provide incentives for investors keen on developing tourism facilities in the ecosystem
5. Open and connect circuits between SHE and adjacent tourism destinations such as Tsavo conservation area, Diani and Mkomazi
6. Enhance network and internet connectivity in key tourism areas
7. Develop an interactive website on SHE tourism products and information
8. Develop information centres at entry points
9. Establish and implement a tourism stakeholders engagement forum

Objective 2: Local communities adequately engaged to build local capacity for optimum benefits from tourism

This objective aims to enhance community-based tourism management by developing the capacity of the community to invest in cultural tourism ventures and other community related income generating activities.

Management Actions

1. Build capacity of community forest associations and conservation groups for effective tourism management
2. Promote and facilitate development of cultural tourism
3. Establish sustainable tourism income generating activities such as curio shops, zip line, tour guides and porters

Objective 3: Tourism products in SHE diversified to enhance visitor experience

The future desired state of this objective is where tourism activities in the ecosystem are developed to increase visitation and visitor satisfaction. Increased visitation shall be the foundation of attracting political goodwill and public support for long-term conservation of the ecosystem. In addition, an upsurge in visitors will generate much needed revenues from entrance fees, ranger/community guided tours and accommodation, which in turn shall be invested in conservation and community development.

This objective strives to: facilitate tourism development by encouraging diverse tourist activities; mobilize resources for tourism development through public-private partnerships and enhanced visitor experience and satisfaction through sharing of interpretive materials at competitive prices and by maintaining high standard visitor facilities. The following management actions will be implemented to achieve this objective.

Management Actions

1. Develop and promote diverse tourism activities and experience e.g. adventure tourism -nature trails, hiking, picnics, bush breakfast/dinner, commercial photography/videography and sundowners
2. Undertake tourism research on market needs and trends
3. Identify and market tourism investment potentials within SHE.
4. Upgrade existing tourism facilities e.g. Diani-Ukunda visitor centre, bandas, campsites and picnic sites

Objective 4: Local and global marketing of SHE as tourist destination is modernized to attract high end local and international tourists

Marketing of SHE in such a way that the ecosystem generates increased tourism revenues and at the same time ensures preservation of ecological integrity is crucial. A marketing strategy should be prepared for all tourism products that include inter alia issues such as local information delivery, promotion of the internet and media in marketing, and guidebook coverage. Additionally, the area should be marketed as a diverse tourist destination to safeguard the natural qualities of the area.

The SHE has immense potential to attract a high number of environmentally sensitive tourists thereby raising substantial revenue to support conservation efforts in the ecosystem. However, this tourism potential is hampered by lack of an elaborate and well-coordinated marketing strategy that capitalizes on the unique values that this ecosystem offers. This objective has therefore been designed to enhance marketing of the ecosystem as a unique tourist destination that offers visitor experiences that may not be enjoyed elsewhere in the country. The management actions that have been designed to address gaps relating to effective marketing of SHE are: market SHE as a unique destination in Kenya capitalizing on its exceptional resource values; carry out visitor satisfaction surveys; update the SHE visitor map; develop a guidebook covering the entire SHE; and establish tourist information centres at the gates. This objective will be realized through implementation of the following management actions:

Management Actions

1. Develop and implement a tourism marketing strategy for Shimba Hills Ecosystem e.g. annual SHE product marketing event, developing brand identity for SHE
2. Develop tourism packages to attract local and international tourists
3. Evaluate visitor needs to improve service delivery and experience
4. Enhance capacities of licensed tour guides/rangers on basic customer service

Ten Year Action Plan: Tourism Development and Management Programme

The following pages set out the ten-year action plan for tourism development and management programme (Table 13). The action plan details the management objectives and actions, responsibilities, timeframe necessary for the delivery of each management action over the ten years of this management plan. In addition, the plan sets out specific and time bound milestones that SHE management aims to achieve in implementing the plan.

Table 13: Ten Year Action Plan: Tourism Development and Management Programme

Management Action	Unit	10 Year Targets	Means of verification	Annual Targets (Years)										Lead Agency
				1	2	3	4	5	6	7	8	9	10	
Objective 1: Tourism developments are coordinated to ensure proper standards, distribution and sustainability														
Develop guidelines for tourism development in SHE	No	1	Tourism guidelines developed		1									MES, KFS, SHICOFA, KWS, CGK, Strategic Partners
Prepare a tourism development plan	No	1	Tourism development plan prepared		1									MES, KFS, SHICOFA, KWS, CGK, Strategic Partners
Enhance implementation of tourism policies and standards	%	100	Level of implementation	100	x	x	x	x	x	x	x	x	x	KWS, KFS, MES,CGK
Provide incentives for investors keen on developing tourism facilities in the ecosystem.	No	5	Tourism facilities developed	1		1		1		1		1		MES, KFS, KWS, CGK, Strategic Partners
Open and connect circuits between SHE and adjacent tourism destinations such as Tsavo conservation area, Diani and Mkomazi	No	5	Tourism circuits developed	2	1	1	1							MES, KFS, KWS, CGK, Strategic Partners
Enhance network and internet connectivity in key tourism areas	%	50	Status of connectivity	50	x	x	x	x	x	x	x	x	x	MES, KFS, KWS, CGK, Strategic Partners
Develop an interactive website on SHE tourism products and information	No	1	Status of SHE website		1									KWS, KFS, MES, Strategic Partners
Develop information centres at entry points	No	7	Information centres developed		3		4							KWS, KFS, MES, Strategic Partners
Establish and implement a tourism stakeholders engagement forum	No	20	Engagement meeting minutes	2	2	2	2	2	2	2	2	2	2	KWS, KFS, MES, Strategic Partners
Objective *2: Local communities adequately engaged to build local capacities for optimum benefits from tourism*														
Build capacity of community forest associations and conservation groups for effective tourism management	No	20	Trainings	2	2	2	2	2	2	2	2	2	2	KWS, KFS, MES, CFAs and conservation groups, Strategic Partners
Promote and facilitate development of cultural tourism	No	5	cultural tourism developed		1		1		1		1		1	KWS, KFS, CFA, MES, Strategic Partners
Establish sustainable tourism income generating activities such as curio shops, zip line, tour guides and porters	No	5	New tourism IGAs developed	1	1	1	1	1						KWS, MES, KFS, CFA, Strategic Partners
Objective 3: *Tourism products in SHE diversified to enhance visitor experience*														
Undertake tourism research on market needs and trends	No	1	New products identified	1										KWS, KFS, Strategic Partners
Develop and promote diverse tourism activities and experience	No	9	Products developed		1	1	1	1	1	1	1	1	1	KWS, MES, KFS
Identify and market tourism investment potentials within SHE	No	5	Tourism investments	1		1		1		1		1		KWS, KFS, CGK
Upgrade existing tourism facilities	No	10	Facilities upgraded	1	1	1	1	1	1	1	1	1	1	KWS, KFS, MES, Strategic Partners
Objective 4: *Local and global marketing of SHE as tourist destination is modernised to attract high end local and international tourists*														
Develop and implement a tourism marketing strategy for Shimba Hills Ecosystem	%	100	Level of implementation	100	x	x	x	x	x	x	x	x	x	KWS, KFS, MES, Strategic partners
Develop tourism packages to attract local and international tourists	No.	10	Number of packages developed	1	1	1	1	1	1	1	1	1	1	MES, KFS, SHICOFA, KWS, Strategic Partners
Evaluate visitor needs to improve service delivery and experience	%	50	Repeat visitations	x	x	x	x	x	x	x	x	x	x	MES, KWS,
Enhance capacities of licensed tour guides/rangers on basic customer service	No.	10	Number of trainings	1	1	1	1	1	1	1	1	1	1	MES, SHICOFA, KWS, Strategic Partners

5.4 Water Resources Conservation and Management Programme

5.4.1. Programme Purpose and Strategy

The purpose of the Water Resources Conservation and Management Programme is to ensure that:
Water resources in the Shimba Hills Ecosystem are conserved and sustainably managed to meet domestic, agricultural and commercial needs of Kwale County and its environs

The Shimba Hills Ecosystem is an important water tower and a source of four permanent rivers namely Marere, Mkanda, Mwachema and Mkurumudzi. The Water Resources Authority (WRA) and Mkurumudzi Water Resources Users Association (WRUA) in collaboration with other partners developed a 5-year Sub-Catchment Management Plan (SCMP) covering the catchment area of Mkurumudzi river. The SCMP is a key reference document guiding the water resources management in SHE. In March 2018, the Kenya Water Towers Agency (KWTA) carried out an assessment of the status of Shimba Hills Water Tower (SHWT) and published a report that provides key information on the status of the water tower for informed decision making and sustainable management.

The major water resource conservation and management challenges in the water catchment area were identified as:

a) Water scarcity due to increasing demand from competing uses such as agricultural, domestic and commercial activities
b) Over abstraction of water, particularly in the dry season
c) Conflicts due to different water demands downstream
d) Deforestation and vegetation clearance in the catchment;
e) Non-Point pollution due to use of agro-chemicals in the farmlands
f) Siltation of rivers as a result of soil erosion
g) Poor agricultural practices causing siltation and pollution of water resources
h) Illegal charcoal production leading to degradation of water catchment areas

This programme addresses issues affecting water resources in the water catchment area and the five- kilometre buffer zone surrounding the ecosystem. The programme objectives will be achieved through close collaboration of key stakeholders like WRA, KWTA, KWS, KFS and WRUAs.

5.4.2. Guiding Principles

In implementing the water resources conservation and management programme, key government institutions and stakeholders should strive to ensure that:

- Water catchment areas are restored, conserved and sustainably managed
- Water abstraction from rivers is regulated and controlled

5.4.3. Management Objectives and Actions

Objective 1: Sustainable water management enhanced and natural flow regimes restored

This objective is designed to ensure sustainable management of the water resources and restoring natural water flow regime in the ecosystem. The management actions that have been developed to realize this objective relate to construction and maintenance of water harvesting structures; creating inter-county water transfer; monitoring water quality and quantity from water sources; controlling non-point sources of pollution such as inflows from farmland and soil erosion into water bodies; developing sub-catchment management plans; reforestation of the degraded water catchment areas using indigenous tree species; building the capacity of WRUAs and other Civil Society Organisations to effectively participate in water resources management; and drawing collaborative MOUs between stakeholders to monitor water quality and quantity. The following management actions will be implemented to achieve this objective:

Management Actions

1. Review/develop Sub-catchment management plans (SCMPs)
2. Build the capacity of WRUAs and other CSOs to effectively participate in Integrated Water Resource Management (IWRM).
3. Monitor water quality and quantity from water sources
4. Support inter-county water transfer
5. Construct water harvesting structures to support farmers to harvest rain water, run-off or flood water for farming
6. Promote sustainable land management practices that prohibits farming on steep slopes while maintaining ground cover to avoid soil erosion
7. Control deforestation and vegetation clearance of wetlands, springs and swamps

Objective 2: Water Resource Use Regulated and Controlled

Unregulated water abstraction in the ecosystem is a major challenge and the percentage of water abstracted illegally has not been established. The management actions designed to achieve this objective relate to the development of sub-catchment water allocation plans; collaboration with relevant stakeholders in clustering intakes to facilitate regulation of water abstraction; enforcement of water regulations; monitoring water levels; and monitoring ground and surface water abstraction in SHE. The following management actions will be implemented to achieve this objective:

Management Actions

1. Undertake a baseline survey on the status of water abstraction
2. Develop sub-catchment water allocation plans
3. Implement sub-catchment water allocation plans
4. Monitor and evaluate water abstraction in SHE
5. Establish common water intakes to facilitate regulation of water abstraction.
6. Draft a collaboration framework to enforce existing water regulations
7. Collaborate with relevant stakeholders in monitoring river water levels in SHE.

Ten Year Action Plan: Water Resources Conservation and Management Programme

Table 14 sets out the ten-year action plan for water resources conservation and management programme. The action plan details the management objectives, actions, responsibilities and time frame necessary for the delivery of each management action over the ten years of this management plan.

Table 14: Ten Year Action Plan: Water Resources Conservation and Management Programme

Management Actions	Unit	10 yr target	Means of Verification	Annual targets										*Lead Agencies*
				1	2	3	4	5	6	7	8	9	10	
Objective 1: Water Resource Use Regulated and Controlled														
Undertake a baseline survey on the status of water abstraction	No	1	Baseline survey conducted	1										KWTA, WRUAs, WRA, KFS, KWS, CFAs
Develop sub-catchment water allocation plans	No	4	Sub catchment water allocation plans developed.		2	2								KWTA, WRUAs, WRA, KFS, KWS, CFAs
Implement sub-catchment water allocation plans	No	4	Sub catchment water allocation plans implemented.			2	2	x	x	x	x	x	x	KWTA, WRUAs, WRA, KFS, KWS, CFAs
Monitoring and evaluation of water abstraction in the SHE	No	10	Annual M&E reports	1	1	1	1	1	1	1	1	1	1	WRA, KFS, KWS, CFAs KWTA, WRUAs,
Establish common water intakes to facilitate regulation of water abstraction	No	9	Common water intakes established/ maintained; Installed water metres			3	3	3						KWTA, WRUAs, WRA, KFS, KWS, CFAs
Draft a collaboration framework to enforce existing water regulations	No	1	MoU designed		1									KWTA, WRUAs, WRA, KFS, KWS, CFAs
Collaborate with, relevant stakeholders in monitoring river water levels in the SHE	No	10	River gauging regularly monitored; Monitoring reports.	10	x	x	x	x	x	x	x	x	x	WRA, KWTA, WRUAs, KFS, KWS, CFAs
Objective 2: Sustainable Water Management Enhanced and Natural Flow Regimes restored														
Review/develop Sub-catchment management plans (SCMPs)	No	4	SCMPs reviewed/ developed.	1	x	1	x	1	x	1	x	x	x	WRA, KWTA, WRUAs, KFS, KWS
Build the capacity of WRUAs to effectively participate in water resources management	No	10	Water resources management evaluation reports	1	1	1	1	1	1	1	1	1	1	KWTA, WRA, WRUAs, KFS, KWS
Monitor water quality and quantity from water sources.	No	10	Water quality analysis reports	1	1	1	1	1	1	1	1	1	1	WRA, KWTA, WRUAs, KFS, KWS
Support inter-county water transfer	No	2	Water transfer projects established	x	x	x	x	1	x	x	x	1	x	WRA, KWTA, WRUAs, KFS, KWS
Construct water harvesting structures to support farmers to harvest rain water, run-off or flood water for farming	No	10	Water harvesting structures constructed; Project evaluation reports; Photos		2	x	2	x	2	x	2	x	2	WRA, KFS, KWTA, WRUAs, KWS
Promote sustainable land management practices that control farming on steep slopes while maintaining the required ground cover to avoid soil erosion	No	10	Water quality analysis reports	1	1	1	1	1	1	1	1	1	1	WRA, KWTA, WRUAs, KFS, KWS
Control deforestation and vegetation clearance of wetlands, springs and swamps	%	10	Increased vegetation covers in wetlands, springs and swamps	1	1	1	1	1	1	1	1	1	1	KFS, KWTA, WRA, WRUAs, KWS

5.5. COMMUNITY PARTICIPATION & DEVELOPMENT PROGRAMME

5.5.1. Programme Purpose and Strategy

The Purpose of the Community Participation and Development Programme is to:

Enhance community participation in conservation management and sustainable use of natural resources and livelihoods improvement.

The SHE contains several resources that are of benefit to the local communities and the country at large. It is widely recognized due to delivery of ecosystem services (provisioning, regulatory, cultural and supportive services). Communities extract a variety of resources from the ecosystem including firewood, building materials, medicinal plants, fish, water, honey and fodder for livestock.

These natural resource uses require an elaborate management system to ensure that resources are sustainably managed for both the present and future generations. The main conservation initiatives envisaged in this plan include: socio-economic development of the community, biodiversity, soil and water conservation. These cannot be fully realized by government and development partners working within the ecosystem, without the effective engagement of the local communities since they are the direct beneficiaries. Hence, this plan recommends adoption of elaborate engagement with communities to enhance Participatory Forest Management. Participatory Forest Management advocates for the local community to play a significant role in forest management and forest adjacent land use decision making as change agents.

In implementing the SHE's Community Participation and Development Programme, SHE management will strive to ensure that: relationship between SHE resource managers, communities and other stakeholders are enhanced, human-wildlife conflicts are minimized in the SHE adjacent areas; communities and other stakeholders are aware of the SHE's values and importance; and communities are sustainably benefiting from natural resources in SHE. This will be achieved through implementation of the following three management objectives: conservation education and awareness programme strengthened; human-wildlife conflicts reduced; and opportunities for communities to benefit from SHE improved.

Charcoal production is considered a key economic activity in Kwale. The most common source of energy in Kwale County is wood fuel, used by 71.7% of the households for cooking, 0.5% for lighting and 12.2% of the households use charcoal for cooking hence the need to promote sustainable energy efficient technologies.

Poverty has been a major problem for the communities living around the Shimba Hills Forest and National Reserve hence increased dependence on forest resources. To address this, alternative livelihood options in nature based-enterprises should be enhanced. There is a need to organise community sensitisation and outreach programmes on agroforestry and sustainable land management practices.

This Programme will work towards the mitigation of these impacts; improve awareness of the SHE's values; promote nature based enterprises and foster a constructive and supportive relationship between SHE resource managers, communities and other stakeholders.

5.5.2. Guiding Principles

In implementing the SHE's Community Participation and Development Programme, SHE Management Plan will strive to ensure that:

- *Communities are actively participating in conservation and management of natural resources in SHE*
- *There is increased community awareness of the value of SHE's natural resources and the capacity of the community to sustainably conserve and manage natural resources in SHE*
- *Negative Human-Wildlife interactions are minimized for improved community relations with the*

lead agencies

- *Communities are receiving tangible benefits from conservation of natural resources in SHE*
- *There is enhanced agroforestry practices and restoration of degraded farmlands*
- *Communities adopt efficient and sustainable energy practices*

5.5.3. Management Objectives and Actions

Objective 1: Community participation in natural resource management enhanced

The future desired state for community involvement is where the local community in SHE is supportive of the ecosystem and the biodiversity contained therein; and there is robust awareness on the importance of SHE values, positive community attitude towards conservation and lead agencies relations with the community is enhanced. Community support makes management of the ecosystem easy and inexpensive and is the ultimate guarantee of sustainable conservation. The community shall therefore value the ecosystem as a national resource and appreciate the management's efforts and programmes that are geared towards its conservation. The following management actions will be done under this objective.

Management Actions

1. Awareness creation to institutionalize community participation in conservation and sustainable utilization of ecosystem resources
2. Hold meetings to institutionalize community participation on utilization of Non Wood Forest Products (NWFPs) based on locations
3. Awareness creation to communities (including resource managers) to form conservation associations
4. Form and enhance institutional organizational capacity for CFAs, WRUAs and CWA
5. Form institutional organizations of Mwaluganje and SHICOFA CFAs, Mkurumudzi, WRUAs and SHFNR CWA
6. Develop capacity of the community organisational institutions
7. Develop a community outreach strategy
8. Establish and equip a conservation education centre
9. Undertake School Environmental Programme

Objective 2: Problem animal control (PAC) techniques enhanced and promoted

The future desired state at the SHE is where human-wildlife conflicts (HWCs) around SHE, in particular crop raiding, livestock attacks/predation, disease transmission, and human injury or loss of life, are minimised in order to improve SHE community relations. To address the HWC problem and thereby improve PA managers-community relations, the following management actions will be implemented under this objective.

Management Actions

1. Upgrade and maintain the existing fences and wildlife barriers
2. Improve problem animal control strategies
3. Establish and maintain a human-wildlife conflict database
4. Enhance human elephant conflicts (HEC) mitigation by involving stakeholders in the use of appropriate site-specific methods
5. Capacity build Human Wildlife Conflict Mitigation Committees (HWMCCs)
6. Establish new Problem Animal Control (PAC) units in hot spot areas

Objective 3: Community livelihood sources from nature based enterprises diversified and promoted

The desired future state of the SHE is one where its adjacent communities are benefiting directly from support given through managements' corporate social responsibility projects or income-generating conservation projects.

This programme will enhance community support for conservation and management of natural resources in the ecosystem. This objective focuses on: development of community nature-based initiatives and value addition of nature based products to increase income generation; supporting enhancement of other livelihood activities; and supporting production of eco-friendly charcoal and energy efficient cook stoves. The following actions will be implemented to achieve this objective.

