



NORTH NANDI PARTICIPATORY FOREST MANAGEMENT PLAN 2023 -2027



APPROVAL PAGE

The North Nandi Forest Participatory Forest Management Plan is approved for implementation for the next five years and will be reviewed when need arises through mutual agreement of the key stakeholders. Its implementation will be based on the signed Forest Management Agreement between KFS and Nandi North Escarpment Community Forest Association (NNECFA).

A.L. LEMARKOKO, 'ndc'(K)
Ag. CHIEF CONSERVATOR OF FORESTS
KENYA FOREST SERVICE

Date: -----

PREFACE

(J Rono-To provide KFS message)

A.L. LEMARKOKO, 'ndc'(K)
Ag. CHIEF CONSERVATOR OF FORESTS
KENYA FOREST SERVICE

FOREWORD

GBM to provide

ACKNOWLEDGEMENT

Nandi North Escarpment Community Forest Association through its Chairman would wish to acknowledge individuals and institutions that played a role in the successful review of the elapsed plan. The reviewed plan will run for the next five years and all the stakeholders are encouraged to participate in the implementation of some of the proposed activities.

 REPUBLIC OF KENYA	The National Government that was represented in the Local Plan Review Team led by Mr. Andrew K Mutua the Deputy County Commissioner Nandi North who attended the launch is greatly appreciated for their participation and input in the preparation of this plan.
 KENYA Forest Service	KFS has played a great role in the preparation of this plan. We would like to give a special appreciation to the CCF Mr Julius Kamau (EBS), the CFA gives special appreciation to Mr John Rono from KFS Headquarters Forest Management office who participated in the adoption and validation meeting and for providing guidance and technical advice that facilitated the completion of this plan, the Regional Conservator of Forests Mr. Anthony Musyoka for his support, the County Forest Conservator for Nandi Mr. Kenneth Muskiton and his staff. We would not like to forget the North Nandi Forest Station Manager Mr. James Thairu and his Assistant Mercy Langat who participated in all our meetings and workshops and provided the necessary data and support. We appreciate the KFS GIS team comprised of M/s Alice Mutemi and Gloria Atiavila who assisted in resource inventory and mapping
 KENYA WILDLIFE SERVICE	KWS Nandi office was represented in the launch by Grace Wendot. We appreciate her contribution and participation towards the success of preparation of this plan and look forward to working with KWS during the implementation of the plan

 <p>nema mazingira yetu usal wetu usajibu wetu</p>	<p>NEMA Nandi County office was represented during the validation workshop by Kalabata Samuel the Environment Officer. We appreciate his contributions and participation towards the success of preparation of this plan and look forward to working with them during the implementation of the plan</p>
	<p>We cannot forget the staff from the County Government of Nandi led by the Director Environment Dr. James K. Meli who participated in the launch and look forward to working with County Government during the implementation of the plan</p>
	<p>The CFA would like to thank Green Belt Movement (GBM) for providing financial support and for participating in the review process. The CFA would like to mention in a special way Hariat Maiyo and Edwin Ngunjiri for fully participating in the process and look forward to working with them during the implementation of the plan</p>
	<p>The CFA sincerely thank all members of Local Plan Review Team (LPRT) drawn from the six beats of the forest who voluntary and tirelessly participated in data collection and information gathering for social-economic survey, resource and biodiversity inventory, zonation and mapping and played a key role in the preparation of the plan.</p>
	<p>The CFA also appreciate the facilitators from IFCMS Kenya Ltd (Integrated Forestry Consultancy and Management Services Kenya Ltd), led by Mr. Samuel K. Muriithi for the role they played in coordinating the PFMP preparation process.</p>

Since it is not possible to mention all the persons who played various roles in the review of the elapsed plan and in the preparation of this PFMP, the CFA wish to take this opportunity to express its sincere gratitude to all individuals and institutions that played any role to make this process successful

James Koskei

Chairman – Nandi North Escarpment CFA

ACRONYMS AND ABBREVIATIONS

ALFA	Agriculture, Livestock and Food Authority
AMCEN	Africa Ministerial Conference on Environment
Asl	Above Sea Level
CBOs	Community Based Organizations
CDC	County Development Committee
CFA	Community Forest Association
CGN	County Government of Nandi
CITES	Convention on International Trade in Endangered Species
EIA	Environmental Impact Assessment
EAC	East African Community
EMCA	Environmental Management and Coordination Act
FCC	Forest Conservation Committee
FGDs	Focused Group Discussions
FMA	Forest Management Agreement
FSM	Forest Station Manager
FUGs	Forest User Groups
GBM	Green Belt Movement
GoK	Government of Kenya
HQs	Head Quarters
NNECFA	Nandi North Escarpment Community Forest Association
IGAs	Income Generating Activities
KEFRI	Kenya Forestry Research Institute
KFS	Kenya Forest Service
KII	Key Informant Interviews
Km	Kilometres
KTDA	Kenya Tea Development Agency
KWS	Kenya Wildlife Service
LPRC	Local Plan Review Committee
LLFMC	Local Level Forest Management Committee

LPT	Local Planning Team
MoAL&F	Ministry of Agriculture, Livestock and Fisheries
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NMK	National Museums of Kenya
NEPAD	New Partnership for Africa Development
NGOs	Non-governmental Organizations
NNECFA	North Nandi Escarpment Community Forest Association
NWFP	Non-Wood Forest Products
PES	Payment for Environmental Services
PFM	Participatory Forest Management
PFMP	Participatory Forest Management Plan
REDD	Reduced Deforestation and Degradation
REA	Regional Environmental Agreements
SDGs	Sustainable Development Goals
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
WRA	Water Resource Authority
WRUAs	Water Resource Users Associations

EXECUTIVE SUMMARY

The Review of North Nandi participatory forest management plan was conducted through a consultative process with coordination from the County Forest Conservator's office Nandi and financial support from the French Development Agency (AFD) through the Green Belt Movement (GBM). The plan review process was initiated on 28th September 2021 at Forest Manager's compound at North Nandi, with a launch and formation of a Local Plan Review Team comprising of community members drawn from the six beats; Septonok, Teresia, Kiptangus, Kipsamoite, Kapchepkok and Mwein, representatives of KWS and the Forest Manager.

North Nandi Forest is one of the forests found in Nandi County. It covers an area of 10,500.7 Ha. It was declared a forest reserve vide Proclamation No.76 of 1936, with an aim of forest conservation. It was declared as a central forest vide legal notice 176 of 4th May 1964. The forest station stretches in two sub-counties; North Nandi and Chesumei of Nandi County. It borders South Nandi forest to the south and Kakamega and Malava forests to the West. The Forest Station Manager North Nandi manages the forest Station with support of other KFS staff.

The Forest falls within the range of at an altitude of between 1,900 and 2,250 m asl. In 2016 the forest had prepared a Participatory Forest Management Plan (PFMP) after the Forests Act 2005 was enacted and operationalized in 2007. The PFMP last one was launched in 2016 by the Director KFS which covered a period of 5 years effectively elapsing in 2020

The process of reviewing the management plan involved some of the stakeholders who had participated in the review, implementation of the previous plans. In addition, the consultant collected the required data, through literature review, field surveys and interviews using questionnaires (vegetation, socio-cultural, eco-tourism, and wildlife), direct observation, and consultative sessions with the community (meetings and workshops). North Nandi Local Plan Review Team (LPRT) was responsible for providing any other information required to ensure that the plan met the required standard. The Enumerators who conducted the socio-economic survey in the intervention zone for 5 days with the support of LPRT were trained by the consultant on data collection on 10th November 2021. The data and information gathered in the survey was then packaged into various management programmes and strategies that resulted in a draft Management Plan.

The management programmes in the plan include: 1) Natural forest conservation and Management, 2) Plantation Development Management, 3) Water Resources Management, 4) Eco-tourism and Wildlife management 5) Community participation and development 6) Infrastructure and Equipment Development, 7) Protection and Security, 8) Human Resource Development and, 9) Research and education.

For successful implementation of the plan for the next five years, each activity has an estimated budget. However, it is expected that by the end of the five-year plan period, the resources in North Nandi Forest and its adjacent areas will be well protected, conserved and sustainably utilized for the improvement of livelihoods of the forest adjacent communities and other stakeholders. The plan has also taken into consideration the importance of forest as source of water and the role that women, youth and people with disabilities can play in the conservation and management of the forest and its resources for the benefit of all.