Management Actions

1. Feasibility study on viable NBEs
2. Enhance nature-based enterprises and community income generating activities
3. Capacity building on value addition of NBEs
4. Value addition of the NBEs
5. Promote the use of green energy technologies
6. 6Enhance capacity of community in employable skills in forestry and wildlife sector

Objective 4: Local communities engaged in forestry and wildlife conservation related activities

The forest adjacent communities take ownership for the protected area when they are directly involved in the management and also receive the benefits derived from the ecosystem. The management activities, especially surveillance, fits best to the community capacity, and this will ensure known law defaulters are easily deterred. To ensure this is achieved the following management activities will be undertaken.

1. Enhance capacity of community in skills related to forestry and wildlife sector
2. Lobby to recruit Community scouts from each adjacent location
3. Build capacity of the community scouts in forestry and wildlife conservation activities
4. Engage CFAs to undertake silvi-cultural activities
5. Promote community conservation livelihood enterprises
6. Develop and implement a sustainable benefit sharing mechanism between the communities and ecosystem managers
7. Develop community botanical gardens for biodiversity conservation

Objective 5: Appropriate agroforestry practices in farmlands promoted

There is a high demand for forest products from Shimba Hills by the adjacent community. This programme aims at proposing ways that the adjacent community can undertake agroforestry and farm forestry to reduce the pressure for forest products in the ecosystem. The focus will be increasing the tree cover and rehabilitating degraded areas in the farmlands. The following management actions will be undertaken to meet this objective:

Management Actions

1. Build capacity on agroforestry and sustainable land management practices
2. Hold field days and establish demonstration plots
3. Promote high- value agroforestry tree species and farm forestry
4. Establish soil and water conservation measures in farms
5. Enhance forest extension services
6. Rehabilitate degraded farmlands

Objective 6: Adoption of sustainable energy practices

The desired future state of SHE is one in which the Forest adjacent communities have a low dependence on wood fuel for their energy requirements and have adopted energy-efficient technologies. The following actions will be implemented to achieve this objective:

Management Actions

1. Awareness creation on alternative sustainable energy sources
2. Capacity building communities on sustainable energy practices
3. Infrastructural support towards the adoption of sustainable energy options
4. Support community energy enterprise development

TEN YEAR ACTION PLAN

The ten-year action plan for this programme is set out in Table 15. The action plan details the management objectives, actions, responsibilities and time-frame necessary for the delivery.



Table 15: Ten Year Action Plan: Community Participation and Development Programme

Management Action	Unit	10 Years Targets	Means of Verification	Annual Targets (Years)										Lead Agency
				1	2	3	4	5	6	7	8	9	10	
Objective 1: *Community participation in natural resource management enhanced*														
Awareness creation to institutionalize community participation in conservation and sustainable utilization of ecosystem resources	No.	40	Awareness creation reports	4	4	4	4	4	4	4	4	4	4	KWS, KFS
Hold meetings to institutionalize community participation on utilization of Non Wood Forest Products (NWFPs) based on locations	No.	38	No. of meetings held Minutes	5	5	1	5	5	1	5	5	1	5	KFS, KWS, CGK, KWTA,CFA, WRUA & CWA
Awareness creation to communities (including resource managers) to form Conservation associations	No.	3	Reports from Resource managers	3	x	x	x	x	x	x	x	x	x	KFS, KWS, WRA, CGK, CFA, WRUA & Strategic Partners
Form and enhance institutional organizational capacity for CFAs, WRUAs and CWA	No.	10	Reports on capacity building	1	1	1	1	1	1	1	1	1	1	KFS, KWS, WRUAs
Form institutional organizations of Mwaluganje and SHICOFA CFAs, Mkurumudzi, WRUAs and SHFNR CWA	No.	12	No. of trainings conducted Report		3		3			3			3	KFS, KWS, CGK, KWTA, CFAs, WRUAs & CWA Strategic partners
Develop capacity of the community organisational institutions	No.	30	Reports, Minutes	3	3	3	3	3	3	3	3	3	3	KFS, KWS, CGK, KWTA,CFA, WRUA & CWA Strategic Partners
Establish and equip a conservation education centre	No.	1	Fully equipped and functional education centre			1								KFS, KWS, CGK, KWTA,CFA, WRUA & CWA Strategic Partners
Develop a community outreach strategy	No.	1	Developed community outreach programme			1								KFS, KWS, CGK, KWTA,CFA, WRUA & CWA Strategic Partners
Undertake School Environmental Education Program	No.	1	School Environmental Education Program operational	1										KFS, KWS, CGK, KWTA,CFA, WRUA & CWA Strategic Partners
Objective 2: Problem animal control (PAC) techniques enhanced and promoted														
Upgrade and maintain the existing fences and wildlife barriers	Km	120	Length of fence upgraded	12	12	12	12	12	12	12	12	12	12	KFS, KWS, MES, Strategic partner
Improve problem animal control (PAC) strategies	No.	6	Enhanced PAC	1	2	2	1							KWS, KFS, CGK, Strategic partner
Establish and maintain a human-wildlife conflict database	No.	1	HWC database in place			1								KWS, KFS, CGK, Strategic Partner
Enhance human elephant conflicts (HEC) mitigation by involving stakeholders in the use of appropriate site-specific methods	No.	20	No of stakeholder awareness meetings, no of joint mitigation measures	2	2	2	2	2	2	2	2	2	2	KWS, KFS, CGK, MES & Strategic partners
Capacity build Human Wildlife Conflict Mitigation Committees (HWCMCs)	No	10	Training reports	1	1	1	1	1	1	1	1	1	1	KWS, WRTI, MES, Strategic Partners

Management Action	Unit	10 Years Targets	Means of Verification	Annual Targets (Years)										Lead Agency
				1	2	3	4	5	6	7	8	9	10	
Establish new Problem Animal Control (PAC) units in hotspot areas	No	3	Outposts		1		1		1					KWS, Strategic Partners
Objective 3: Community livelihood sources from nature based enterprises diversified and promoted														
Feasibility study on viable NBEs	No.	2	Feasibility report	1				1						KFS, KWS, CGK, KWTA, Strategic Partners
Enhance Nature Based Enterprises (NBEs) e.g beekeeping, tree nursery, butterfly farming, chilli farming, eco-tourism, *Aloe vera* farming, poultry farming, basketry, tapestry, mushroom farming, fish farming, mariculture and farm forestry	No.	13	Increased NBEs	2	2	2	2	2	2	1				KFS, KWS, CGK, KWTA, Strategic Partners
Capacity building on value addition of NBEs	No	10	Training reports		5				5					KFS, KWS, CGK, KWTA, Strategic Partners
Value addition of the NBEs e.g Aloe vera, Neem, Bamboo, *Eucalyptus globulus*, lemon grass, tea tree, honey, fruits, among others	No.	8	Value added products		2	2	2	2						KFS, KWS, CGK, KWTA, Strategic Partners
Enhance capacity of community in employable skills in forestry and wildlife sector (Tree nursery establishment, Tour guiding, Entrepreneurship, Commercial Forestry management and Wildlife enterprises	No.	5	No. of trainings	2		2			1					CFA, KWTA, KFS, KWS, CGK, Strategic partners
Objective 4: Local communities engaged in forestry and wildlife conservation related activities														
Enhance capacity of community in skills related to forestry and wildlife sector	No.	5	No. of trainings conducted	2		2		1						CFA, KWTA, KFS, KWS, CGK, Strategic Partners
Lobby for recruitment/recruit community scouts from each adjacent location	No.	40	No. of community scouts recruited	20		20								CFA, KFS, KWS, CGK, Strategic Partners
Build capacity of the community scouts in forestry and wildlife conservation	No	10	Training reports	1	1	1	1	1	1	1	1	1	1	CFA, KFS, KWS, CGK, Strategic Partners
Engage CFAs to undertake silvicultural activities e.g. provision of tree seedlings, tree planting, maintenance of planted areas and regeneration, fence maintenance, management of invasive species	%	100	Reports of activities undertaken by the communities	100										CFA, KFS, KWS, CGK, Strategic Partners
Promote community conservation livelihood enterprises	No	100	Conservation livelihood enterprises established	10	10	10	10	10	10	10	10	10	10	KWTA, WRA, WRUAs, KFS, KWS
Develop a sustainable benefit sharing mechanism between the communities and ecosystem managers	No.	1	Report		1									KWS, Tourism board, KFS, CGK, WWF SHICOFA

Management Action	Unit	10 Years Targets	Means of Verification	Annual Targets (Years)										Lead Agency
				1	2	3	4	5	6	7	8	9	10	
Develop community botanical gardens for biodiversity conservation	No.	5	No. of community botanical gardens developed		1		1		1		1		1	KFS, KWS, CGK, CFA, WRUA, & CWA Strategic Partners
Objective 5: To promote appropriate agroforestry practices in farmlands														
Build capacity on agroforestry and sustainable land management practises (pest control, climate smart agriculture, appropriate tree species)	No.	25	No. of farmers trained	3	2	3	2	3	2	3	2	3	2	KFS, CGK, Strategic Partners
Hold field days and establish demonstration plots	No.	10	No. of trainings conducted	1	1	1	1	1	1	1	1	1	1	CFA, KTWA,KFS, CGK, Strategic partners
Promote agroforestry and farm forestry in farmlands	HH.	500	No. of households that have planted trees	30	50	70	120	150	80					CFA, KFS, CGK, Strategic Partners
Establish soil and water conservation measures in farms	No.	1700	No. of farms with soil and water conservation structures	30	50	80	120	170	200	230	250	270	300	CFA, KFS, CGK, Strategic Partners
Enhance forest extension services through employment of forest extension officers	No.	6	No. of extension officers employed	2		2		2						KFS, CGK
Rehabilitate degraded sites in the farmlands	Ha	500	Area rehabilitated			40	40	50	60	70	80	80	80	CFA, KFS, CGK, NGAO, KWTA, Strategic Partners
Objective 6: Adoption of sustainable energy practices														
Awareness creation to communities on sustainable energy technologies (meetings and radio talk-shows	No.	50	Report	5	5	5	5	5	5	5	5	5	5	CFA, KFS, NEMA, CGK, Strategic Partners
Capacity building communities on sustainable energy practices (trainings on energy-saving cook stoves, sustainable and eco- friendly charcoal production, renewable energy, fireless cookers, briquettes, solar lamps, solar heaters, solar cookers, biogas)	No.	12	Training reports	2	2	2			2	2		2		CFA, KFS, NEMA, CGK, Strategic Partners
Development and equipment of demonstration centres for sustainable energy practices	No.	4	Development of demonstration centres for sustainable energy practices		1		1		1		1			CFA, KFS, NEMA, CGK, Strategic Partners
Undertake business trainings and coaching on community energy enterprises	No.	4					1		1		1		1	CFA, KFS, NEMA, CGK, Strategic Partners
Create market linkage for community energy enterprises (field days, exhibitions, branding)	No.	4				1		1		1		1		CFA, KFS, NEMA, CGK, Strategic Partners

5.6 SHE Operations and Security Programme

5.6.1. Programme Purpose and Strategy

The purpose of the SHE Operations and Security Management Programme is:

To ensure that SHE's operational systems and structures effectively and efficiently support the implementation and achievement of all SHE management programmes' objectives.

The SHE faces many conservation challenges mainly emanating from the interaction between the local community and the protected areas. Many of these threats, such as illegal harvesting of forest products, wild fires and wildlife poaching had been impacting the forest ecosystem even before the establishment of the protected areas. Indeed, the protected forest reserve was established to minimise these impacts and forestall destruction of the SHE which is a critical water catchment area for Mombasa and Kwale counties. As the human population increases, there is a corresponding increase in pressure on the ecosystem. The current workforce is also inadequate to ensure effective management of the PAs. It is expected that unless drastic measures such as the current upgrading of the fence around the SHE from the 6 strand to 14 strand electric fence, coupled with increased forest surveillance are maintained, the pressure will intensify during the 10-year duration of this plan. Strong stakeholder collaboration particularly amongst the resource managers is needed to ensure that agencies that have management responsibilities for the protected area; KWS and KFS, are working in tandem to ensure that the forest is safeguarded.

5.6.2. Guiding Principles

In implementing the SHE's Operations and Security Management Programme, SHE Management will strive to ensure that:

- *Institutional collaboration is formalised and strengthened through MOUs*
- *Capacity, performance and motivation of SHE staff is improved*
- *SHE natural resources and visitors are safeguarded*
- *Infrastructure to support SHE management and tourism development is improved*

5.6.3. Management Objectives and Actions

Objective 1: Institutional collaboration formalised and strengthened

The future desired state at the SHE is where stakeholders are actively involved in the management of the ecosystem to ensure continued provision of the much-needed goods and services. This desired condition can be achieved if stakeholders with legal jurisdiction over the SHE protected areas and other conservation partners are working in tandem to achieve the protected areas management objectives. This objective has therefore been designed to address problems that hinder effective participation of key stakeholders in the management of the SHE protected areas. These problems include: overlapping mandates within the forest reserve where there is dual gazettement, hence KFS and KWS have legal mandate to carry out their functions at times leading to natural resource management conflicts.

Management Actions

1. Formulate a Memorandum of Understanding on the implementation of the management plan
2. Engage National and County Government to support protection and management of natural resources in SHE
3. Develop a framework for implementation of the Kwale County CIDP and CSP in relation to SHE
4. Engage the National Land Commission and Kwale County Government to secure two critical wildlife corridors
5. Liaise with Tanzania's wildlife authority on cross border wildlife protection
6. Protect elephant population by minimising poaching through stakeholder collaboration

Objective 2: Capacity, performance and motivation of SHE staff improved

The future desired state of the SHE in regards to staff and personnel is where an adequate, skilled and motivated workforce is deployed at SHE to facilitate conservation and management of the ecosystem. Currently, SHE experiences staff shortages in many cadres hindering effective management. The number of security personnel deployed from KWS and KFS responsible for protecting the ecosystem and visitors have declined over the years, hence are unable to effectively curb illegal activities within SHE. Other problems facing the SHE include: inadequate staff training in relevant management fields, dilapidated housing and allied amenities. The following management actions will be implemented to achieve this objective.

Management Actions

1. Deploy adequate staff including KFS and KWS Rangers
2. Build the capacity of SHE managers, rangers, researchers and other staff.
3. Construct and renovate dilapidated staff houses and allied amenities within KWS and KFS camps and outposts

Objective 3: SHE natural resources and visitors safeguarded

The SHE natural resources face a lot of anthropogenic threats, including logging and poaching. Poachers usually set snares in the reserve to trap wild animals for subsistence and sometimes commercial use. This has led to the decline in wildlife numbers, especially the sable antelope and restocked species. Poaching for timber and poles, especially the high value tree species, has been witnessed in SHE because of their high demand.

The future desired state therefore is where natural resources in SHE are protected through legal enforcement and the area is safe for visitors. The following management actions will be implemented to achieve this objective.

Management Actions

1. Enhance security capacity by recruiting community scouts and deploying more rangers in SHE
2. Protect elephant population by minimising poaching through effective law enforcement measures
3. Enhance joint patrols between KWS, KFS and community scouts
4. Deploy security in key visitor points (viewpoints, campsites, nature trail and gates)
5. Adoption of modern technology to curb illegal activities within SHE like drones, camera traps, night vision goggles.
6. Community sensitization programmes.

Objective 4: Infrastructure to support SHE management improved

Provision of SHE infrastructure and management services is important in supporting security operations such as curbing illegal logging, wildlife poaching and wild fires fighting. Tourism activities also require good road networks for wildlife viewing to enhance visitors' experience. Currently, there is outdated radio communication infrastructure, which needs to be replaced by modern radio communication systems. The road network in SHFNR is fairly motorable. However, in some areas of the ecosystem like MES, MFR and Mkongani forest reserves the road networks are few and in poor condition. Within SHE, there is one airstrip whose runway is long enough for fixed wing aircraft landing. However, the airstrip requires upgrade and regular maintenance to meet the required operation standards. All visitors' gates and some of the rangers' camps lack electricity and piped water from the main supply. The fleet supporting SHE operations and services are also few and ageing resulting in high cost of maintenance. The existing SHE infrastructure is shown in Figure 13.

This objective has been designed to ensure that the SHE infrastructure is developed and maintained to good standards that promote efficiency and effectiveness in management of natural resources. The management actions that will be implemented to achieve this objective are outlined below.

Management Actions

1. Construct, rehabilitate and maintain SHE infrastructure
2. Renovate dilapidated staff houses and allied amenities within KWS and KFS camps and outposts
3. Upgrade and maintain the 140Km electric fence
4. Procure and maintain vehicles, plants, communication, security and surveillance, and fire-fighting equipment
5. Enhance utility provision
6. Implement mitigation measures of EIA for planned upgrading of the Kwale-Kinango road to bitumen

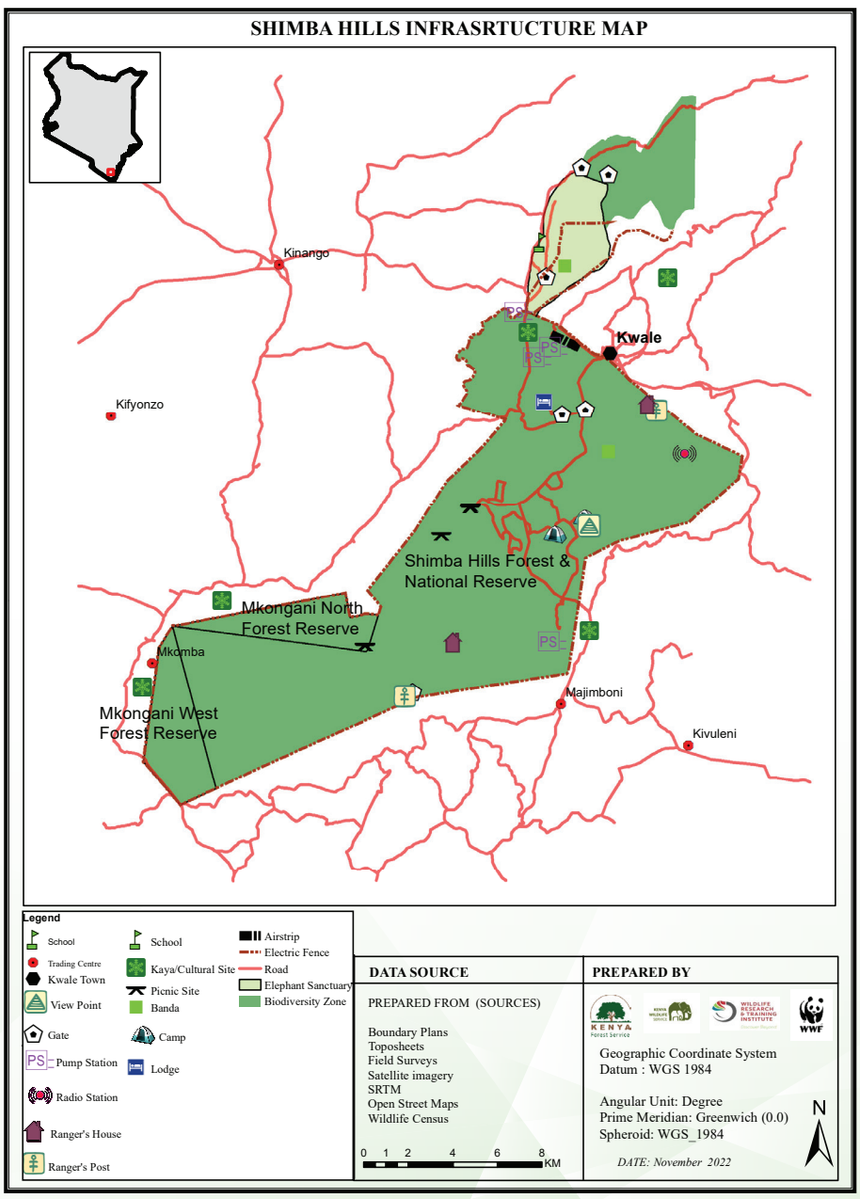


Figure 13: SHE infrastructure

TEN YEAR ACTION PLAN

The following table 16 sets out the ten-year action plan for the security and operations and security management programme. The action plan details the management objectives and actions, responsibilities, timeframe necessary for the delivery of each management action over the ten years of this management plan. In addition, the plan sets out specific and time bound targets that SHE management aims to achieve in implementing the plan.