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CHAPTER ONE

INTRODUCTION

1.1 Justification of the management plan

This plan is prepared as a fulfillment of the requirement of the Forest Conservation and Management Act 2016, Section 47 (1) and 48 (4). The Section 47 (1) stipulates that “Every public forest, nature reserve and provisional forest shall be managed in accordance with a management plan that complies with the requirements prescribed by regulations made by the Cabinet Secretary.

Community participation in forest management using the Participatory Forest Management Plan (PFMP) has entered the third cycle in Kenya. All PFMPs developed in the country cover a period of 5 years and it is expected that 6 months to the elapse of the period the process of review of the plans should commence. However, sometimes this is not possible as is in the case of North Nandi forest due to lack of funds at the time of elapse.

In recognition that a forest reserve can be managed better through involvement of local communities and other stakeholders, it is imperative to involve them from review stage to implementation as well as in monitoring and evaluation. When this approach is used, it is expected that the North Nandi forest reserve will be managed in a better way.

Adoption of participatory management plans have been found to be one approach of achieving improved, effective and more efficient management of the forest estates. The reviewed PFMP aims at minimizing conflicts with forest adjacent communities and other stakeholders, creating an opportunity for them to contribute towards sustainable forest management and supporting sustainable forest-based livelihoods in rural communities. It is therefore hoped that through implementation of the sustainable forest-based livelihood improvement activities identified in North Nandi Forest Participatory management plan, the wellbeing of the forest adjacent communities will be improved

1.2 Approach to plan development

The process of revising the management plan was initiated through public barazas and sensitization meetings. The first meeting was held on 28th September 2021 at North Nandi Forest Office compound (Plate 1). 

Representatives of various key stakeholders such as National Government, Kenya Forest service, NEMA, Nandi County Government, Kenya Wildlife Service attended the launch. In this meeting, the process of PFMP Review was explained to the stakeholders. The meeting was also meant to create awareness to the community, CFA members and other stakeholders on the need to review the previous management plan as it had elapsed and ensure that they had been actively involved in the review process. Mobilization was conducted by KFS which has worked with the community adjacent to the forest for more than ten years. The list of members that attendant the launch is in appendix 1.



Plate 1.1: Participants being addressed by Mr. James K. Meli - County Director Environment during the PFMP launch held on 28th September 2021 at Forest Station Office compound

The climax of the sensitization meeting agenda was the selection of 13 representatives into the Local Plan Review Team (LPRT). The membership was drawn from 6 beats (Septonok, Teresia, Kiptangus, Kipsamoite, Kapchepkok and Mwein), CFA officials, a representative of the National Government (NGAO), KWS and North Nandi Forest Manager. The selection criterion was sensitive to gender and also included the youth (Plate1.2). **is a photo taken for the LPRT.**



Plate 1.2: LRPT members who participated in PFMP review process

On 10th November 2021, the enumerators were trained in data collection and sampling methods, and how to use Kobo collect kit on mobile phones, fill digital questionnaires and submit (Plate 1.3). **is a photo taken during the training of enumerators**



Plate 1.3: Training of enumerators and LPRT on data collection at Forest Station compound on 10th November 2021

On 22nd & 23rd November 2021, the LPRT, the consultant with the assistance of GIS experts from KFs Headquarters carried zonation and mapping of resources. The maps were prepared from this exercise and form part of this plan (Plate 1.4). **is a photo taken during zonation and mapping exercise.**



Plate 1.4: LPRT and KFS GIS team during zonation and mapping of resources on 22nd November 2021

On 28th November 2021 with the facilitation of the consultant, the LPRT held a meeting that discussed the status of implementation of the elapsed plan. During the meeting, all activities that were proposed in the previous plan were analyzed and the achievements and challenges that were experienced during implementation identified, agreed upon and documented. It was during the same meeting that the changes that had taken place in the station for the last 5 years were also discussed. A list of LPRT is in Appendix 1. On 14th & 15th December 2022, with assistance of the consultant the LPRT held meetings to discuss and agree on the vision of the plan and develop management programmes that would be implemented during the plan period. It was during these meetings that the Vision, Goal and the broad objective of the plan and nine Management programmes with specific actions, five-year targets and budgets were

discussed and agreed (Plate 5). is a photo taken during visioning and preparation of the programme