Table 16: Ten Year Action Plan: Operations and Security Management Programme

Management Actions and Activities	Unit	10-year Target	Means of Verification	Annual Targets (Years)										*Lead Agency*
				1	2	3	4	5	6	7	8	9	10	
Objective 1: Institutional collaboration formalized and strengthened														
Formulate an agreement on the implementation of the management plan	No	1	Signed MOU	1										KFS, KWS, MES
Engage National and County Government to support protection and management of natural resources in SHE	No	40	Minutes	4	4	4	4	4	4	4	4	4	4	KFS, KWS, CGK, KWTA
Develop a framework for the implementation of the Kwale County CIDP and CSP in relation to SHE	No	1	Framework		1									KFS, KWS, CGK, CFA, KWTA
Engage the National Land Commission and Kwale County Government to secure two critical wildlife corridors	No	40	Minutes	4	4	4	4	4	4	4	4	4	4	KWS, CGK, WRTI, WRTI, Strategic partners
Liaise with Tanzania's wildlife authority on cross border wildlife protection	No	10	Meeting minutes	1	1	1	1	1	1	1	1	1	1	KWS, & Strategic partners
Protect elephant population by minimising poaching through stakeholder collaboration efforts	No	3	No of collaborative stakeholder meetings	1			1			1				KWS, WRTI, CGK, MES & KFS
Objective 2: Capacity, performance and motivation of SHE staff improved														
Strengthen staff capacity through relevant training	No	10	Training report	1	1	1	1	1	1	1	1	1	1	KFS, KWS, MES, Strategic partners
Deploy adequate staff including KFS and KWS rangers	No	74	Deployment letters	20	20	19	15							KFS, KWS,
Build the capacity of managers, rangers and other staff including researchers within SHE	No	40	Training reports	4	4	4	4	4	4	4	4	4	4	WRTI, KEFRI, KWS, KFS, CGK, WWF and universities
Renovate dilapidated staff houses and allied amenities within KWS and KFS camps and outposts	No	60	Certificate of completion reports, No. of houses renovated, contract documents		10	10	10	10	10	10				KFS, KWS, MES, Strategic partners

Management Actions and Activities		Unit	10-year Target	Means of Verification	Annual Targets (Years)										*Lead Agency*
					1	2	3	4	5	6	7	8	9	10	
Objective 3: SHE Natural Resources and Visitors Safeguarded															
Strengthen security capacity by deploying more rangers in SHE		No	40	Deployment reports		10		10		10		10			KWS, KFS, Strategic partners
Enhance joint patrols between KWS, KFS and community scouts		No	40	Patrol reports and achievements	4	4	4	4	4	4	4	4	4	4	KWS, KFS, MES, scouts, Strategic partners
Deploy security in key visitor points (viewpoints, campsites, nature trails and gates)		No	14	Deployment reports	x	x	x	x	x	x	x	x	x	x	KWS, KFS
Protect elephant population by minimising poaching through effective law enforcement measures		%	100	Incident report, no of patrols, no of stakeholder meetings	x	x	x	x	x	x	x	x	x	x	KWS, WRTI, CGK, MES & KFS
Objective 4: Infrastructure to support SHE management improved															
Construct, rehabilitate and maintain SHE infrastructure (airstrip, buildings, roads, gates, bridges, nature trails, fire breaks, and fire towers)	Buildings	No	4	Completion reports		2	2								KFS, KWS
	Roads	Km	300	Km maintained/ constructed	30	30	30	30	30	30	30	30	30	30	KFS, KWS, MES, Strategic partners
	Gates	No	5	Rehabilitation reports		1	1	1	1	1					KWS, MES, Strategic partners
	Bridges	No	1	Construction report		1									KWS, Strategic partners
	Nature trails	No	7	Rehabilitation reports	1	1	1	1	1	1	1				KWS, KFS, MES, Strategic partners
	Airstrip	No	1	Completion reports	1										KFS, KWS, Strategic partner
	Fire breaks	Km	140	Km constructed	14	14	14	14	14	14	14	14	14	14	KFS, MES, CGK, KWS, Strategic partner

Management Actions and Activities		Unit	10-year Target	Means of Verification	Annual Targets (Years)										*Lead Agency*
					1	2	3	4	5	6	7	8	9	10	
	Fire towers	No	3	Towers constructed		1	1	1							KWS, KFS, MES, Strategic partners
Renovate dilapidated staff houses and allied amenities within KWS and KFS camps and outposts	Renovated houses	No	1	Renovation report		10	10	10	10	10	10				KFS, KWS, MES, Strategic partners
Upgrade and maintain the 140Km electric fence	Fence	Km	140	Km upgraded	x	x	x	x	x	x	x	x	x	x	KFS, KWS, MES, Strategic partner
Procure and maintain vehicles, plants, communication, security, surveillance, and fire-fighting equipment	Vehicles	No	12	Vehicles procured		4		2		2		2		2	KFS, MES KWS, Strategic partners
	Plants	No	5	Plants procured		2	2	1							KWS, KFS, MES Strategic partners
	Equipment	No	40	Equipment procured	10	10	10	10							KFS, KWS, MES, Strategic partners
Enhance utility provision (e.g. water, electricity)		No	10	Completion reports	5	5									KFS, KWS, MES, Strategic partner
Implement measures of EIA for planned upgrading of the Kwale-Kinango road to bitumen		%	100	Implementation report	x	x	x	x	x						

5.7 Research and Education Management Programme

5.7.1. Programme Purpose and Strategy

The purpose of the Research and Education Programme is:

To conduct focused research on thematic areas, to generate knowledge on the ecosystem, support education, conservation actions and management interventions.

The essential purpose of the research and education program is to generate information and knowledge on key elements and attributes of the SHE ecosystems to enhance conservation measures, strengthen effective management and satisfy the information needs of the key stakeholders. The disseminated technical reports are converted by the relevant stakeholders in the respective areas of specialisation, into circulars and policy reviews management decisions for implementation of various programmes in SHE.

5.7.2. Guiding Principles

In implementing the SHEMP Research and Education Programme, the management agencies will ensure that:

- *Critical habitats and their elements are well documented, conserved and restored*
- *Threatened, endangered and endemic species are conserved, managed, and monitored based on sound scientific knowledge*
- *Ecological elements and processes to support adaptive management are understood*
- *Effects of climate change on ecosystem and species dynamics are understood*

5.7.3. Management Objectives and Actions

Objective 1: Ecological research and monitoring strengthened

The objective of ecological research in SHE is to ensure all ecosystem elements such as flora, fauna, hydrology, anthropogenic and climate are monitored to discern the structure, function and change dynamics. Further, this information should be w
ell documented, understood and used in conservation and management. This will promote timely, appropriate and informed conservation and management intervention measures. Research and monitoring in SHE includes collection of ecological baseline data and information by WRTI, KWS and scientific studies by other diverse research institutions and universities.

Research and monitoring have been conducted in the protected area for a long time and this information needs to be collated to guide future research and for use in management decision making. Ecological research and monitoring faces emerging challenges, including lack of adequately defined research information dissemination, monitoring and evaluation protocols, leading to inconsistency in data collection, reporting and sharing, making data collected on similar aspects by different researchers unavailable, often resulting in often repeated or duplicated research and incomparable data by different researchers at different tunes. Additionally, the use of indigenous knowledge in research and monitoring has often been overlooked.

Consequently, an ecological database is currently lacking coupled with inadequate capacity and resources to address research issues. Some of the proposed priority research areas under this programme include: understanding the wildlife species behaviour including their range, habitats and patterns of ranging within the ecosystem; natural resource inventories; and establishing the causes of declining wildlife populations.

The management actions that have been designed to realize this objective focus on establishing a systematic long-term ecological program, establishing an ecological database, carrying out priority research, strengthening SHE research substation and promoting collaboration with research institutions and universities in carrying out research.

Management Actions

1. Establish a research substation to oversee a multidisciplinary research agenda at SHE
2. Recruit and enhance the research capacity of research scientists at SHE
3. Build the capacity of researchers under the SHE research substation to regulate and oversee multidisciplinary research at the SHE;
4. Implement the standard research authorisation protocols and data base
5. Adopt and implement the Access and Benefit Sharing protocol as defined under the Nagoya Protocol
6. Develop a collaborative research framework and organize dissemination forums for research and monitoring activities

Objective 2: Research on forest and allied resources enhanced

Sustainable forest management will require knowledge on ecosystem structure and function, knowledge on the ecosystem flora and fauna, their functions and its native biotic and abiotic components. Sustainable management exists when the forest ecosystem function and integrity can be maintained. In order to achieve this, there is a need to provide science based data to the forest resource managers to ensure that they manage conditions related to human activities, mitigate degradation and pursue restoration in degraded sites. An integrated research methodology that includes social and economic valuation of SHE, long term changes in forest area cover, factors driving the forest cover changes, and potential mitigation measures will be conducted. This will be achieved through implementing the following specific actions.

1. Carry out ecosystem valuation in SHE
2. Carry out an assessment of degraded forest areas
3. Research on the impact of land degradation in the ecosystem
4. Research on various methods of ecosystem restoration in the affected areas of SHE
5. Carry out species site matching

Objective 3: Research on invasive species control conducted

There is limited capacity to manage invasive plant species in Kenya. However, there exists opportunities to enhance our current knowledge on invasive species in order to provide comprehensive tested tools and mechanisms that can be used to address the problem of proliferation of invasive species in SHE. There is an urgent need to understand the current status of invasive species, factors contributing to establishment of invasive species in the ecosystem, potential socio-economic use of the existing invasive species and test the efficacy of invasive species control methods prescribed in the National Invasive Species Control Strategy in Kenya. This knowledge will contribute towards sustainable control and management of invasive species in SHE and adjacent areas. The following actions will be undertaken to achieve this objective.

Management Actions

1. Carry out surveys on prevalence of invasive species in the ecosystem.
2. Undertake research on socio-economic value of invasive species
3. Control identified invasive species as prescribed in the National Invasive Species Control Strategy (KWS website)
4. Pilot test invasive species control methods in SHE as prescribed in the national invasive species control strategy

Objective 4: Hydrological flow regime to balance both environmental and socio-economic needs established

The hydrology of any catchments depends highly on climatic conditions, especially rainfall and meteorological variables. Other factors influencing hydrology include topography, land use and land cover soils. There is documented evidence regarding existing water use conflicts for domestic, irrigation and commercial use in the River Mukurumudzi sub-catchment management. The conflict is brought about by diminishing water resource availability leading to over abstraction. This diminishing water resource could be as a result of land use changes, Shimba Hills Forest Ecosystem degradation and changes in rainfall patterns due to climate change. The hydrological study will provide information regarding the amount of water discharge from SHE and aid in the development of a proper water allocation plan that meets environmental and socio-economic needs. The specific studies will include:

Management Actions

1. Determine water discharge/flow and water quality in the sub-catchment
2. Assess impacts of river course damming on ecological and socio-economic needs in SHE

Ten Year Action Plan: Research and Education Programme

The following Table 17 set out the ten-year action plan for the research and education programme.



Table 17: Ten Year Action Plan: Research and Education Programme

Management Actions	Unit	10-yr target	Means of Verification	Annual targets										*Lead Agencies*
				1	2	3	4	5	6	7	8	9	10	
Wildlife Management Programme														
Objective 1: **Ecological research and monitoring strengthened**														
Recruit research staff – in operations programme	No.													KWS, WRTI
Build the capacity of researchers under the SHE, WRTI) SHE research substation	No.	10	Training reports	1	1	1	1	1	1	1	1	1	1	WRTI, KEFRI, KWS, KFS, CGK, WWF and universities
Integrate citizen science in ecological monitoring and research	No.	10	Reports	1	1	1	1	1	1	1	1	1	1	KWS, KFS, WRTI, CGK, Strategic partners, WWF, SHICOFA
Conduct natural resource (flora, fauna, soils) assessments	No.	4	No of assessments conducted	2			1				1			KWS, KFS, CGK, WWF, KEFRI, NMK,WRTI,SHICOFA and universities
Establish collaborative research and organise dissemination forums for research and monitoring activities	No.	1	MoU signed	1										KWS, KFS, CGK, WWF, Strategic partners, KEFRI, WRTI,SHICOFA and universities
Forest Resource Conservation and Management Programme														
Objective 1: Research on forest resources and allied resources enhanced														
Conduct ecosystem valuation in SHE	No.	2	Value of the ecosystem		1					1				KWS, KFS, CGK, WWF, WRTI, SHICOFA, universities and other strategic partners
Carry out an assessment of degraded forest areas	No.	1	Area assessed	1										KWS, KFS, WRTI, CGK, WWF, SHICOFA
Carry out an assessment on the rehabilitated areas	No.	1	Area assessed					1						KWS, KFS, WRTI, CGK, WWF, SHICOFA
Research on various methods of ecosystem restoration in the affected areas of SHE	No.	3	Methods of restoration		1			1		1				WRTI, KWS, KFS, KEFRI, NMK
Carry out site specific species matching	No.	1	Trial plot established		1									KFS, KWS, KEFRI, WWF, CGK

Management Actions	Unit	10-yr target	Means of Verification	Annual targets										*Lead Agencies*
				1	2	3	4	5	6	7	8	9	10	
Objective 2: Measures to prevent and control invasive species promoted														
Carry out survey on prevalence of invasive species in SHE	No.	1	Survey conducted			1								KEFRI, NMK, KWS, KFS, SHICOFA
Undertake research on socio-economic value of invasive species	No.	1	Research report				1							KEFRI, KFS, KWS, NMK, NGOs, CBOs, SHICOFA
Water Management Programme														
Objective 1: Adequate water flow regime to meet both environmental and socio-economic needs promoted														
Assess water discharge/flow and water quality in the sub-catchment	No.	3	Assessment reports	1				1				1		WRA, KWTA, WRUAs, NGO, private sector, CBOs
Assess impacts of river course damming on ecological and socio-economic needs in SHE	No.	2	Assessment reports			1				1				WRA, KWTA, WRUAs, NGO, private sector, CBOs
Undertake water quality and hydrological monitoring in the delta	No.	3	Monitoring reports		1			1			1			WRA, KWTA, WRUAs, NGO, private sector, CBOs
Tourism Development and Management Programme														
Objective 1: Sustainable tourism practices promoted														
Identify challenges and develop indicators for sustainable tourism development in SHE	No.	1	Report	1										KWS, Tourism board, KFS, CGK, SHICOFA
Develop a research and marketing strategy to promote tourism in SHE	No.	1	Strategy in place	1										KWS, Tourism board, KFS, CGK, SHICOFA
Community Participation and Development Programme														
Objective 1: Sustainable community socio-economic development and ecosystem conservation promoted														
Develop a sustainable benefit sharing mechanism between the communities and ecosystem managers	No.	1	Report		1									KWS, Tourism Board, KFS, CGK, WWF SHICOFA
Determine the potential of SHE in sustainable recreation activities	No.	1	Report			1								KWS, KFS, WWF, NMK, KWTA, SHICOFA
Determine best methods of value addition for non-wood forest products	Days	8	Open days			1	1	1	1	1	1	1	1	KWS, KFS, CGK, SHICOFA
Conduct research to establish drivers of wildfires	No.	3	Reports	1			1			1				KFS, KWS, CGK
Disseminate results of various findings through field days	No.	5		1		1		1		1		1		KEFRI, KFS, WWF, NMK, KWTA, CFAs

CHAPTER SIX

PLAN IMPLEMENTATION

6.1. Financial Management

To guide the implementation of this ecosystem management plan, a financial management mechanism will be prepared. Substantial funds will be required to finance this plan.

The main sources of finances will come from the consolidated fund. These are financial resources appropriated by the Government to KFS, KWS, KWTA, WRA or Kwale County Government as each implement's activities within their mandate. Expenditure will follow budget allocations for prescribed activities. Revenue collection based on forest resources will be in accordance with the National or County Government regulations and procedures.

The SHICOFA funds will adhere to their constitution and by-laws governing management of various user groups. The CFA is advised to raise funds from the various stakeholders identified in the plan and undertake financial management as guided by each stakeholder.

The other source of funds for implementing the planned activities will come from external sources. These financial resources are from strategic partners who have an interest in SHE conservation at heart.

The implementing agencies and partners should mobilize resources to implement the programmes proposed in this ecosystem plan. Generation of revenue from the payment of ecosystem goods and services from the forest and the nature reserves in the Shimba Hills Ecosystem.

The general cross cutting issues need to be considered in the implementation of this ecosystem plan. The issues include gender disparities and ways for affirmative action, HIV/AIDs, poverty and climate change. These are the issues if not addressed by partners, can jeopardise attempts to achieve the goal of attaining sustainable ecosystem natural resources management. These issues affect the communities at large and all partners.

6.2 Resource Mobilization

Funds will be needed for capital development, purchase of equipment, construction and rehabilitation of roads and other infrastructure. The implementing institutions and SHICOFA should seek financial support in good time from various sources such as the annual KFS and KWS budgetary allocations or support from stakeholders during the plan period for capital development. Annual recurrent budgets to cover annual work plans and activities within the forest/national reserve will be prepared by the respective implementing agencies.

6.3 Environmental Social Impact Assessment (ESIA)

Putting up establishments in any natural ecosystem could result in negative impacts affecting the dynamics of the biodiversity and its ability to supply the desired goods and services.

An ESIA provides a means of mitigation for the welfare of humanity and other species dependent on such ecosystems.

It provides a mechanism for project planning, implementing and integrating environmental conservation; management and development. It takes into account the social, physical and biological components of the environment to ensure minimal negative impacts, as well as promoting environmental benefits according to the requirements of EMCA (amendment), 2015. Any activity that may cause irreversible damage in the natural ecosystem will not be approved. The establishments in this ecosystem plan which require ESIA include;

- Eco-tourism facilities and buildings
- Establishment of additional roads, tracks and trails in improving forest and nature reserve accessibility

6.4 Plan Monitoring and Evaluation

Monitoring and evaluation serve as a tool for assessing project achievements, success and constraints. It also provides a feedback mechanism to improve proposed activities and make adjustments wherever necessary. The process also identifies problems, their sources to help come up with strategies in addressing them for a successful implementation and continuity of the proposed activities.

6.5 Institutional Arrangements for Plan Implementation

The systematic implementation of this ecosystem management plan requires appropriate institutional structures that are integrated into existing institutions. The structure to oversee the implementation of SHEMP will be the Plan Implementation Committee (PIC) whose membership is in Table 18. They will serve as a forum for dialogue and consensus building, priority setting and balancing the various interests involved.

Table 18: Plan Implementation Committee (PIC)

Institution	Designation	No.
SHICOFA	Executive	3
MES	Manager	1
KFS	Forest Station Manager	1
KWS	Senior Warden	1
CGoK	Sub county administrator	1
NEMA	Environment officer	1
WRUA	Representative	1
NGAO	ACC	1
Coopted member	Partners	3
Total		**13**

6.6 Institutional arrangement for SHE plan

The success of this ecosystem Plan is hinged on partners' collaboration during the implementation period. The various partners will work together as shown in Figure 14.