Plate 1.5: LPRT during the visioning process meeting at FSM office 14th December 2021

After this, the consultant was given two weeks to prepare a draft which was presented to LPRT on 27th January 2022 at Starlink Hotel in Kapsabet Town. The purpose of the meeting was to get feedback on whether the draft plan had captured the required information and the same time fill gaps that would facilitate in the preparation of the final PFMP draft. After this meeting, the consultant was given 2 weeks to prepare a final draft that was presented to the stakeholders in a validation workshop that was attended by various stakeholders held on A List of attendants is in (Appendix 1).

1.3 Title and Duration of the Plan

The title of this plan is '**North Nandi Participatory Forest Management Plan**'. The plan will cover a period of five years (2022-2026) and will commence from the date of approval by Chief Conservator of Forests.

1.4 Amendments and revision of the management plan

This PFMP shall be amended following consultation between the CFA, KFS and other stakeholders depending on the existing challenges, development priorities and policy guidelines. Following the initial five-year period of implementation, the plan will be revised depending on the impact of all the projects implemented. Both review and revision will involve KFS, NNECFA and other relevant stakeholders identified in the plan. It will also take into consideration new stakeholders who might commence activities in the area in the course of implementation of the plan.

1.5 Status of implementation of the previous plan

1.5.1 Overview of the previous PFMP, (2023-2027).

The North Nandi Escarpment Community Forest Association (NNECFA) and other collaborating partners completed the review of previous PFMP in 2016 and was launched by

the Director KFS on 18th March 2016. The Management Plan covered the period 2016 to 2020. The overall management goal was; - *“To maintain a functional forest ecosystem that is sustainably managed for the benefit of the present and future generation”*

The plan was implemented through 9 management programmes and had the following management objectives:

- 1) To manage the natural forest resources sustainably for continued benefit of the local communities and other stakeholders, maintain local biodiversity and rehabilitate degraded areas.
- 2) To educate the local communities on the value of wildlife, protect wildlife and their habitats, identify and develop eco-tourism sites.
- 3) To maintain the natural hydrological discharge water balance within the ecosystem.
- 4) To provide security and protection that will ensure the sustainable conservation and utilization of forest products and services.
- 5) To ensure the forest adjacent communities are fully involved in the management and conservation of the forest and realize an improvement in their standard of living.
- 6) To provide and maintain the infrastructure and equipment to achieve sustainable conservation and management of the forest.
- 7) To recruit adequate number of staff and improve their skills/ competency and their motivation.
- 8) To generate information for planning and decision making that will enhance the implementation of the forest management plan.
- 9) To establish and strengthen the capacity of the stakeholders and enhance the effectiveness of M & E mechanisms that are put into place.

1.5.2 Status of implementation of the previous plan

Table 1 below is analysis on how activities proposed in the previous Management Plan (2016 – 2020) were implemented

Table 1.1: Status on implementation of the previous plan

Management Programme	Activity	Proposed target action	Achievements	Remarks
1. Natural forest conservation and management	Awareness creation meetings to increase People's knowledge on importance of Natural forest	No target set	6	This was done during a public barazas and meetings organized by KFS and CFA.
	Control human encroachment	No target set	198 ha recovered and beacons replaced.	Done by ministry of interior and KFS. The area was contested and case in court .

Management Programme	Activity	Proposed target action	Achievements	Remarks
	Rehabilitate degraded part of the natural forest	No target set	141 Ha	By KFS and NGOs-(GBM and Nature Kenya)
	Enforce law through community involvement	No target set	18 scouts were recruited for all beats	Only 3 in Kipsamoite and 2 in Kapchepkok are active, whereas 13 are dormant- They had no incentives.
	Map out degraded areas	No target set	Not done	funds were not allocated
	Rehabilitate degraded areas through enrichment planting	No target set	141 Ha	Done by GBM.
	Protect the planted sites	No target set	141 Ha.	This was done by KFS , CFA and Green Volunteers.
	Promote alternative activities to reduce pressure on the forest such as agroforestry, use of efficient jikos etc	No target set	100 cook stoves were distributed to the community adjacent to Mwein beat through community initiative. Improved Agricultural practices that have improved the livelihood of the	This has been achieved through and community efforts (Mirembe Women Group) and GIZ. Rural Services Kaimosi assisted in agriculture services