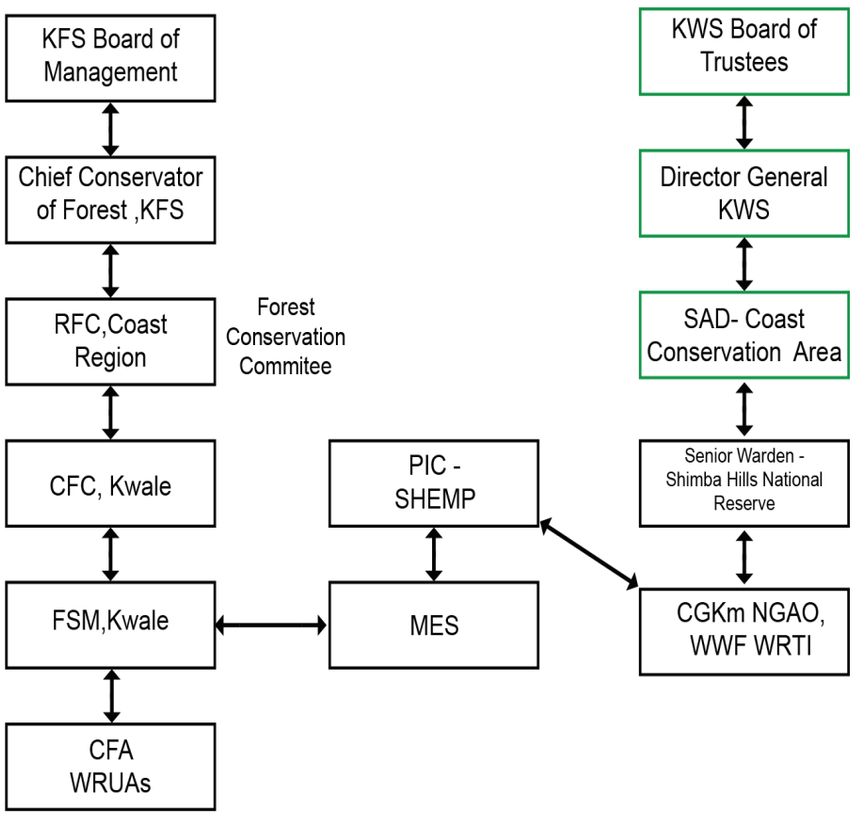


Figure 14: SHEMP Implementation Organization Structure

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ANNEXES

Annex 1: SHEMP Development Action Schedule

Date	Activity
13-15 Mar 2019	Preliminary Planning Meeting at Leopard Beach Resort
3- 5 Apr 2019	CPT Meeting at PrideInn Ukunda
24-26 Apr 2019	SHEMP Scoping workshop and thematic group meetings
22- 25 May 19	Ecological Experts Working Group Meeting
9-12 Jul 2019	Write-up workshop to develop zero draft
29-Jul-19	Review/Update of Maps, Zonation and Incorporation of Information into the Zero Draft
26 Jul–19 Aug 2019	Community Sensitization Meetings
17-21 Sep 2019	Proofreading and Editing Workshop at Royal Court Mombasa
23-25 Sep 2019	Proofreading and Editing Workshop at KFS Kwale offices
25-26 Nov 2019	Review of SHEMP, 25-26 November 2019, PrideInn Mombasa
17-19 Feb 2020	Incorporation of reviewers comments into SHEMP draft 2020
7 Aug 2020	CPT consultation meeting at KFS offices, Kwale
26 Aug 2020	Virtual meeting for senior managers (KFS and KWS)
23-24 Nov-2020	Validation Workshop for Shimba Hills Ecosystem Management Plan , PrideInn Ukunda,
9 – 14 May 2021	Workshop on fianlization of SHEMP for submission to the CCF and DG for approval
13 July 2022	Zoom meeting between representatives of KFS, WRTI, KWS, WWF-Kenya to discuss the way forward on the competition of the Shimba Hills Ecosystem Management Plan and Shimba Hills Forest and National Reserve plan.
20 – 25 Nov 2022	Workshop on completion of SHEMP for submission to the CCF and DG for approval
29 – 30 May 2023	Workshop and field visit to SHEMP for senior officers

Annex 2: Matrix Used for Stakeholder Identification

Lead Organisations

Stakeholder	Contact person	Impact	Influence	What is important to the stakeholder	How could the stakeholder contribute to the plan	How could the stakeholder block the implementation of the plan	Strategy for engaging the stakeholder
Kenya Forest Service (KFS)	Ecosystem Conservator	High	High	Custodian of forest reserves Management of forest areas Law enforcement and protection services Employment Eco-tourism Revenue generation Infrastructure development and maintenance	Planning and implementation	Lack of endorsement	Lead agency Stakeholder workshops Expert working groups CPT
Kenya Wildlife Service (KWS)	Senior Warden - SHFNR	High	High	Wildlife Conservation and management	Planning and implementation	Lack of endorsement	Lead agency Stakeholder workshops Expert working groups CPT
Mwaluganje Elephant Sanctuary (MES)	Project Manager	High	High	Wildlife management, custodian of elephant sanctuary land, ecotourism, revenue generation, employment	Planning and implementation	Lack of community goodwill	CPT Stakeholder workshop

Government Organisations

Stakeholder	Contact person	Impact	Influence	What is important to the stakeholder	How could the stakeholder contribute to the plan	How could the stakeholder block the implementation of the plan	Strategy for engaging the stakeholder
Kenya Water Towers Agency (KWTA)	Regional Director	Medium	High	Water catchment conservation	Planning and implementation	Lack of goodwill	CPT Stakeholder workshop
County Government of Kwale (CGK)	County Secretary	High	High	Forest water, agriculture, extension services, social services, infrastructure, tourism, land and environment	Planning and implementation	Lack of political goodwill	Stakeholder engagement Expert working groups CPT
Coast Development Authority (CDA)	Managing Director	Medium	Medium	Environmental conservation and livelihood enhancement	Support implementation	Lack of goodwill	Stakeholder workshop and expert working group
Ministry of Interior and Coordination	County Commissioner	Medium	Medium	Law enforcement Coordinating security and national development projects Chair to CEC, WCC	Support implementation		Stakeholder workshop
Judiciary		Medium	Medium	Prosecution	Support implementation		Stakeholder workshop
Kwale Water and Sewerage Company (KWASCO)	Managing Director	Low	Low	Water abstraction and supply	Support Implementation	Lack of goodwill	Stakeholder workshop, Expert working group
Coast Water Services Board (CWSB)	Managing Director	Low	Low	Water abstraction and supply	Support Implementation	Lack of goodwill	Stakeholder workshop, Expert working group
Metrological Department	County Director	Low	Low	Weather forecast dissemination	Support implementation		Stakeholder workshop
National Drought Management Authority (NDMA)	County Director	Low	Low	Food security, livelihoods and disaster management	Support implementation		Stakeholder workshop

National Environment and Management Authority (NEMA)	County Director Environment	High	High	EIA/EA/SEA Capacity building,	Planning and implementation	Lack of goodwill	Stakeholder workshop Expert working group
National Land Commission (NLC)	Coordinator	Medium	Medium	Land adjudication and settlement	Support implementation		Stakeholder workshop
National Museums of Kenya (NMK)	Curator Kwale County	Medium	Medium	Conservation of cultural resources	Planning and implementation	Lack of goodwill	Stakeholder workshop Expert working group
Water Resource Authority (WRA)	Regional Director	Medium	Medium	Water use regulation, protection and water quality monitoring	Planning and implementation	-	Stakeholder workshop Expert working group

Research Organisations

Stakeholder	Contact person	Impact	Influence	What is important to the stakeholder	How could the stakeholder contribute to the plan	How could the stakeholder block the implementation of the plan	Strategy for engaging the stakeholder
Kenya Agricultural and Livestock Research Organization (KALRO)	Center director	Medium	Medium	Research and monitoring	Planning and implementation	-	Stakeholder workshop Expert working group Individual consultation
Kenya Forest Research Institute (KEFRI)	Center director	Medium	Medium	Research and monitoring	Planning and implementation	-	Stakeholder workshop Expert working group Individual consultation
Kenya Medical Research Institute (KMRI)	Center director	Medium	Medium	Research and monitoring	Planning and implementation	-	Stakeholder workshop Expert working group Individual consultation
Research organizations	Center director	Medium	Medium	Research and monitoring	Planning and implementation	-	Stakeholder workshop Expert working group Individual consultation
Universities and colleges	HODs						Stakeholder workshop Expert working group Individual consultation

Private Organisations

Stakeholder	Contact person	Impact	Influence	What is important to the stakeholder	How could the stakeholder contribute to the plan	How could the stakeholder block the implementation of the plan	Strategy for engaging the stakeholder
Base Titanium Limited	Managing director	Medium	High	Water abstraction, biodiversity conservation	Support Implementation	Lack of goodwill	Stakeholder workshop, Expert working group
Kenya Association of Hotel Keepers and Caterers	Chair	Medium	Medium	Tourism	Support implementation		Stakeholder workshop
Kwale International Sugar Company Limited (KISCOL)	Managing Director	Low	Low	Water abstraction	Support Implementation		Stakeholder workshop

Non-Governmental Organisations

Stakeholder	Contact person	Impact	Influence	What is important to the stakeholder	How could the stakeholder contribute to the plan	How could the stakeholder block the implementation of the plan	Strategy for engaging the stakeholder
Colobus conservation	Manager	Low	Low	Primate conservation	Implementation		Stakeholder workshop,
Kenya Water Services Network (KEWASNET)	Coordinator	Medium	Medium	Advocacy and lobbying WASH	Planning and implementation	Lack of goodwill	Stakeholder workshop
WWF-Kenya	Coordinator Kwale-Kilifi landscape	High	High	Biodiversity conservation	Planning and Supporting implementation	Lack of goodwill	CPT Stakeholder workshop Expert working group

Community-Based ***Organisations***

Stakeholder	Contact person	Impact	Influence	What is important to the stakeholder	How could the stakeholder contribute to the plan	How could the stakeholder block the implementation of the plan	Strategy for engaging the stakeholder
Kwale County Natural Resources Network (KCNRN)	Coordinator	Medium	Medium	Advocacy and lobbying sustainable NRM	Planning and implementation	Lack of goodwill	Stakeholder workshop
South Coast Owners Forest Association (SCOFOA)	Chair	Medium	Medium	On farm forestry	Support implementation		Stakeholder workshop
South Coast Residents Association (SCRA)	Chair	Medium	Medium	Advocacy and lobbying	Support implementation		Stakeholder workshop
Shimba Hills Community Forest Association (SHICOFA)	Chair	Medium	Medium	IEC Tree growing, IGA's for livelihood improvement	Planning and implementation	Lack of community goodwill	CPT Stakeholder workshop
Water Resources Users Association (WRUA)	Chair	Medium	Medium	Water catchment protection and conservation	Planning and implementation	Lack of goodwill	Stakeholder workshop
Community Wildlife Association (CWA)	Chair	Medium	Medium	Wildlife conflict mitigation	Planning and implementation	Lack of goodwill	Stakeholder workshop

Annex 3: List of Participants Involved in SHEMP Development Process

Name of the participants	Organization	Preliminary planning (13th -15th March 2019)	Core planning team (3rd -5th April 2019)	Scoping workshop (24th -26th April 2019)	Ecological experts working groups (22nd -25th May 2019)	Draft zero write (9th -12th July 2019)	Review of draft zero (29th July -1st Aug 2019)	Incorporating views from barazas (17th -25th Sept 2019)	Review of SHEMP draft on 25th-26th November 2019 in Pride inn Mombasa	Virtual meeting 26th August 2020	Validation (24th -26th Nov 2020)	Completion workshop (9th-15th April 2021)	Completion workshop (21st -25th November, 2022	KWS-KFS-WWF Workshop /Field Visit – 29th -30th May 2023
Raymond Omondi	KWS					X	X	X	X	X	X		X	
George Wara	KFS	X	X	X	X	X	X	X	X	X	X	X		
Benard Ochieng Ogwoka	KWS	X	X	X	X	X	X	X	X	X	X	X	X	X
Nathaniel Mwangeka	WWF	X	X	X		X	X	X	X	X	X	X	X	
Elaar Yusuf	WWF						X							
Simeon Ndegwa	WWF			X	X									
Simeon Mwadiga	WWF							X						
Binitah Onsongo	NMK	X	X	X		X	X	X						
Juma Mahupa Dalu	CGK			X										
Edward Karanja	KWS			X		X	X	X						
Kafaa Rimo Mwarimo	MES		X	X			X		X		X			
Edwin Misachi	KFS									X	X		X	X
Joseph K. Mkala	KFS						X							
Hamisi Salim Nzila	SHICOFA		X	X										X
Chadzumba Kipanje	JAC													
Devo Bashero	KWS													
Abubakar Said Salim	KFS						X							
Edward Njuguna	KWS	X	X											
Joycelyn Makena	KWS	X												
Jacqueline Benard	KWS	X	X	X	X	X		X						
Elias Kimaru	WWF	X												
Jamleck K Ndamberi	KFS	X		X					X					
James Mathenge	KWS	X		X		X	X							
Edin Kalla	KWS	X												
Luke Njuguna	KFS	X												
Daniel Mbithi	KFS	X												
Dr. Yussuf Wato	WWF- Kenya	X												X
Dr. Elizabeth Wambugu	KFS	X							X				X	X
Kiunga Kareko	WWF-Kenya	X												
Arthur Tuda	KWS	X		X										

Name of the participants	Organization	Preliminary planning (13th -15th March 2019)	Core planning team (3rd -5th April 2019)	Scoping workshop (24th -26th April 2019)	Ecological experts working groups (22nd -25th May 2019)	Draft zero write (9th -12th July 2019)	Review of draft zero (29th July -1st Aug 2019)	Incorporating views from barazas (17th -25th Sept 2019)	Review of SHEMP draft on 25th-26th November 2019 in Pride inn Mombasa	Virtual meeting 26th August 2020	Validation (24th -26th Nov 2020)	Completion workshop (9th-15th April 2021)	Completion workshop (21st -25th November, 2022	KWS-KFS-WWF Workshop /Field Visit – 29th -30th May 2023
Simon Wahome	KFS													
Sofia Kabibi	WWF	X			X									
Francis Kenga	KWS	X												
Obadiah Kadenge	KFS	X												
Jackline Mutwiri	KWS	X		X										
Felix Mbuvi	JKUAT	X	X	X										
Florence Mwachoki	KWTA		X	X							X			
Dr. Joseph Indo	CGK		X	X		X	X	X	X		X	X	X	
Rashid Tsama	SHICOFA			X										
Adili Mwatondo	SHICOFA			X										
Bakari Hassan	CWMA			X										
Paul Musila	CGK			X		X								
Apollo Kariuki	KWS			X										
Josephine Njui	KFS			X			X							
Tsimba Nyawa	KCNRN			X	X		X							
Irene Njengo	Base Titanium Ltd			X										
Jackline Mureithi	Base Titanium Ltd			X										
Mohammed Mwajirani	Mwainzi WRUA			X							X			
Chai Ramoyo	MES			X										
Matano Abdulrahman	NMK			X										
Peter Mbugua	CWCMC			X										
Kelvin Obondo	WRA			X										
Julius Mwanyalo	KWTA			X										
James Maina	KEFRI			X										
Karuku Ngumo	NGAO			X										
Lorrine Awuor	KFS				X									
Martha Munyao	KWS				X	X	X							
Mwanakombo Hassan	KCNRN				X									
Paul Kibagendi	KFS					X								
Nelly Muthoni	KFS					X								
Daudi Galgalo	KFS						X							
Safi Ibrahim	KFS						X							

Name of the participants	Organization	Preliminary planning (13th -15th March 2019)	Core planning team (3rd -5th April 2019)	Scoping workshop (24th -26th April 2019)	Ecological experts working groups (22nd -25th May 2019)	Draft zero write (9th -12th July 2019)	Review of draft zero (29th July -1st Aug 2019)	Incorporating views from barazas (17th -25th Sept 2019)	Review of SHEMP draft on 25th-26th November 2019 in Pride inn Mombasa	Virtual meeting 26th August 2020	Validation (24th -26th Nov 2020)	Completion workshop (9th-15th April 2021)	Completion workshop (21st -25th November, 2022	KWS-KFS-WWF Workshop /Field Visit – 29th -30th May 2023
Victoria Oliech	KFS						X							
Esboan Mwania	KWS						X							
Mohammed Mashin	KWS						X							
Peter Hongo	KWS						X						X	
Nyamavi Mwandia	SHICOFA						X							
Siro Abdallah	WWF						X							
Peter Mwangi	KFS							X	X	X	X			
Josephine Mutiso	KWS								X					
Kassim Ntindi	KWS								X					
Elizabeth Wambugu	KFS									X	X	X		X
Hamisi Dzila	SHICOFA								X		X			
Anastacia Mwaura	KWS									X	X	X	X	
Dr. Mohammed Omar	KWS									X	X	X	X	X
Dr. Judith Nyunja	KWS									X	X			
Mohamed Pakia	WWF									X			X	X
Kareko Kiunga	WWF									X				
Andrew Soi	KFS								X		X	X		
Samuel Ngumah	WWF								X					
Nancy Karugi	KFS									X	X	X	X	
Amani Mbesta	SHICOFA										X			
Caroline Adhoha	BAMBURI CEMENT										X			
Geofrey Waini	COUNTY COMMISSIONER										X			
Mwichondo Omari	KWS										X			
Francisca Fundi	SHIFOGA										X			
Mohamed Katambo	SHIFOGA										X			
Kelly Festus	SHIFOGA										X			
Jane Mathei	SHIFOGA										X			
Neema Suya	WWF									X		X		
Jacob Orahle	KWS											X		
John Rono	KFS											X	X	
Dickson Ritan	KWS													X
Lekishon Kenana	KWS													X

Name of the participants	Organization	Preliminary planning (13th -15th March 2019)	Core planning team (3rd -5th April 2019)	Scoping workshop (24th -26th April 2019)	Ecological experts working groups (22nd -25th May 2019)	Draft zero write (9th -12th July 2019)	Review of draft zero (29th July -1st Aug 2019)	Incorporating views from barazas (17th -25th Sept 2019)	Review of SHEMP draft on 25th-26th November 2019 in Pride inn Mombasa	Virtual meeting 26th August 2020	Validation (24th -26th Nov 2020)	Completion workshop (9th-15th April 2021)	Completion workshop (21st -25th November, 2022	KWS-KFS-WWF Workshop /Field Visit – 29th -30th May 2023
Lilian Ajuoga	KWS												X	X
Carolyne Busuru	KFS													X
John Wambua	KWS													X
Vincent Ongwae	KWS													X
James Kiparus	KWS													X
Mercelyne Khalumba	KFS													X
Elphas Wesonga	KFS												X	X
Santos Ingosi Kevin	KFS													X
Fredrick Ojuang	KFS													X
Blessingtone C. Maghaga	KFS												X	X
Katana Thoya	KFC													X
Hussein Gwama	KFC													X
Asma Awadh	WWF KENYA												X	
Samuel Tokore	KWS												X	
Lydia Illa	KWS												X	
Cornel Omondi	KWTA												X	

Annex 4: List of Plantations in Shimba Hills

Sub-Compartment	Species	Year Planted	Area (Ha)	Status	Recommendation
SHIMBA HILLS					
1A	*Pinus carribea*	1993	2.8	Intact	Harvest and revert to natural forest
1 B	*Pinus carribea*	2004	5	Game damage	Salvage and revert
2A	*Pinus carribea*	1963	14.1	Game damage	Salvage and revert
2 B	*Pinus carribea*	1969	12.1	Intact	Harvest and revert
2 C	*Pinus carribea*	1970	13.4	Intact	Harvest and revert
2 D	*Pinus carribea*	1971	43.8	Intact	Harvest and revert
2 E	*Pinus carribea*	1971	16.5	Intact	Harvest and revert
3 B	*Pinus carribea*	1973	8.1	Game damage	Salvage and revert
3 C	*Pinus carribea*	1968	17	Intact	Harvest and revert
3 D	*Pinus carribea*	1968-69	19	Game damage	Salvage and revert
3 F	*Pinus carribea*	1969	18.2	Game damage	Salvage and revert
3 G	*Pinus carribea*	1978	16.2	Game damage	Salvage and revert
3 J	*Pinus carribea*	1969	15	Intact	Harvest and revert
4 A	*Pinus carribea*	1980	27	Game damage	Salvage and revert
4 B	*Pinus carribea*	1978	23	Game damage	Salvage and revert
4 C	*Araucaria cunninghami*	1960	22	Game damage	Revert to natural forest based on natural rotation
4 C	*Pinus carribea*	1960	50	Game damage	Salvage and revert
4 D	*Pinus carribea*	1975	23	Game damage	Salvage and revert
4 E	*Pinus carribea*	1960	21	Game damage	Salvage and revert
5 A	*Pinus carribea*	1960	9.3	Game damage	Salvage and revert
5 B	*Pinus carribea*	1961	20.2	Game damage	Salvage and revert
5 C	*Pinus carribea*	1973	7.3	Game damage	Salvage and revert
5 D	*Pinus carribea*	1973	25.5	Game damage	Salvage and revert
5 E	*Pinus carribea*	1970	21	Game damage	Salvage and revert
6 A	*Pinus carribea*	1970	26.7	Intact	Harvest and revert
6 B	*Pinus carribea*	1970	27.1	Intact	Harvest and revert
6 C	*Pinus carribea*	1970	21.5	Intact	Harvest and revert
6 D	*Pinus carribea*	1970	22.7	Intact	Harvest and revert
7 A	*Pinus carribea*	1971	27.6	Game damage	Salvage and revert
7 B	*Pinus carribea*	1972	36.4	Game damage	Salvage and revert
7 C	*Pinus carribea*	1973	13.2	Game damage	Salvage and revert
7 D	*Pinus carribea*	1973	12.6	Game damage	Salvage and revert
KILIMANI					
1 A	*Pinus carribea*	1977	21.4	Fire damage	Salvage and revert
1 B	*Pinus carribea*	1978	8.3	Fire damage	Salvage and revert
1 C	*Pinus carribea*	1981	10.2	Fire damage	Salvage and revert
KIVUMONI					
1 A	*Pinus carribea*	1972	19.8	Game damage	Salvage
1 B	*Pinus carribea*	1974	25.5	Game damage	Salvage

1 C	*Pinus carribea*	1974	8.2	Game damage	Salvage and revert
1 D	*Pinus carribea*	1975	19.8	Game damage	Salvage and revert
1 F	*Pinus carribea*	1973	11.8	Game damage	Salvage and revert
1 G	*Pinus carribea*	1975	14.4	Game damage	Salvage and revert
1 H	*Pinus carribea*	1976	34.8	Game damage	Salvage and revert
1 J	*Pinus carribea*	1976	27.7	Game damage	Salvage and revert
1 K	*Pinus carribea*	1976	29.1	Game damage	Salvage and revert
1 L	*Pinus carribea*	1981	31.6	Game damage	Salvage and revert
GODONI					
1 B	*Pinus carribea*	1966	10	Game damage	Salvage and revert

Annex 5: List of flora in SHE

Scientific names	Common names
Aquatic herb	
Asystasia ansellioides C.B.Clarke	*Chinese violet*
Asystasia gangetica (L.) T.Anderson	
Barleria angustiloba Lindau	
Blepharis maderaspatensis Heine ex Roth	*Creeping Blepharis*
Ecbolium amplexcaulis S.Moore	*Green ice crossandra*
Elytraria minor Dokosi	*Scalystem*
Hypoestes forskahlii (Vahl) R.Br.	
Justicia pseudorungia Lindau	*Water-willow*
Lankesteria alba Lindau	*Caterpillar tree*
Monathecium aristatum T. Anderson	
Pseuderanthemum subviscosum (C.B.Clarke) Stapf	
Ruellia patula Jacq.	*Veld violet*
Sclerochiton boivini (Baill.) C.B.Clarke	*Blue-lips*
Sclerochiton vogelii (Nees) T.Anderson ssp. *holstii*	
(Lindau) Napper	
Thunbergia alata Bojer ex Sims	
Thunbergia kirkii Hook.f.	*Blue Sky Shrub*
Thunbergia schimbensis S. Moore	*Black-eyed Susan vine*
Pellaea doniana Hook.	*Cliff-brake*
Achyranthes aspera L. var. sicula L.	
Aerva lanata (L.) Schults	
Alternanthera sessilis (L.) DC.	*Sessile joyweed*
Amaranthus graecizans L. ssp. *Silvestris* (Vill.) Brenan	*Tepalled pigweed*
Celosia schweinfurthiana Schinz	*Woolflower*
Gomphrena celosioides Mart.	*Bachelor's Button*
Psilotrichum sceleranthum Thwaites	
Psilotrichum sericeum (Roxb.) Dalziel	
Pupalia lappacea (L.) A.Juss.Var. *velutina* (Moq.)	
Hook.f.	
Scadoxus multiflorus (Martyn) Raf.	*Blood lily*
Lannea schweinfurthii Engl. var. *stuhlmannii* (Engl.)	
Kokwaro	

Scientific names	Common names
Lannea welwitschii (Hiern) Engl. var. *ciliolata* Engl.	*Kumbi*
Ozoroa insignis Delile ssp. *reticulata* (Baker.F.) Gillett	*Currant resin tree*
Ozoroa obovata (Oliv.) R. Fern. & A.Fern.	*Broad-leaved resin tree*
Rhus natalensis Krauss	*Dune currant*
Sclerocarya birrea (A. Rich.) Hochst. ssp. *Caffra*	
(Sond.) Kokwaro	
Sorindeia madagascariensis DC.	*Sorindeia*
Annona senegalensis Pers. ssp. *Senegalensis*	African custard-apple
Artabotrys monteiroae Oliv.	*Red hook-berry*
Asteranthe asterias (S.Moore) Engl. & Diels ssp.	*Msaluti-Swahili*
Asterias	
Isolona cauliflora Verdc.	
*Lettowianthus stellatus*Diels	*Green star-flower*
Monanthotaxis faulknerae Verdc.	
Monodora grandidieri Baill.	Mudzala simba-Giriama
Sphaerocoryne gracilis (Engl. & Diels) Verdc.	Uvaria
Uvaria acuminata Oliv.	
Uvaria lucida Benth. ssp. *Lucida*	Uvaria
Uvaria puguensis D.M. *Johnson*	
Uvariodendron kirkii Verdc.	
Xylopia longipetala De Wild. & T. Durand	
Chlorophytum macrophyllum (A. Rich.) Asch.	
Adenium obesum (Forssk.) Roem. & Schult.	Desert Rose
Ancylobothrys petersiana (Klotzsch) Pierre	Climbing wild apricot
Baissea myrtifolia (Benth.) Pichon	Stinkbush
Carvalhoa campanulata K.Schum.	
Cryptolepis apiculata K.Schum.	Milk ropes
Cryptolepis sinensis (Lour.) Merr. ssp. *Africana*	Chinese Wax-Leaf Climber
Bullock	
Cynanchum viminale Blanco	
Gymnema sylvestre R.Br.	Australian cowplant
Holarrhena pubescens (Buch.-Ham.) G.Don	Conessi
Hunteria zeylanica (Retz.) Gardn. ex Thwaites var.	
Africana	
Kanahia laniflora (Forssk.) R.Br.	
Landolphia kirkii Dyer	Sand apricot-vine
Marsdenia rubicunda (K. Schum.) N.E.Br.	
Mascarenhasia arborescens A.DC.	
Pentarrhinum inspidum E.Mey.	
Pergularia daemia (Forssk.) Blatt. & MacOwan	
Rauvolfia mombasiana Stapf	Lesser quinine-tree
Saba comorensis (Bojer) Pichon	
Schizozygia coffaeoides Baill.	
Secamone parvifolia (Oliv.) Bullock	

Scientific names	Common names
Secamone retusa N.E.Br.	
Strophanthus courmontii Franch	Tail-less strophanthus
Strophanthus kombe Oliv.	Kombe arrow poison
Tabernaemontana elegans Stapf	Toad Tree
Tabernaemontana pachysiphon Stapf	
Anchomanes abbreviatus Engl.	
Callopsis volkensii Engl.	
Gonatopus boivinii (Decne.) Engl.	Giraffe's knees
Stylochiton salaamicus N.E.Br.	
Zamioculcas zamiifolia (Lodd.) Engl.	ZZ Plant
Asparagus falcatus L.	Sicklethorn
Asplenium buettneri Hieron	
Ageratum conyzoides L.	Goatweed
Aspilia mossambicensis (Oliv.) Wild	Wild sunflower
Bidens pilosa L.	Cobblers pegs
Bidens schimperi Sch.Bip. ex Walp	Black jack
Brachylaena huillensis O.Hoffm.	Silver oak
Ethulia angustifolia DC	
Laggera brevipes Oliv. & Hiern	
Launaea cornuta (Hochst. ex Oliv. & Hiern) C.Jeffre	Bitter Lettuce
Launaea intybacea (Jacq.) Beauverd	
Pluchea dioscorides (L.) DC.	Marsh Fleabane
Pluchea ovalis (Pers.) DC.	
Tridax procumbens L.	Coatbuttons
Vernonia aemulans Vatke	Ironweed
Vernonia cinerea (L.) Less. var. cinerea	
Vernonia hildebrandtii Vatke	
Vernonia zanzibarensis Less.	Ironweed
Balanites maughamii Sprague ssp. *acuta* Sands	Torchwood
Fernandoa magnifica Seem.	
Markhamia zanzibarica K.Schum.	Bell bean tree
Adansonia digitata L.	Baobab
*Bombax rhodognaphaton*K. Schum. var.	East African cotton tree
Rhodognaphaton	
Cordia faulknerae Verdc.	
Cordia monoica Roxb.	Sandpaper tree
Ehretia bakeri Britten	
Hilselbergia nomeralis (Gurke) J.S. Mill.	
Hilselbergia petiolaris (Lam.) J.S. Mill.	Climbing hydrangea
Hilsenbergia teitensis (Gurke) J.S. Mill.	
Commiphora ?campestris Engl. ssp. *glabrata* (Engl.)	
Gillett	
Commiphora lindensis Engl.	Corkwood
Commiphora obovata Chiov.	Corkwood

Scientific names	Common names
Buxus obtusifolia (Mildbr.) Hutch.	Hutch
Opuntia ficus-indica (L.) Mill.	Prickly pear
Afzelia quanzensis Welw.	Pod mahogany/Mahogany bean
Brachystegia spiciformis Benth.	Brachystegia/Zebra wood
Caesalpinia insolita (Harms) Brenan & Gillett	
Cassia abbreviata Oliv. ssp. *Abbreviate*	Long pod cassia
Cassia abbreviata Oliv. ssp. *beareana (Holmes) Brenan*	
Chamaecrista absus (L.) Irwin & Barneby	
Chamaecrista mimosoides (L.) Greene	Feather-leaved Cassia
Cynometra suaheliensis (Taub.) Baker f.	
Cynometra webberi Baker f.	Mfunda-Swahili
Erythrophleum suaveolens (Guill. & Perr.) Brenan	
Hymenaea verrucosa Gaertn.	Zanzibar copal
Paramacrolobium coeruleum (Taub.) J.L,on	
Piliostigma thonningii (Schumach.) Milne-Redh.	Camel's foot tree
Scorodophloeus fischeri (Taub.) J.L,on	
Senna singueana (Delile) Lock	Wild cassia
Tamarindus indica L.	Tamarind
Wahlenbergia napiformis (A.DC.) Thulin	
Boscia angustifolia A. Rich. var. *angustifolia*	Rough-leaved shepherds tree
Cadaba carneo-viridis Gilg-Ben. &Benedict	Her boy's fruit
Capparis sepiaria L.	Wild caper bush
Capparis tomentosa Lam.	African caper
Cleome usambarica Pax	
Maerua (simple leaves)	
Maerua angolensis DC.	Bead-bean
Maerua calantha Gilg	
Maerua grantii Oliv.	
Maerua kirkii (Oliv.) F.White	Large-flowered bush-cherry
Maerua triphylla A.Rich.	
Ritchiea capparoides (Andr.) Britten	
Thylachium africanum Lour.	Cucumber bush
Elachyptera parvifolia (Oliv.) N.Hall,	
Elaeodendron schlechterianum (Loes.) Loes.	Large-leaved saffron
Elaeodendron schweinfurthianum (Loes.) Loes.	
Gymnosporia gracilis Loes.	
Gymnosporia putterlikioides Loes.	Large-flowered spike-thorn
Loeseneriella africana (Willd.) N.Hall,var. *richardiana*	African paddle-pod
Maytenus undata (Thunb.) Blakelock	Koko tree
Pleurostylia africana Loes.	Northern coffee-pear
Pristimera andongensis (Oliv.) N.Hall, var. *volkensii*	
Salacia elegans Oliv.	
Salacia lehmbachii Loes.	
Salacia madagascariensis (Lam.) DC.	

Scientific names	Common names
Gloriosa superba L.	
Combretum chionanthoides Engl. & Diels	Bushwillows
Combretum falcatum (Hiern) Jongkind	Bushwillows
Combretum hereroense Schinz ssp. *Volkensii*	Bushwillows
(Engl.)Wickens var. *volkensii* (Engl.) Wickens	
Combretum illairii Engl.	Bushwillows
Combretum paniculatum Vent.	Bushwillows
Combretum schumannii Engl.	Bushwillows
Terminalia boivinii Tul.	
Terminalia prunioides M.A.Lawson	Purple-pod terminalia
Terminalia spinosa Engl.	Spiny terminalia
Aneilema aequinoctiale Kunth	Clinging aneilema
Aneilema petersii (Hassk.) C.B.Clarke ssp. *Petersii*	
Commelina benghalensis Wall.	Wandering Jew
Commelina bracteosa Hassk.	
Commelina diffusa Burm.f.	Spreading dayflower
Commelina forskalaei Vahl	
Commelina imberbis Hassk.	
Commelina sp.	
Murdannia simplex (Vahl) Brenan	Large dewflower
Agelaea pentagyna (Lam.) Baill.	
Connarus longistipitatus Gilg	
Ellipanthus madagascariensis (Schellenb.) Keraudren	
Rourea orientalis Baill.	Short pod
Evolvulus alsinoides L.	
Hewittia malabarica (L.) Suresh	Malabar Bindweed
Ipomoea irwinae Verdc.	
Ipomoea pes-tigridis L.	Tiger's footprint
Ipomoea urbaniana (Dummer) Hallier f.	Bindweed
Paniculata	
Jacquemontia tamnifolia (L.) Griseb.	Smallflower morningglory
Metaporana densiflora (Hallier F.) N.E Br.	
Stictocardia incompta (Hallier f.) Hallier f.	
Kalanchoe lateritia Engl. var. *lateritia*	
Coccinia grandis (L.) Voigt	Ivy Gourd
Cucumis sacleuxii Paill. &Bois	
Cucumis sp.	
Momordica leiocarpa Gilg	Bitter melon
Zehneria pallidinervia (Harms) C.Jeffrey	
Bulbostylis filamentosa (Vahl) C.B.Clarke	Hairsedge
Bulbostylis hispidula (Vahl) R.W.Haines ssp.	
halophila (Lye) R.W.Haines	
Bulbostylis pilosa (Willd.) Cherm.	
*Cyperus*sp.	

Scientific names	Common names
Cyperus cyperoides (L.) Kuntze	Common Flat Sedge
Cyperus dubius Rottb. ssp. *Dubius*	Soft sedge
Cyperus exaltatus Retz.	Tall flat-sedge
Cyperus haspan L.	Haspan flatsedge
Cyperus hemisphaericus Boeck.	
Cyperus involucratus Rottb.	Umbrella sedge
Cyperus luteus Boeck.	
Cyperus niveus Retz. *var.* flavissimus	Snow White Sedge
Cyperus niveus Retz. var. *leucocephalus* (Kunth) Fosberg	
Cyperus prolifer Lam.	Miniature Flatsedge
Cyperus tenax Boeck.	
Fimbristylis dichotoma (L.) Vahl	Forked fimbry
Fuirena umbellata Rottb.	
Kyllinga cartilaginea K.Schum.	
Kyllinga polyphylla Kunth	
Kyllinga sp	
Pycreus polystachyos (Rottb.) P. Beauv. var. *laxiflorus*	Manyspike flatsedge
Scleria lithosperma (L.) Sw.	
Davallia denticulata (Burm.f.) Kuhn var. *denticulata*	Rabbit's Foot Fern
Dichapetalum madagascariense Poir. var. *Madagascariensi*	
Dichapetalum ruhlandii Engl.	
Dichapetalum zenkeri Engl.	
Tetracera boiviniana Baill.	
Tetracera litoralis Gilg	
Dioscorea astericus Burkill	
Dioscorea sansibarensis Pax	Zanzibar yam
Dracaena manii Baker	Small-leaved dragon tree
Sansevieria gracilis N.E.Br.	
Sansevieria kirkii Baker	Star sansevieria
Diospyros abyssinica (Hiern) F.White ssp. *abyssinica*	
Diospyros bussei Gürke	
Diospyros consolatae Chiov.	
Diospyros greenwayi F.White	
Diospyros loureiriana G.Don ssp. *Rufescens*	
Diospyros squarrosa Klotzsch	Rigid star-berry
Euclea ?divinorum Hiern	
Euclea natalensis A.DC.	Natal guarri
Euclea racemosa Murr ssp. *schimperi* (A.DC.) F.White	
Nectaropetalum kaessneri Engl. var. *kaessneri*	
Acalypha fruticosa Forssk. *var.* fruticose	Birch-Leaved Cat Tail
Acalypha lanceolata Willd.var. *glandulosa* (Muell.Arg.) A.R.-Sm.	Toothed Bract Indian Copperleaf.

Scientific names	Common names
Acalypha neptunica Müll.Arg. var. *neptunica*	
Acalypha racemosa Baill.	
Alchornea laxiflora (Benth.) Pax & K.Hoffm.	Lowveld bead string
Antidesma venosum Tul.	Tassel-berry
Antidesma vogelianum Müll.Arg.	
Aristogeitonia monophylla Airy shaw	
Bridelia atroviridis Müll.Arg.	Rare forest bridelia
Bridelia cathartica G.Bertol.	Blue sweetberry
Croton menyharthii Pax	Rough-leaved croton
Croton persicaria Baill.	Lady's thumb
Croton pseudopulchellus Pax	Small lavender croton
Croton sylvaticus Krauss	
Dalechampia scandens L. var. *cordofana*	Spurgecreeper
Drypetes parvifolia (Müll.Arg.) Pax & K.Hoffm.	
Erythrococca kirkii (Müll.Arg.) Prain	
Erythrococca pentagyna A.R.-Sm.	
Erythrococca pubescens Radcl.-Sm.	
Euphorbia candelabrum Kotschy	Candelabra tree
Euphorbia hirta L.	Asthma Weed
Flueggea virosa (Willd.) Voigt ssp. *Virosa*	White-Berry Bush
Mallotus oppositifolius (Geiseler) Müll.Arg. ssp.	
Oppositifolius	
Margaritaria discoidea (Baill.) Webster	Pheasant-berry
Meineckia fruticans (Pax) Webster	
Micrococca mercurialis (L.) Benth.	Mercury Doughwood
Mildbraedia carpinifolia (Pax) Hutch. var. *carpinifolia*	Queque
Oldfieldia somalensis (Chiov.) Milne-Redh.	
Phyllanthus ovalifolius Forssk.	
Phyllanthus amarus Schumach. & Thonn.	Carry Me Seed
Phyllanthus delpyanus Hutch.	
Phyllanthus harrisii Radcl.-Sm.	
Phyllanthus kaessneri Hutch.	
Phyllanthus maderaspatensis L. var. *maderaspatensis*	Madras Leaf-Flower
Phyllanthus reticulatus Poir. var. *glaber*	Black-Honey Shrub
Pycnocoma littoralis Pax	
Suregada zanzibariensis Baill.	Sand Canary-berry
Synadenium pereskiifolium (Baill.) Guill.	
Thecacoris usambarensis Verdc.	
Tragia furialis Bojer	
Tragia kirkiania Müll.Arg.	
Bivinia jalbertii Tul.	Cobweb seed
Casearia gladiiformis Mast.	
Dovyalis hispidula Wild	Bristly sourberry
Grandidiera boivinii Jaub.	

Scientific names	Common names
Homalium longistylum Mast.	
Rawsonia lucida Harv. & Sond.	Forest peach
Trimeria grandifolia (Burkill) Sleumer	
Xylotheca tettensis (Klotzsch) Gilg var. *kirkii*	Northern african dog-rose
Flagellaria guineensis Schumach.	Kanoti grass
?Garcinia sp.	
Garcinia livingstonei T.Anderson	African Mangosteen
Psorospermum febrifugum Spach var. *ferrugineum*	
(HooK.f.) Keay & Milne-Redh.	
Vismia orientalis Engl.	
Gyrocarpus americanus Jacq. ssp. *Amaricanus*	Helicopter tree
Bowiea volubilis Hook.f. ssp. *Volubilis*	Climbing Onion
Apodytes dimidiata Arn.	Pear wood
Pyrenacantha kaurabassana Baill.	
Pyrenacantha malvifolia Baill. var. *malvifolia*	Monkey chair
Aeollanthus zanzibaricus S.Moore	
Clerodendrum robustum Klotzsch var. *fischeri*	Bagflower
(Gürke) Verdc.	
Endostemon gracilis (Benth.) Ashby	
Hoslundia opposita Vahl	
Leucas martinicensis (Jacq.) R.Br.	Whitewort
Leucas sp.	
Ocimum americanum L.	
Ocimum gratissimum Forssk.	
Plectranthus flaccidus Gürke	
Premna chrysoclada (Bojer) Gürke	
Premna hildebrandtii Gürke	
Premna resinosa (Hochst.) Schauer ssp. *Resinosa*	Digo: Mursapungu
Tinnea aethiopica Kotschy ex Hook.f. ssp. *Littoralis*	
Vollesen	
Vitex mombassae Vatke	Smelly berry vitex
Vitex strickeri Vatke & Hildebrandt	
Cassytha filiformis L.	Seashore Dodder
Hugonia castaneifolia Engl.	
Mostuea brunonis F. Didr. var. *brunonis*	
Strychnos madagascariensis Poir.	Black monkey orange
Strychnos panganensis Gilg	
Strychnos spinosa Lam. ssp. *volkensii* (Gilg)	Natal orange
E.A.Bruce	
Agelanthus sansibarensis (Engl.) Polhill & Wiens	
ssp. *Sanzibarensis*	
Lawsonia inermis L.	Henna tree
*Acridocarpus alopecurus*Sprague	
Triaspis mozambica A.Juss.	

Scientific names	Common names
Abutilon mauritianum (Jacq.) Sweet	Country Mallow
Gossypioides kirkii (Must.) J.B. Hutch.	
*Hibiscus faulknerae*Vollesen	Hibiscus
Hibiscus micranthus L.f.	Tiny flower hibiscus
Pavonia leptocalyx (Sond.) Ulbr.	
Sida acuta Burm.f.	
Sida cordifolia L.	
Thespesia danis Oliv.	
Clidemia hirta (L.) D.Don	
Memecylon fragrans A. Fern. & R.Fern.	
*Memecylon verruculosum*Brenan	
Warneckia amaniensis Gilg	
Azadirachta indica A.Juss.	Neem
Pseudobersama mossambicensis (Sim) Verdc.	False bersama
Trichilia emetica Vahl	Woodland mahogany
Turraea floribunda Hochst.	Honeysuckle tree
Turraea mombassana C. D.C. ssp. *Mombassana*	
Turraea nilotica Kotschy & Peyr.	Bushveld honeysuckle tree
Turraea wakefieldii Oliv.	Mozambique honeysuckle-tree
Bersama abyssinica Fresen ssp. *Abyssinica*	Winged bersamaj
Cissampelos pareira L. var. *hirsuta* (DC) Forman	
Dioscoreophyllum volkensii Engl.	Serendipity berry
Tiliacora funifera (Miers) Oliv.	Elbow-leaf
Tinospora oblongifolia (Engl.) Troupin	
Acacia brevispica Harms	Wait-a-bit thorn
Acacia nilotica (L.) Willd. ex Delile ssp. *Subalata* (Vatke) Brenan	Nile Thorn
Acacia rovumae Oliv.	Mgunga (Swahili)
Albizia anthelmintica Brongn.	Worm killer
Dichrostachys cinerea (L.) Wight & Arn. ssp. *cinerea*	Chinese lantern tree
Newtonia paucijuga (Harms) Brenan	Mpilipili (Swahili)
Parkia filicoidea Welw. ex Oliv.	African locust bean
Antiaris toxicaria Lesch. ssp. *welwitschii* (Engl.) C.C. Berg	False mvule
Ficus bubu Warb.	Sulphur-barked fig
Ficus bussei Mildbr. & Burret	
Milicia excelsa (Welw.) C.C.Berg	African teak
Syzygium cordatum Krauss ssp. *shimbaensis* Verdc.	Water berry
Boerhavia diffusa L.	Red Spiderling
Nymphaea lotus L.	Egyptian white water-lily
Brackenridgea zanguebarica Oliv.	Yellow peeling plane
Ochna mossambicensis Klotzsch	African bird's-eye bush
Ochna sp.	
Ochna thomasiana Engl. & Gilg ex Engl.	Mickey Mouse plant

Scientific names	Common names
Olax obtusifolia De Wild.	Large-fruited olax
Strombosiopsis pentamera Q.Luke	
Ximenia americana L.	Hog plum
Jasminum fluminense Vell.	Brazilian jasmine
Jasminum meyeri-johannis Engl.	
Jasminum streptopus E.Mey.	
Olea woodiana Knobl. ssp. *disjuncta* P. S. Green	Forest olive
Nephrolepis biserrata (Sw.) Schott	Giant Sword Fern
Ludwigia abyssinica A. Rich.	
Opilia amentacea Roxb.	Fragrant Opilia
Pentarhopalopilia umbellata (Baill.) Hiepko	
Cynorkis kirkii Rolfe	
Habenaria sp.	
Nervilia sp.	
Platycoryne crocea (Rchb.f.) Rolfe ssp. *Crocea*	
Polystachya tessellata Lindl.	
Biophytum umbraculum Welw.	South Pacific palm
Hyphaene compressa H. Wendl.	
Alysicarpus ovalifolius (Schumach.) J.L,on	Alyce clover
Clitoria ternatea L.	Butterfly pea
Craibia brevicaudata (Vatke) Dunn ssp. *brevicaudata*	Mountain ironwood
Crotalaria emarginata Benth.	Rattlepod
Dalbergia boehmii Taub.	Large leaved Dalbergia
Dalbergia bracteolata Baker	
Dalbergia melanoxylon Guill. & Perr.	African blackwood
Dalbergia vaccinifolia Vatke	
Desmodium barbatum (L.) Benth.	Barbadinho
Eriosema glomeratum (Guill. & Perr.) Hook.f.	
Desmodium adscendens (Sw.) DC. var. *adscendens*	Tick clover
Indigofera congesta Bak.	
Indigofera hirsuta L.	Hairy Indigo
Indigofera paniculata Pers.	
Indigofera tinctoria L.	
Indigofera trita L.f.	Asian Indigo
Indigofera vohemarensis Baill.	
Millettia usaramensis Taub. ssp. *Usaramensis*	Smaller millettia
Mundulea sericea (Willd.) A.Chev.	
Rhynchosia minima (L.) DC. var. *minima*	Least snout-bean
Rhynchosia minima (L.) DC. var. *nuda*	Least snout-bean
Rhynchosia velutina Wight & Arn. var. *velutina*	
Stylosanthes fruticosa (Retz.) Alston	African stylo
Tephrosia noctiflora Baker	
Tephrosia purpurea (L.) Pers. ssp. *leptostachya* (DC.) Brummitt	Fish poison

Scientific names	Common names
Tephrosia sp.	
Tephrosia villosa (L.) Pers. ssp. *Ehrenbergiana*	
(Schweinf.) Brummitt	
Vigna hosei (Craib) Backer	Sarowak bean
Schlechterina mitostemmatoides Harms	
Sesamum angustifolium (Oliv.) Engl.	
Pinus caribaea Morelet	Caribbean pine
?Paspalum scrobiculatum L.	Kodo millet
Aristida adscensionsis L.	Sixweeks threeawn
Aristida stenostachya Clayton	
Brachiaria chusqueoides (Hack.) Clayton	Signalgrass
Brachiaria leersioides (Hochst.) Stapf	Signalgrass
Brachiaria reptans (L.) Gardner & C.E.Hubb.	Creeping Panic Grass
Cenchrus ciliaris L.	Buffel grass
Chloris gayana Kunth	Rhodes grass
Chloris roxburghiana Schult.	Plume chloris
Cymbopogon caesius (Hook. & Arn.) Stapf	Common turpentine grass
Cynodon nlemfuensis Vanderyst var. *nlemfuensis*	Star grass
Dactyloctenium aegyptium (L.) Willd	Egyptian crowfoot grass
Digitaria milanjiana (Rendle) Stapf	Milanje finger grass
Digitaria velutina (Forssk.) P.Beauv.	Velvet fingergrass
Diheteropogon amplectens (Nees) Clayton var.	Broad-leaved bluestem
Amplectens	
Enteropogon macrostachyus (A.Rich.) Benth.	Bush rye grass
Eragrostis aethiopica Chiov.	Canegrass
Eragrostis ciliaris (L.) R.Br.	Stinkgrass
Eragrostis racemosa (Thunb.) Steud.	Narrow Heart Love Grass
Eragrostis superba Peyr.	Saw-tooth love grass
Eriochloa parvispiculata C.E.Hubb.	Cupgrass
Eriochloa stapfiana Clayton	Cupgrass
Heteropogon contortus (L.) Roem. & Schult.	Black speargrass
Hyperthelia dissoluta (Steud.) Clayton	Yellow thatching grass
Leptochloa panicea (Retz.) Ohwi	Thread Sprangletop
Leptochloa uniflora A.Rich.	Sprangletops
Lepturus radicans (Steud.) A. Camus	Thintail
Megastachya mucronata (Poir.) P.Beauv.	
Olyra latifolia L.	Carrycillo
Oplismenus hirtellus (L.) P.Beauv.	Basket grass
Panicum infestum Peters	
Panicum laticomum Nees	Panic grass
Panicum maximum Jacq.	Guinea grass
*Panicum pleianthum*Peter	Panic grass
Paspalidium obtusifolium (Delile) N.D.Simpson	Watercrown grass
Perotis hildebraendtii Mez	

Scientific names	Common names
Perotis patens Gand.	Bottlebrush Grass
Sacciolepis curvata (L.) Chase	Cupscale grass
Setaria incrassata (Hochst.) Hack.	Vlei bristle grass
Sporobolus fimbriatus (Trin.) Nees	Perennial Dropseed
Sporobolus pyramidalis P.Beauv.	Giant Rat's tail Grass
Urochloa panicoides P.Beauv.	Liveseed grass
Urochloa setigera (Retz.) Stapf	Signalgrass
Carpolobia goetzei Gürke	Mtindapo-Swahili, Milkworts-English
Polygala amboniensis Gürke	Snakeroots
Polygala stenopetala Klotzsch	Milkworts
Securidaca longipedunculata Fresen.	Violet Tree
Oxygonum salicifolium Dammer	
Persicaria decipiens (R.Br.) K.L. Wilson	Slender knotweed
Microgramma lycopodioides (L.) Copel	Clubmoss snakefern
Microsorum punctatum (L.) Copel.	Crested Fern
Phymatosorus scolopendria (Burm.f.) Pic.Serm	Wart fern
Talinum portulacifolium (Forssk.) Asch. ex Schweinf	Flameflower
Portulaca kermesina N.E.Br.	
Acrostichum aureum L.	Mangrove Fern
Scutia myrtina (Burm.f.) Kurz	Cat-thorn
Ziziphus mucronata Willd. ssp. *Mucronata*	Buffalo thorn
Cassipourea euryoides Alston	Velvet-fruit onionwood
Afrocanthium kilifiense Bridson	
Afrocanthium pseudoverticillatum (S. Moore) Lantz	Manica spurred Canthium
Agathisanthemum bojeri Klotzsch var. *bojeri*	
Calycosiphonia spathicalyx (K. Schum.) *Robbr.*	
Canthium glaucum Hiern ssp. *Glaucum*	Pink-fruit canthium
Canthium mombazense Baill.	
Catunaregam nilotica (Stapf) Tirveng	
Chassalia umbraticola Vatke	
Coffea sessiliflora Bridson ssp. *Sessiliflora*	
Coptosperma graveolens (S.Moore) Degreef	
Cremaspora triflora (Thonn.) K.Schum.	
Crossopteryx febrifuga (G.Don) Benth.	African bark
Didymosalpinx norae (Swynn.) Keay	Climbing bells
*Diodia sarmentosa*Sw.	Tropical buttonweed
Geophila repens (L.) I.M.Johnst.	
Heinsia crinita (Afzel.) G.Taylor ssp. *Parviflora*	Bush apple
(K. Schum. & K.Krause) Verdc.	
Heinsia zanzibarica (Bojer) Verdc.	Zanzibar jasmine gardenia
Ixora narcissodora K.Schum.	Red trumpets
Keetia gueinzii (Sond.) Bridson	Climbing turkey-berry
Keetia venosa (Oliv.) Bridson	Raisin-fruit keetia
Keetia zanzibarica (Klotzsch) Bridson ssp. *zanzibarica*	Canthium

Scientific names	Common names
Lagynias pallidiflora Bullock	Woodland pendent-medlar
Lamprothamnus zanguebaricus Hiern	
Leptactina platyphylla (Hiern) Wernham	
Meyna tetraphylla (Hiern) Robyns ssp. *Comorensis* (Robyns) Verdc.	Chonyi: Mtamba chiko; Giriama: Mtamba kiko;
Mitracarpus hirtus (L.) DC.	Tropical girdlepod
Multidentia sclerocarpa (K. Schum.) Bridson	
Oldenlandia johnstonii (Oliv.) Engl.	
Oxyanthus pyriformis (Hochst.) Skeels ssp. *longitubus* Bridson	Hatpins loquat
Pachystigma loranthifolium (K. Schum.) Verdc. ssp. *Loranthifolium*	
Pavetta stenosepala K. Schum. ssp. *Stenosepala*	Bride's bush
Pavetta tarennoides S.Moore	Bride's bush
Pentas bussei K.Krause	
Pentas zanzibarica (Klotzsch) Vatke	Pentas
Pentodon pentandrus (Schumach. & Thonn.) Vatke var. *minor*	Hale's pentondon
Polysphaeria parvifolia Hiern	Mkanja-Swahili
Psychotria faucicola K.Schum.	
Psychotria lauracea (K. Schum.) Petit	
Psychotria leucopoda Petit	
Psychotria amboniana K. Schum. var. *amboniana*	
Psychotria capensis (Eckl.) Vatke ssp. *riparia* K. Schum. & K. Krause) Verdc. var. *puberula* (E.M.A. Petit) Verdc.	Bird berry
Psychotria capensis (Eckl.) Vatke ssp. *riparia* K. Schum. & K. Krause) Verdc. var. *riparia*	Bird berry
Psychotria faucicola K.Schum.	
Psychotria holtzii (K. Schum.) Petit var. *tanganyicensis*	
Psydrax faulknerae Bridson	
Psydrax sp.	
Pyrostria bibracteata (Baker) Cavaco	
Pyrostria phyllanthoidea (Baill.) Bridson	
Rytigynia celastroides (Baill.) Verdc. var. *celastroides*	
Rytigynia decussata (K. Schum.) Robyns	
Spermacoce filituba (K. Schum.) Verdc.	False buttonweed
Tarenna drummondii Bridson	
Tricalysia ovalifolia Hiern var. *glabrata* (Oliv.) Brenan	
Tricalysia pallens Hiern	
Vangueria randii S.Moore ssp. *acuminata* Verdc.	Anthill wild medlar
Clausena anisata (Willd.) Benth	Horsewood

Scientific names	Common names
Vepris eugeniifolia (Engl.) Verd.	
Vepris robertsonae Q. Luke	
Vepris sansibarensis (Engl.) Mziray	
Vepris trichocarpa (Engl.)	Furry-fruited teclea
Zanthoxylum chalybeum Engl. var. *chalybeam*	Knob wood
Allophylus pervillei Blume	Mchacha-Swahili
Allophylus chirindensis Baker f.	Large-leaved false-currant
Allophylus rubifolius (Hochst.) Engl. var. *alnifolius*	Lowveld false-currant
(Baker) Friis & Vollesen	
Chytranthus obliquinervis Radlk. ex Engl.	
Deinbollia borbonica Scheffler	
Haplocoelum inopleum Radlk.	Northern galla-plum
Lecaniodiscus fraxinifolius Baker ssp. *Scassellatii*	River litchi
(Chiov.) Friis	
Lecaniodiscus fraxinifolius Baker ssp. *vaughanii*	River litchi
(Dunkley) Friis	
Lepisanthes senegalensis (Poir.) Leenh.	
Majidea zanguebarica J.Kirk	Black Pearl Tree
Pancovia golungensis (Hiern) Exell & Mendonca	False soap-berry
Zanha golungensis Hiern	
Manilkara sansibarensis (Engl.) Dubard	
Manilkara mochisia (Baker) Dubard	
Manilkara sulcata (Engl.) Dubard	
Pouteria alnifolia (Baker) Roberty var. *alnifolia*	Pouteria
Sideroxylon inerme L. ssp. *diospyroides* (Baker)	White milkwood
J.H.Hemsl.	
Synsepalum brevipes (Baker) T.D. Penn.	Stem-fruit miraculous-berry
Vitellariopsis kirkii (Baker) Dubard	Bush Milkwoods
Alectra orobanchoides Benth.	Kirk's tobacco witchweed
Cycnium veronicifolium (Vatke) Engl. ssp.	Vlei ink-flower
Veronicifolium	
Selaginella eublepharis A. Braun	Spike-moss
Harrisonia abyssinica Oliv.	Msamburini-Swahili
Quassia undulata (Guill. & Perr.) D. Dietr.	Bitter-ash
Smilax anceps Willd.	Smilax
Physalis angulata L.	Angular winter cherry
Solanum goetzei Dammer	Goetze's bitter-apple
Solanum zanzibarense Vatke	
Cola minor Brenan	
Cola ululoma Brenan	
Hermannia exappendiculata (Mast.) K.Schum.	
Melhania velutina Forssk.	
Nesogordonia holtzii (Engl.) Capuron	

Scientific names	Common names
Sterculia africana (Lour.) Fiori	
Sterculia schliebenii Mildbr.	
Waltheria indica L.	sleepy morning
Gnidia subcordata Meisn.	
Synaptolepis kirkii Oliv.	
Corchorus olitorius L.	
Corchorus trilocularis L.	
Grewia microcarpa K.Schum.	
Grewia capitellata Bojer	
Grewia forbesii Harv. ex Mast.	
Grewia holstii Burret	
Grewia plagiophylla K.Schum.	
Grewia stuhlmannii K.Schum.	
Grewia villosa Willd.	
Triumfetta rhomboidea Jacq.	
Celtis philippensis Blanco	Wight's Hackberry
Lantana camara L.	lantana
Lantana viburnoides (Forssk.) Vahl ssp. *viburnoides*	
var. viburnoides	
Stachytarpheta urticifolia Sims	
Hybanthus enneaspermus (L.) F. Muell. var.	
Enneaspermus	
Rinorea ilicifolia (Oliv.) Kuntze var. *ilicifolia*	
Ampelocissus africana (Lour.) Merr. var. *africana*	
Cissus intergrifolia (Baker) Planch.	
Cissus quadrangularis L.	
Cissus rotundifolia (Forssk.) Vahl var. *rotundifolia*	Venezuelan Treebine
Cissus sylvicola Masinde & L.E.Newton	
Cyphostemma sp.	
Cyphostemma sp.(simple leaves)	
Rhoicissus revoilii Planch.	
Encephalartos hildebrandtii A.Br. & Bouch *var.*	
hildebrandtii	
Afranomum sp.	

Ethulia angustifolia DC
Laggera brevipes Oliv. & Hiern
Launaea cornuta (Hochst. ex Oliv. & Hiern) C.Jeffre
Launaea intybacea (Jacq.) Beauverd
Pluchea dioscorides (L.) DC.
Pluchea ovalis (Pers.) DC.
Tridax procumbens L.
Vernonia aemulans Vatke
Vernonia cinerea (L.) Less. var. cinerea

Vernonia hildebrandtii Vatke
Vernonia zanzibarensis Less.
Balanites maughamii Sprague ssp. *acuta* Sands
Fernandoa magnifica Seem.
Markhamia zanzibarica K.Schum.
Adansonia digitata L.
*Bombax rhodognaphaton*K. Schum. var.
Rhodognaphaton
Cordia faulknerae Verdc.
Cordia monoica Roxb.
Ehretia bakeri Britten
Hilselbergia nomeralis (Gurke) J.S. Mill.
Hilselbergia petiolaris (Lam.) J.S. Mill.
Hilsenbergia teitensis (Gurke) J.S. Mill.
Commiphora ?campestris Engl. ssp. *glabrata* (Engl.)
Gillett
Commiphora lindensis Engl.
Commiphora obovata Chiov.
Buxus obtusifolia (Mildbr.) Hutch.
Opuntia ficus-indica (L.) Mill.
Afzelia quanzensis Welw.
Brachystegia spiciformis Benth.
Caesalpinia insolita (Harms) Brenan & Gillett
Cassia abbreviata Oliv. ssp. *Abbreviate*
Cassia abbreviata Oliv. ssp. *beareana (Holmes) Brenan*
Chamaecrista absus (L.) Irwin & Barneby
Chamaecrista mimosoides (L.) Greene
Cynometra suaheliensis (Taub.) Baker f.
Cynometra webberi Baker f.
Erythrophleum suaveolens (Guill. & Perr.) Brenan
Hymenaea verrucosa Gaertn.
Paramacrolobium coeruleum (Taub.) J.L,on
Piliostigma thonningii (Schumach.) Milne-Redh.
Scorodophloeus fischeri (Taub.) J.L,on
Senna singueana (Delile) Lock
Tamarindus indica L.
Wahlenbergia napiformis (A.DC.) Thulin
Boscia angustifolia A. Rich. var. *angustifolia*
Cadaba carneo-viridis Gilg-Ben. &Benedict
Capparis sepiaria L.
Capparis tomentosa Lam.

Cleome usambarica Pax
Maerua (simple leaves)
Maerua angolensis DC.
Maerua calantha Gilg

Maerua grantii Oliv.
Maerua kirkii (Oliv.) F.White
Maerua triphylla A.Rich.
Ritchiea capparoides (Andr.) Britten
Thylachium africanum Lour.
Elachyptera parvifolia (Oliv.) N.Hall,
Elaeodendron schlechterianum (Loes.) Loes.
Elaeodendron schweinfurthianum (Loes.) Loes.
Gymnosporia gracilis Loes.
Gymnosporia putterlikioides Loes.
Loeseneriella africana (Willd.) N.Hall,var. *richardiana*
Maytenus undata (Thunb.) Blakelock
Pleurostylia africana Loes.
Pristimera andongensis (Oliv.) N.Hall, var. *volkensii*
Salacia elegans Oliv.
Salacia lehmbachii Loes.
Salacia madagascariensis (Lam.) DC.
Gloriosa superba L.
Combretum chionanthoides Engl. & Diels
Combretum falcatum (Hiern) Jongkind
Combretum hereroense Schinz ssp. *Volkensii*
(Engl.)Wickens var. *volkensii* (Engl.) Wickens
Combretum illairii Engl.
Combretum paniculatum Vent.
Combretum schumannii Engl.
Terminalia boivinii Tul.
Terminalia prunioides M.A.Lawson
Terminalia spinosa Engl.
Aneilema aequinoctiale Kunth
Aneilema petersii (Hassk.) C.B.Clarke ssp. *petersii*
Commelina benghalensis Wall.
Commelina bracteosa Hassk.
Commelina diffusa Burm.f.
Commelina forskalaei Vahl
Commelina imberbis Hassk.
Commelina sp.
Murdannia simplex (Vahl) Brenan
Agelaea pentagyna (Lam.) Baill.
Connarus longistipitatus Gilg
Ellipanthus madagascariensis (Schellenb.) Keraudren
Rourea orientalis Baill.
Evolvulus alsinoides L.
Hewittia malabarica (L.) Suresh

Ipomoea irwinae Verdc.
Ipomoea pes-tigridis L.
Ipomoea urbaniana (Dummer) Hallier f.

Paniculata
Jacquemontia tamnifolia (L.) Griseb.
Metaporana densiflora (Hallier F.) N.E Br.
Stictocardia incompta (Hallier f.) Hallier f.
Kalanchoe lateritia Engl. var. *lateritia*

Coccinia grandis (L.) Voigt
Cucumis sacleuxii Paill. &Bois
Cucumis sp.
Momordica leiocarpa Gilg
Zehneria pallidinervia (Harms) C.Jeffrey
Bulbostylis filamentosa (Vahl) C.B.Clarke
Bulbostylis hispidula (Vahl) R.W.Haines ssp.
halophila (Lye) R.W.Haines
Bulbostylis pilosa (Willd.) Cherm.
*Cyperus*sp.
Cyperus cyperoides (L.) Kuntze
Cyperus dubius Rottb. ssp. *Dubius*
Cyperus exaltatus Retz.
Cyperus haspan L.
Cyperus hemisphaericus Boeck.
Cyperus involucratus Rottb.
Cyperus luteus Boeck.
Cyperus niveus Retz. *var.* flavissimus
Cyperus niveus Retz. var. *leucocephalus* (Kunth)
Fosberg
Cyperus prolifer Lam.
Cyperus tenax Boeck.
Fimbristylis dichotoma (L.) Vahl
Fuirena umbellata Rottb.
Kyllinga cartilaginea K.Schum.
Kyllinga polyphylla Kunth
Kyllinga sp
Pycreus polystachyos (Rottb.) P.Beauv. var. *laxiflorus*
Scleria lithosperma (L.) Sw.
Davallia denticulata (Burm.f.) Kuhn var. *denticulate*
Dichapetalum madagascariense Poir. var.
Madagascariensi
Dichapetalum ruhlandii Engl.
Dichapetalum zenkeri Engl.

Tetracera boiviniana Baill.
Tetracera litoralis Gilg
Dioscorea astericus Burkill
Dioscorea sansibarensis Pax
Dracaena manii Baker
Sansevieria gracilis N.E.Br.
Sansevieria kirkii Baker
Diospyros abyssinica (Hiern) F.White ssp. *abyssinica*
Diospyros bussei Gürke
Diospyros consolatae Chiov.
Diospyros greenwayi F.White
Diospyros loureiriana G.Don ssp. *Rufescens*

Diospyros squarrosa Klotzsch
Euclea divinorum Hiern
Euclea natalensis A.DC.
Euclea racemosa Murr ssp. *schimperi* (A.DC.) F.White
Nectaropetalum kaessneri Engl. var. *kaessneri*
Acalypha fruticosa Forssk. *var.* fruticose
Acalypha lanceolata Willd.var. *glandulosa*
(Muell.Arg.) A.R.-Sm.
Acalypha neptunica Müll.Arg. var. *neptunica*
Acalypha racemosa Baill.
Alchornea laxiflora (Benth.) Pax & K.Hoffm.
Antidesma venosum Tul.
Antidesma vogelianum Müll.Arg.
Aristogeitonia monophylla Airy shaw
Bridelia atroviridis Müll.Arg.
Bridelia cathartica G.Bertol.
Croton menyharthii Pax
Croton persicaria Baill.
Croton pseudopulchellus Pax
Croton sylvaticus Krauss
Dalechampia scandens L. var. *cordofana*
Drypetes parvifolia (Müll.Arg.) Pax & K.Hoffm.
Erythrococca kirkii (Müll.Arg.) Prain
Erythrococca pentagyna A.R.-Sm.
Erythrococca pubescens Radcl.-Sm.
Euphorbia candelabrum Kotschy
Euphorbia hirta L.
Flueggea virosa (Willd.) Voigt ssp. *Virosa*
Mallotus oppositifolius (Geiseler) Müll.Arg. ssp.
Oppositifolius
Margaritaria discoidea (Baill.) Webster
Meineckia fruticans (Pax) Webster

Micrococca mercurialis (L.) Benth.
Mildbraedia carpinifolia (Pax) Hutch. var. *carpinifolia*
Oldfieldia somalensis (Chiov.) Milne-Redh.
Phyllanthus ovalifolius Forssk.
Phyllanthus amarus Schumach. & Thonn.
Phyllanthus delpyanus Hutch.
Phyllanthus harrisii Radcl.-Sm.
Phyllanthus kaessneri Hutch.
Phyllanthus maderaspatensis L. var. *maderaspatensis*
Phyllanthus reticulatus Poir. var. *glaber*
Pycnocoma littoralis Pax
Suregada zanzibariensis Baill.
Synadenium pereskiifolium (Baill.) Guill.
Thecacoris usambarensis Verdc.
Tragia furialis Bojer
Tragia kirkiania Müll.Arg.
Bivinia jalbertii Tul.
Casearia gladiiformis Mast.
Dovyalis hispidula Wild

Grandidiera boivinii Jaub.
Homalium longistylum Mast.
Rawsonia lucida Harv. & Sond.
Trimeria grandifolia (Burkill) Sleumer
Xylotheca tettensis (Klotzsch) Gilg var. *kirkii*
Flagellaria guineensis Schumach.
?Garcinia sp.
Garcinia livingstonei T.Anderson
Psorospermum febrifugum Spach var. *ferrugineum*
(HooK.f.) Keay & Milne-Redh.
Vismia orientalis Engl.
Gyrocarpus americanus Jacq. ssp. *amaricanus*
Bowiea volubilis Hook.f. ssp. *volubilis*
Apodytes dimidiata Arn.
Pyrenacantha kaurabassana Baill.
Pyrenacantha malvifolia Baill. var. *malvifolia*
Aeollanthus zanzibaricus S.Moore
Clerodendrum robustum Klotzsch var. *fischeri*
(Gürke) Verdc.
Endostemon gracilis (Benth.) Ashby
Hoslundia opposita Vahl
Leucas martinicensis (Jacq.) R.Br.
Leucas sp.
Ocimum americanum L.
Ocimum gratissimum Forssk.

Plectranthus flaccidus Gürke
Premna chrysoclada (Bojer) Gürke
Premna hildebrandtii Gürke
Premna resinosa (Hochst.) Schauer ssp. *resinosa*
Tinnea aethiopica Kotschy ex Hook.f. ssp. *litoralis*
Vollesen
Vitex mombassae Vatke
Vitex strickeri Vatke & Hildebrandt
Cassytha filiformis L.
Hugonia castaneifolia Engl.
Mostuea brunonis F. Didr. var. *brunonis*
Strychnos madagascariensis Poir.
Strychnos panganensis Gilg
Strychnos spinosa Lam. ssp. *volkensii* (Gilg)
E.A.Bruce
Agelanthus sansibarensis (Engl.) Polhill & Wiens
ssp. *sansibarensis*
Lawsonia inermis L.
*Acridocarpus alopecurus*Sprague
Triaspis mozambica A.Juss.
Abutilon mauritianum (Jacq.) Sweet
Gossypioides kirkii (Must.) J.B. Hutch.
*Hibiscus faulknerae*Vollesen
Hibiscus micranthus L.f.
Pavonia leptocalyx (Sond.) Ulbr.
Sida acuta Burm.f.
Sida cordifolia L.

Thespesia danis Oliv.
Clidemia hirta (L.) D.Don
Memecylon fragrans A.Fern. & R.Fern.
*Memecylon verruculosum*Brenan
Warneckia amaniensis Gilg
Azadirachta indica A.Juss.
Pseudobersama mossambicensis (Sim) Verdc.
Trichilia emetica Vahl
Turraea floribunda Hochst.
Turraea mombassana C.DC. ssp. *mombassana*
Turraea nilotica Kotschy & Peyr.
Turraea wakefieldii Oliv.
Bersama abyssinica Fresen ssp. *abyssinica*
Cissampelos pareira L. var. *hirsuta* (DC) Forman
Dioscoreophyllum volkensii Engl.
Tiliacora funifera (Miers) Oliv.
Tinospora oblongifolia (Engl.) Troupin
Acacia brevispica Harms

Acacia nilotica (L.) Willd. ex Delile ssp. *subalata* (Vatke) Brenan
Acacia rovumae Oliv.
Albizia anthelmintica Brongn.
Dichrostachys cinerea (L.) Wight & Arn. ssp. *cinerea*
Newtonia paucijuga (Harms) Brenan
Parkia filicoidea Welw. ex Oliv.
Antiaris toxicaria Lesch. ssp. *welwitschii* (Engl.) C.C. Berg
Ficus bubu Warb.
Ficus bussei Mildbr. & Burret
Milicia excelsa (Welw.) C.C.Berg
Syzygium cordatum Krauss ssp. *shimbaensis* Verdc.
Boerhavia diffusa L.
Nymphaea lotus L.
Brackenridgea zanguebarica Oliv.
Ochna mossambicensis Klotzsch
Ochna sp.
Ochna thomasiana Engl. & Gilg ex Engl.
Olax obtusifolia De Wild.
Strombosiopsis pentamera Q.Luke
Ximenia americana L.
Jasminum fluminense Vell.
Jasminum meyeri-johannis Engl.
Jasminum streptopus E.Mey.
Olea woodiana Knobl. ssp. *disjuncta* P. S. Green
Nephrolepis biserrata (Sw.) Schott
Ludwigia abyssinica A. Rich.
Opilia amentacea Roxb.
Pentarhopalopilia umbellata (Baill.) Hiepko
Cynorkis kirkii Rolfe
Habenaria sp.

Nervilia sp.
Platycoryne crocea (Rchb.f.) Rolfe ssp. *crocea*
Polystachya tessellata Lindl.
Biophytum umbraculum Welw.
Hyphaene compressa H. Wendl.
Alysicarpus ovalifolius (Schumach.) J.L,on
Clitoria ternatea L.
Craibia brevicaudata (Vatke) Dunn ssp. *brevicaudata*
Crotalaria emarginata Benth.
Dalbergia boehmii Taub.
Dalbergia bracteolata Baker

Dalbergia melanoxylon Guill. & Perr.
Dalbergia vaccinifolia Vatke
Desmodium barbatum (L.) Benth.
Eriosema glomeratum (Guill. & Perr.) Hook.f.
Desmodium adscendens (Sw.) DC. var. *adscendens*
Indigofera congesta Bak.
Indigofera hirsuta L.
Indigofera paniculata Pers.
Indigofera tinctoria L.
Indigofera trita L.f.
Indigofera vohemarensis Baill.
Millettia usaramensis Taub. ssp. *usaramensis*
Mundulea sericea (Willd.) A.Chev.
Rhynchosia minima (L.) DC. var. *minima*
Rhynchosia minima (L.) DC. var. *nuda*
Rhynchosia velutina Wight & Arn. var. *velutina*
Stylosanthes fruticosa (Retz.) Alston
Tephrosia noctiflora Baker
Tephrosia purpurea (L.) Pers. ssp. *leptostachya* (DC.) Brummitt
Tephrosia sp.
Tephrosia villosa (L.) Pers. ssp. *ehrenbergiana* (Schweinf.) Brummitt
Vigna hosei (Craib) Backer
Schlechterina mitostemmatoides Harms
Sesamum angustifolium (Oliv.) Engl.
Pinus caribaea Morelet
?Paspalum scrobiculatum L.
Aristida adscensionsis L.
Aristida stenostachya Clayton
Brachiaria chusqueoides (Hack.) Clayton
Brachiaria leersioides (Hochst.) Stapf
Brachiaria reptans (L.) Gardner & C.E.Hubb.
Cenchrus ciliaris L.
Chloris gayana Kunth
Chloris roxburghiana Schult.
Cymbopogon caesius (Hook. & Arn.) Stapf
Cynodon nlemfuensis Vanderyst var. *nlemfuensis*
Dactyloctenium aegyptium (L.) Willd
Digitaria milanjiana (Rendle) Stapf

Digitaria velutina (Forssk.) P.Beauv.
Diheteropogon amplectens (Nees) Clayton var. *amplectens*
Enteropogon macrostachyus (A.Rich.) Benth.

Eragrostis aethiopica Chiov.
Eragrostis ciliaris (L.) R.Br.
Eragrostis racemosa (Thunb.) Steud.
Eragrostis superba Peyr.
Eriochloa parvispiculata C.E.Hubb.
Eriochloa stapfiana Clayton
Heteropogon contortus (L.) Roem. & Schult.
Hyperthelia dissoluta (Steud.) Clayton
Leptochloa panicea (Retz.) Ohwi
Leptochloa uniflora A.Rich.
Lepturus radicans (Steud.) A. Camus
Megastachya mucronata (Poir.) P.Beauv.
Olyra latifolia L.
Oplismenus hirtellus (L.) P.Beauv.
Panicum infestum Peters
Panicum laticomum Nees
Panicum maximum Jacq.
*Panicum pleianthum*Peter
Paspalidium obtusifolium (Delile) N.D.Simpson
Perotis hildebraendtii Mez
Perotis patens Gand.
Sacciolepis curvata (L.) Chase
Setaria incrassata (Hochst.) Hack.
Sporobolus fimbriatus (Trin.) Nees
Sporobolus pyramidalis P.Beauv.
Urochloa panicoides P.Beauv.
Urochloa setigera (Retz.) Stapf
Carpolobia goetzei Gürke
Polygala amboniensis Gürke
Polygala stenopetala Klotzsch
Securidaca longipedunculata Fresen.
Oxygonum salicifolium Dammer
Persicaria decipiens (R.Br.) K.L. Wilson
Microgramma lycopodioides (L.) Copel.
Microsorum punctatum (L.) Copel.
Phymatosorus scolopendria (Burm.f.) Pic.Serm.
Talinum portulacifolium (Forssk.) Asch. ex Schweinf.
Portulaca kermesina N.E.Br.
Acrostichum aureum L.
Scutia myrtina (Burm.f.) Kurz
Ziziphus mucronata Willd. ssp. *mucronata*
Cassipourea euryoides Alston
Afrocanthium kilifiense Bridson
Afrocanthium pseudoverticillatum (S. Moore) Lantz

Agathisanthemum bojeri Klotzsch var. *bojeri*
Calycosiphonia spathicalyx (K. Schum.) *Robbr.*
Canthium glaucum Hiern ssp. *Glaucum*
Canthium mombazense Baill.
Catunaregam nilotica (Stapf) Tirveng.
Chassalia umbraticola Vatke
Coffea sessiliflora Bridson ssp. *sessiliflora*
Coptosperma graveolens (S.Moore) Degreef
Cremaspora triflora (Thonn.) K.Schum.
Crossopteryx febrifuga (G.Don) Benth.
Didymosalpinx norae (Swynn.) Keay
*Diodia sarmentosa*Sw.
Geophila repens (L.) I.M.Johnst.
Heinsia crinita (Afzel.) G.Taylor ssp. *parviflora*
(K. Schum. & K.Krause) Verdc.
Heinsia zanzibarica (Bojer) Verdc.
Ixora narcissodora K.Schum.
Keetia gueinzii (Sond.) Bridson
Keetia venosa (Oliv.) Bridson
Keetia zanzibarica (Klotzsch) Bridson ssp. *zanzibarica*
Lagynias pallidiflora Bullock
Lamprothamnus zanguebaricus Hiern
Leptactina platyphylla (Hiern) Wernham
Meyna tetraphylla (Hiern) Robyns ssp. *comorensis*
(Robyns) Verdc.
Mitracarpus hirtus (L.) DC.
Multidentia sclerocarpa (K. Schum.) Bridson
Oldenlandia johnstonii (Oliv.) Engl.
Oxyanthus pyriformis (Hochst.) Skeels ssp.
longitubus Bridson
Pachystigma loranthifolium (K. Schum.) Verdc. ssp.
loranthifolium
Pavetta stenosepala K. Schum. ssp. *stenosepala*
Pavetta tarennoides S.Moore
Pentas bussei K.Krause
Pentas zanzibarica (Klotzsch) Vatke
Pentodon pentandrus (Schumach. & Thonn.) Vatke
var. *minor*
Polysphaeria parvifolia Hiern
Psychotria faucicola K.Schum.
Psychotria lauracea (K. Schum.) Petit
Psychotria leucopoda Petit
Psychotria amboniana K.Schum. var. *amboniana*
Psychotria capensis (Eckl.) Vatke ssp. *riparia* (K.
Schum. & K. Krause) Verdc. var. *puberula* (E.M.A.

Petit) Verdc.
Psychotria capensis (Eckl.) Vatke ssp. *riparia* (K.
Schum. & K. Krause) Verdc. var. *riparia*
Psychotria faucicola K.Schum.
Psychotria holtzii (K.Schum.) Petit

var. *tanganyicensis*
Psydrax faulknerae Bridson
Psydrax sp.
Pyrostria bibracteata (Baker) Cavaco
Pyrostria phyllanthoidea (Baill.) Bridson
Rytigynia celastroides (Baill.) Verdc. var. *celastroides*
Rytigynia decussata (K.Schum.) Robyns
Spermacoce filituba (K.Schum.) Verdc.
Tarenna drummondii Bridson
Tricalysia ovalifolia Hiern var. *glabrata* (Oliv.) Brenan
Tricalysia pallens Hiern
Vangueria randii S.Moore ssp. *acuminata* Verdc.
Clausena anisata (Willd.) Benth.
Vepris eugeniifolia (Engl.) Verd.
Vepris robertsonae Q.Luke
Vepris sansibarensis (Engl.) Mziray
Vepris trichocarpa (Engl.)
Zanthoxylum chalybeum Engl. var. *chalybeum*
Allophylus pervillei Blume
Allophylus chirindensis Baker f.
Allophylus rubifolius (Hochst.) Engl. var. *alnifolius*
(Baker) Friis & Vollesen
Chytranthus obliquinervis Radlk. ex Engl.
Deinbollia borbonica Scheffler
Haplocoelum inopleum Radlk.
Lecaniodiscus fraxinifolius Baker ssp. *scassellatii*
(Chiov.) Friis
Lecaniodiscus fraxinifolius Baker ssp. *vaughanii*
(Dunkley) Friis
Lepisanthes senegalensis (Poir.) Leenh.
Majidea zanguebarica J.Kirk
Pancovia golungensis (Hiern) Exell & Mendonca
Zanha golungensis Hiern
Manilkara sansibarensis (Engl.) Dubard
Manilkara mochisia (Baker) Dubard
Manilkara sulcata (Engl.) Dubard
Pouteria alnifolia (Baker) Roberty var. *alnifolia*
Sideroxylon inerme L. ssp. *diospyroides* (Baker)
J.H.Hemsl.

Synsepalum brevipes (Baker) T.D. Penn.
Vitellariopsis kirkii (Baker) Dubard
Alectra orobanchoides Benth.
Cycnium veronicifolium (Vatke) Engl. ssp.
veronicifolium
Selaginella eublepharis A.Braun
Harrisonia abyssinica Oliv.
Quassia undulata (Guill. & Perr.) D.Dietr.
Smilax anceps Willd.
Physalis angulata L.
Solanum goetzei Dammer
Solanum zanzibarense Vatke

Cola minor Brenan
Cola uloloma Brenan
Hermannia exappendiculata (Mast.) K.Schum.
Melhania velutina Forssk.
Nesogordonia holtzii (Engl.) Capuron
Sterculia africana (Lour.) Fiori
Sterculia schliebenii Mildbr.
Waltheria indica L.
Gnidia subcordata Meisn.
Synaptolepis kirkii Oliv.
Corchorus olitorius L.
Corchorus tridocularis L.
Grewia microcarpa K.Schum.
Grewia capitellata Bojer
Grewia forbesii Harv. ex Mast.
Grewia holstii Burret
Grewia plagiophylla K.Schum.
Grewia stuhlmannii K.Schum.
Grewia villosa Willd.
Triumfetta rhomboidea Jacq.
Celtis philippensis Blanco
Lantana camara L.
Lantana viburnoides (Forssk.) Vahl ssp. *viburnoides*
var. viburnoides
Stachytarpheta urticifolia Sims
Hybanthus enneaspermus (L.) F.Muell. var.
enneaspermus
Rinorea ilicifolia (Oliv.) Kuntze var. *ilicifolia*

Ampelocissus africana (Lour.) Merr. var. *africana*
Cissus intergrifolia (Baker) Planch.
Cissus quadrangularis L.
Cissus rotundifolia (Forssk.) Vahl var. *rotundifolia*
Cissus sylvicola Masinde & L.E.Newton
Cyphostemma sp.
Cyphostemma sp.(simple leaves)
Rhoicissus revoilii Planch.
Encephalartos hildebrandtii A.Br. & Bouch *var.*
hildebrandtii
Afranomum sp.

Annex 6: List of fauna in SHE

Scientific name	Common name	Local name	Conservation status
Loxodonta africana)	African elephant	Ndovu	Vulnerable
Hippotragus niger roosevelti	Sable antelope	Shambi	Endemc
Panthera pardus	Leopard	Chui	Vulnerable
Cycerus caffer	Buffalo	Nyati	Least concern
Giraffe camelopardalis	Giraffe	Twiga	Least concern
Aepyceros buselaphus	Impala	Swala pala	Least concern
Circaetus fasciolatus	Southern Branded Snake Eagle		Near-threatened
Polemaetus bellicosus	Martial Eagle		Near-threatened
Tauraco fischeri	Fischer's Turaco		Near-threatened
Zoothera guttata	Spotted Ground Thrush		Endangered
Sheppardia gunningi	East Coast Akalat		Near Threatened
Bdeogale omnivora	Sokoke dog mongoose		Vulnerable
Hyperolius rubrovermiculatus	Shimba Hills Reed Frog		Endangered
Chamaeleo dilepis	Flap-necked Chameleon		App. II - CITES
Afrixalus *sylvaticus*	Forest Spiny Reed Frog		Endangered
Elapsoidea nigra	Usambara Garter Snake		Endemic
Philothamnus macrops	Usambara Green Snake		Endemic
Python sebae	Central African Rock Python		App. II - CITES
Colobus angolensis palliatus	Angolan black and white colobus monkey		Near Threatened
Pternistis afer	Red-necked Spurfowl		Least concern
Cisticola natalensis	Croaking cisticola		Least concern
Euplectes nigroventris	Zanzibar red bishop		Least concern

Annex 7: Plan monitoring and evaluation framework

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
Forest Conservation and Management Programme	**Manage, utilize forest resources sustainably and restore the degraded forest areas.**	Strengthen the SHICOFA to include communities from these other forest blocks	No.	1	Strengthen CFA -Records	1								
		Prepare a PFMP for Shimba hills with SHICOFA	No.	1	Prepared PFMP -Records									
		Carry out Natural Resource Assessment (NRA) survey	No.	1	NRA report									
		Conduct ecosystem valuation in SHE	No.	1	Report on the value of the ecosystem									
		Promote sustainable utilisation of Non-wood Forest Products (NWFPs) like resin, honey, herbal medicine, ecotourism, water bottling, butterfly farming	No.	5	NWFPs sustainably used									
		Carry out an assessment of degraded forest areas and map	No	1	Assessment report									
		Carry out enrichment planting in mapped degraded forest areas	%	100	-Records									
		Establish tree nurseries at Kinarini, Mutsangatamu, Kirewe, Majimboni	No.	4	Nurseries established									
		Raise indigenous suitable seedlings for enrichment planting and rehabilitation ('000')	No.	2000	No. of seedlings raised									
		Carry out of rehabilitation of degraded forest areas	No	1	Assessment report									
		Maintenance of rehabilitated sites-3000 Ha (1,500-Enrichment planting,1,500 planting)	Ha	3000										
		Protection for natural regeneration	Ha	2000	-Area Protected -Records	400								
		Monitor, prevent and control forest fires	No	10	Reduced forest fire incidences	1								
		Control invasive species	%	100	Reduced/ eliminate invasive species	100								
	Revert 910.7ha of exotic plantations areas to natural forest	Carry out an assessment of forest plantations	No.	1	Inventory report									
		Prepare and implement plantation harvesting plan	No.	1	Plantation harvesting plan Report									
		Prepare and implement the afforestoration plan for plantation areas proposed to revert back to indigenous forest areas	No.	1	Rehabilitation plan									
		Increase capacity of KFS tree nursery to meet the demand for indigenous tree seedlings ('000')	No.	1000	KFS tree nursery capacity									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
		Rehabilitate the area reverted to indigenous forest areas	Ha	1000	Indigenous seedlings raised									
Wildlife management programme	Threats to SHE habitats reduced and ecosystem connectivity maintained	Identify and establish wildlife corridors between SHE and adjacent ecosystems	No	2	Map of corridors									
		Initiate new and support existing habitats protection, restoration and rehabilitation measures	Ha		Maps of rehabilitated and restored sites									
		Develop and implement a SHE fire management plan	No	1	Fire plan									
		Undertake prescribed burning in designated areas for habitat management	No	10	Fire management reports									
		Develop and implement a site specific alien and invasive species management plan	No	1	Site specific invasive species plan									
	Conservation of key wildlife species in SHE enhanced	Monitor population dynamics of elephants	No	2	Census report									
		Assess, review and recommend appropriate land uses in elephant migratory corridors and dispersal areas	No	1	Assessment report									
		Complete and implement the Sable Antelope Recovery and Action Plan	%	100	Completed action plan Level of implementation									
		Establish and implement a bird monitoring program	No	1	Bird monitoring program									
		Establish the status of threatened species in the ecosystem in collaboration with other partners	No	2	Report									
		Support capacity building of Mwalunganje Elephant Sanctuary on wildlife conservation	No	10	Training reports									
	Scientific approaches to reduce human-wildlife conflicts explored	Undertake research on approaches to reduce human wildlife conflicts	No	2	Research publications									
		Collar elephants in the dispersal areas and corridors for monitoring purposes	No	20	Elephants collared									
		Monitor and enhance effectiveness of wildlife barriers	No	10	Monitoring reports									
	Ecological monitoring and research information dissemination strengthened	Undertake natural resource inventories	No	2	Inventory report									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
		Identify and conduct priority management-oriented research	No	10	Research publications									
		Conduct research and ecological monitoring in collaboration with research institutions and universities	No	5	Collaborative research and monitoring implemented									
		Develop and implement a SHE ecological monitoring program, protocols and database	No	3	Monitoring program Protocol Database									
		Monitor impacts of elephants on the structure of critical habitat	No		Monitoring report									
		Undertake disease surveillance on key species	No	10	Disease surveillance report									
		Control and monitor tsetse flies and ticks density	No	20	Reports and control measures implemented									
		Implement climate mitigation and adaptation strategies	%	90	Reports on implementation									
		Establish watering points for wildlife	No	10										
		Develop and equip a fully-fledged research sub station	No	1	Equipped research sub station									
		Integrate citizen science in ecological monitoring and research	%	100	Level of citizen science integration									
		Organise dissemination forums for research and monitoring outputs	No	10	Conferences and exhibitions									
Water Resource Management Programme	**Water Resource Use Regulated and Controlled**	Undertake a baseline survey on the status of water abstraction	No	1	Baseline survey conducted									
		Develop sub-catchment water allocation plans	No	4	Sub catchment water allocation plans developed.									
		Implement sub-catchment water allocation plans	No	4	Sub catchment water allocation plans implemented									
		Monitoring and evaluation of water abstraction in the SHE	No	10	Annual M&E reports									
		Establish common water intakes to facilitate regulation of water abstraction	No	9	Common water intakes established/ maintained; Installed water metres									
		Draft a Collaboration framework to enforce existing water regulations	No	1	No. of MoU designed									
		Collaborate with, relevant stakeholders in monitoring river water levels in the SHE	No	10	River gauging regularly monitored; Monitoring reports.									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
	Sustainable Water Management Enhanced and Natural Flow Regimes restored	Review/develop Sub-catchment management plans (SCMPs)	No	4	SCMPs reviewed/ developed.									
		Build the capacity of WRUAs to effectively participate in water resources management	No	10	Water resources management evaluation reports									
		Monitor water quality and quantity from water sources.	No	10	Water quality analysis reports									
		Support inter-county water transfer	No	2	Water transfer projects established									
		Construct water harvesting structures to support farmers to harvest rain water, run-off or flood water for farming	No	10	Water harvesting structures constructed; Project evaluation reports; Photos.									
		Promote sustainable land management practices that control farming on steep slopes while maintaining the required ground cover to avoid soil erosion	No	10	Water quality analysis reports									
		Control deforestation and vegetation clearance of wetlands, springs and swamps	%	10	Increased vegetation covers in wetlands, springs and swamps									
Tourism Development and Management Programme	**Tourism developments are coordinated to ensure proper standards, distribution and sustainability**	Develop guidelines for tourism development in SHE	No	1	Tourism guidelines developed									
		Prepare a tourism development plan	No	1	Tourism development plan									
		Enhance implementation of tourism policies and standards	%	100	Level of implementation									
		Provide incentives for investors keen on developing tourism facilities in the ecosystem.	No	5	Tourism facilities developed									
		Open and connect circuits between SHE and adjacent tourism destinations such as Tsavo conservation area, Diani and Mkomazi	No	5	Tourism circuits developed									
		Enhance network and internet connectivity in key tourism areas	%	50	Status of connectivity									
		Develop an interactive website on SHE tourism products and information	No	1	Status of SHE website									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
		Develop information centres at entry points	No	7	Information centres developed									
		Establish and implement a tourism stakeholders engagement forum	No	20	Engagement meeting minutes									
	Local communities adequately engaged to build local capacities for optimum benefits from tourism	Build capacity of community forest associations and conservation groups for effective tourism management	No	20	Trainings									
		Promote and facilitate development of cultural tourism	No	5	cultural tourism developed									
		Establish sustainable tourism income generating activities such as curio shops, zip line, tour guides and porters	No	5	New tourism IGAs developed									
	Tourism products in SHE diversified to enhance visitor experience	Undertake tourism research on market needs and trends	No	1	New products identified									
		Develop and promote diverse tourism activities and experience	No	9	Products developed									
		Identify and market tourism investment potentials within SHE.	No	5	Tourism investments									
		Upgrade existing tourism facilities	No	10	Facilities upgraded									
	Local and global marketing of SHE as tourist destination is modernized to attract high end local and international tourists	Develop and implement a tourism marketing strategy for Shimba Hills Ecosystem	%	100	Level of implementation									
		Develop tourism packages to attract local and international tourists	No.	10	Number of packages developed									
		Evaluate visitor needs to improve service delivery and experience	%	50	Repeat visitations									
		Enhance capacities of licensed tour guides/rangers on basic customer service	No.	10	Number of trainings									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
Community Participation and Development Programme	**Community participation in natural resource management enhanced**	Awareness creation to institutionalize community participation in conservation and sustainable utilization of ecosystem resources	No.	Reports	50									
		Hold meetings to institutionalize community participation on utilization of Non Wood Forest Products (NWFPs) based on locations	No.	38	No. of meetings held Minutes									
		Awareness creation to communities (including resource managers) to form Conservation associations	No.	3	Reports from Resource managers									
		Form and enhance institutional organizational capacity for CFAs, WRUAs and CWA												
		Form institutional organizations of Mwaluganje and SHICOFA CFAs, Mkurumudzi, WRUAs and SHFNR CWA	No.	12	No. of trainings conducted Report									
		Develop capacity of the community organisation institutions	No.	30	Reports, Minutes									
		Establish and equip a conservation education centre	No.	1	Fully equipped and functional education center									
		Develop a community outreach strategy	No.	1	Developed community outreach programme									
		Undertake School Environmental Education Program	No.	1	School Environmental Education Program operational									
	Problem animal control (PAC) techniques enhanced and promoted	Upgrade and maintain the existing fences and wildlife barriers	Km	120	Length of fence upgraded									
		Improve problem animal control (PAC) strategies	No.	6	Enhanced PAC									
		Establish and maintain a human-wildlife conflict database	No.	1	HWC database in place									
	Community livelihood sources from nature based enterprises diversified and promoted	Enhance human elephant conflicts (HEC) mitigation by involving stakeholders in the use of appropriate site-specific methods	No.	20	No of stakeholder awareness meetings, no of joint mitigation measures									
		Capacity build Human Wildlife Conflict Mitigation Committees (HWCMCs)	No	10	Training reports									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
		Feasibility study on viable NBEs	No.	2	Feasibility report									
		Enhance Nature Based Enterprises (NBEs) e.g beekeeping, tree nursery, butterfly farming, chilli farming, eco-tourism, *Aloe vera* farming, poultry farming, basketry, tapestry, mushroom farming, fish farming, mariculture and farm forestry	No.	13	Increased NBEs									
		Capacity building on value addition of NBEs	No	10	Training reports									
		Value addition of the NBEs e.g Aloe vera, Neem, Bamboo, *Eucalyptus globulus*, lemon grass, tea tree, honey, fruits, among others	No.	8	Value added products									
		Enhance capacity of community in employable skills in forestry and wildlife sector (Tree nursery establishment, Tour guiding, Entrepreneurship, Commercial Forestry management and Wildlife enterprises	No.	5	No. of trainings									
		Enhance capacity of community in skills related to forestry and wildlife sector	No.	5	No. of trainings conducted									
		Lobby for recruitment/recruit Community scouts from each adjacent location	No.	40	No. of Community scouts recruited									
		Build capacity of the community scouts in forestry and wildlife conservation	No	10	Training reports									
		Engage CFAs to undertake silvicultural activities e.g Provision of tree seedlings, tree planting, maintenance of planted areas and regeneration, fence maintenance, management of invasive species	%	100	Reports of activities undertaken by the communities									
		Promote community conservation livelihood enterprises	No	100	Conservation livelihood enterprises established									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
		Develop a sustainable benefit sharing mechanism between the communities and ecosystem managers	No.	1	Report									
		Develop community botanical gardens for biodiversity conservation	No.	4	No. of community botanical gardens developed									
	To promote appropriate agroforestry practices in farmlands	Build capacity on agroforestry and sustainable land management practises (pest control, climate smart agriculture, appropriate tree species)	No.	25	No. of farmers trained									
		Hold field days and establish demonstration plots	No.	10	No. of trainings conducted									
		Promote agroforestry and farm forestry in farmlands	HH.	500	No. of households that have planted trees									
		Establish soil and water conservation measures in farms	No.	1700	No. of farms with soil and water conservation structures									
		Enhance forest extension services through employment of forest extension services	No.	6	No. Of extension officers employed									
		Rehabilitate degraded sites in the farmlands	Ha	500	Area rehabilitated									
	Adoption of sustainable energy practices	Awareness creation to communities on sustainable energy technologies (Meetings and Radio talk-shows	No.	50	Report									
		Capacity building communities on sustainable energy practices (trainings on energy-saving cook stoves, sustainable and eco- friendly charcoal production, renewable energy, fireless cookers, briquettes, solar lamps, solar heaters, solar cookers, biogas)	No.	12	Training reports									
		Development and equipment of demonstration centres for sustainable energy practices	No.	4	Development of demonstration centres for sustainable energy practices									
		Undertake business trainings and coaching on community energy enterprises	No.	4										
PA operations and Security Management Programme	Institutional collaboration formalized and strengthened	Formulate an agreement on the implementation of the management plan	No	2	MOU signed									

Management Programme	Objective	Activity		Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
								1	2	3	4	5			
		Engage National and County Government to support protection and management of natural resources in the SHE		No	40	Minutes									
		Develop a framework for the implementation of the Kwale County CIDP and CSP in relation to SHE		No	1	Framework									
		Engage the National Land Commission and Kwale County Government to secure two critical wildlife corridors		No	40	Minutes									
		Liaise with Tanzania's wildlife authority on cross border wildlife protection		No	10	Meeting minutes									
		Protect elephant population by minimising poaching through stakeholder collaboration efforts		%	3	No of collaborative stakeholder meetings									
	Capacity, performance and motivation of staff improved	Strengthen staff capacity through relevant training		No	10	Training report									
		Deploy adequate staff including KFS and KWS Rangers		No	74	Deployment letters									
		Build the capacity of managers, Rangers and other staff including researchers within SHE		No	40	Training reports									
		Renovate dilapidated staff houses and allied amenities within KWS and KFS camps and outposts		No	60	Certificate of completion reports, No. of houses renovated, contract documents									
	SHE Natural Resources and Visitors Safeguarded	Strengthen security capacity by deploying more rangers in SHE		No	20	Deployment reports									
		Enhance joint patrols between KWS, KFS and community scouts		No	40	Patrol reports and achievements									
		Deploy security in key visitor points (viewpoints, campsites, nature trail and gates)		No	14	Deployment reports									
		Protect elephant population by minimising poaching through effective law enforcement measures		%	100	Incident report, no of patrols, no of stakeholder meetings									
	Infrastructure to support PA management and tourism development improved	Construct, rehabilitate and maintain SHE infrastructure (Airstrip, buildings, roads, gates, bridges, nature trails, fire breaks, and fire towers)	Buildings	No	4	Completion reports									
			Roads	Km	300	Km maintained/ constructed									
			Gates	No	5	Rehabilitation reports									
			Bridges	No	1	Construction report									
			Nature trails	No	7	Rehabilitation reports									
			Airstrip	No	1	Completion reports									

Management Programme	Objective	Activity		Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
								1	2	3	4	5			
			Fire breaks	Km	140	Km constructed									
			Fire towers	No	3	Towers constructed									
		Procure and maintain vehicles, plants, communication, security and surveillance, and firefighting equipment	Buildings	No	4	Completion reports									
			Roads	Km	300	Km maintained/ constructed									
			Gates	No	5	Rehabilitation reports									
			Bridges	No	1	Construction report									
	Renovate dilapidated staff houses and allied amenities within KWS and KFS camps and outposts	Renovated houses		No	1	Renovation report									
	Upgrade and maintain the 140Km electric fence	Fence		Km	135	Km upgraded									
	Enhance utility provision (e.g. water, electricity)	No		10	Completion reports	Enhance utility provision (e.g. water, electricity)									
	Conduct mitigation measures of EIA for planned upgrading of the Kwale-Kinango road to bitumen					Conduct mitigation measures of EIA for planned upgrading of the Kwale-Kinango road to bitumen									
Research and Education Programme	**Ecological research and monitoring strengthened**	Recruit research staff – in operations programme		No.											
		Build the capacity of researchers under the SHE, WRTI) SHE research substation		No.	10	Training reports									
		Integrate citizen science in ecological monitoring and research		No.	10	Reports									
		Conduct natural resource (flora, fauna, soils) assessments		No.	3	No of assessments conducted									
		Establish collaborative research and Organise dissemination forums for research and monitoring activities		No.	1	MoU signed									

Management Programme	Objective	Activity	Unit	Plan targets	Indicator	No. of beneficiaries	Annual targets (Yrs)					Achievement	Variance	Remarks
							1	2	3	4	5			
	Research on forest resources and allied resources enhanced	Conduct ecosystem valuation in SHE	No.	2	Value of the ecosystem									
		Carry out an assessment of degraded forest areas	No.	1	Area assessed									
		Carry out an assessment on the rehabilitated areas	No.	1	Area assessed									
		Research on various methods of ecosystem restoration in the affected areas of SHE	No.	3	Methods of restoration									
		Carryout site specific species matching	No.	1	Trial plots established									
	Measures to prevent and control invasive species promoted	Carry out survey on prevalence of invasive species in SHE	No.	1	No. of surveys conducted									
		Undertake research on socio-economic value of invasive species	No.	1	Research reports									
	Adequate water flow regime to meet both environmental and socio-economic needs promoted	Assess water discharge/flow and water quality in the sub-catchment	No.	3	Assessment reports									
		Assess impacts of river course damming on ecological and socio-economic needs in SHE	No.	2	Assessment reports									
		Undertake water quality and hydrological monitoring in the delta	No.	3	Monitoring reports									
	Sustainable tourism practices promoted	Identify challenges and develop indicators for sustainable tourism development in SHE	No.	1	Reports									
		Develop a research and marketing strategy to promote tourism in SHE	No.	1	Strategy in place									
	Sustainable community socio-economic development and ecosystem conservation promoted	Develop a sustainable benefit sharing mechanism between the communities and ecosystem managers	No.	1	report									
		Determine the potential of SHE in sustainable recreation activities	No.	1	Reports									
		Determine best methods of value addition for non-wood forest products	Days	8	Open days									




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