Management Programme	Activity	Proposed target action	Achievements	Remarks
			communities living adjacent to the forest	
	Enhance establishment of buffer zone i.e. NTZ	No target set	Not done	There was no additional planting of Tea in NTZ during the plan period
	Promote sustainable use of forest resources	No target set	Not done	Funds were not provided and there was no community initiative
	Conduct trainings on fire management	No target set	Not done	Funds were not allocated
	Reduce Human/Wildlife conflict through enforcement and patrols	No target set	Not done	There was no organized method of doing this was applied and farmers were using their individual methods of controlling the menace Planting trees in the forest ecosystem helps reduce human wildlife conflicts especially Syzygium guineense, and other fruit trees

Management Programme	Activity	Proposed target action	Achievements	Remarks
				that monkeys love
	Promote conservation of endangered species and replace those that have gone into extinction e.g. Tendwet and Fagara	No targets set	Not done	No Funds allocated
	Control of invasive species such as Manyinyet	No targets set	Not done	Funds were not allocated
2. Plantation development	Establishment and maintenance of tree nurseries with community involvement	No targets set	Kipsamoite raised 4,000 seedlings of Cypress, Boinet CBO 2,000 of Cypress, Tendwet SHG 2,000 of Blue gum and Kabose 16,000	This was done purely through groups' initiative. However, KFS provided the Technical support.
	Establishment of healthy plantations through PELIS	No targets set	Approximately 261 Ha were established	This was done by engaging farmers living adjacent to the forest
	Carry out timely silvicultural operations for high quality stands	No targets set	Pruning carried out as follows; 1 st 3.9 Ha, 2 nd 23.7 Ha, 3 rd 46.3 Ha,	2 nd and 3 rd pruning done by the community and 1 st by casuals hired by KFS
	Protect plantations	No hectares	No incidence	Community ready

Management Programme	Activity	Proposed target action	Achievements	Remarks
	from fire damage	that would be affected given	of fire occurred during the plan period	to provide the necessary support
3.Water resources management	Monitor dynamics on flow patterns and volume by installing gauges along Kimondi and Kingwal rivers	No targets set	Not done	No organization volunteered to do this during the plan period
	Carry out inventory on status of water resources and map them	No targets set	Not done	Funds were not allocated to the activity
	Create awareness on conservation and protection of water catchment areas	No targets set	6 meetings were organized on effects of climate change	The activity was carried out through County Government initiative
	Rehabilitation of water catchment areas through planting of water friendly species	No targets set	0.25 Ha done at Mwein beat	Funds not allocated
	Control illegal water abstraction through patrols and maintenance of proper records	No targets set	This was done by KFS & CFA in Mwein and Kapchepkok through regular patrols	This was done by KFS and CFA during their routine patrols
	Build capacity of WRUAs	No targets set	Not done. No WRUA	No WRUA
	Construct water pans to enhance water supply	No targets set	Not done	The view is that the area doesn't require this type

Management Programme	Activity	Proposed target action	Achievements	Remarks
				of intervention
	Promote water harvesting and storage at community level for domestic use	No targets set	Roof water catchment being practiced at individual House Hold	Funds were no allocated
4. Wildlife and Ecotourism Management	Identify potential sites for development of tourism facilities	No target set	Potential sites identified	Funds not allocated
	Development of management plans	No targets set	Not done	Funds not allocated
	Develop tourism facilities eg Bandas, Campsites etc	No targets set	Not done	Funds not allocated
	Marketing of tourism facilities	No targets set	Not done as there were no facilities	Funds not allocated
	Linking the facilities to the existing circuits through networking and marketing	No targets set	Not done as there were no facilities	Funds not available
	Designing, production and distribution of promotion materials eg brochures	No targets set	Not done as there were no facilities	There was no need to allocate funds as there were no facilities to promote
	Establishment and maintenance of website	No targets set	Not necessary as there were no facilities	Funds not available

Management Programme	Activity	Proposed target action	Achievements	Remarks
	Conduct training based on need assessment to strengthen capacity of institution.	No targets set	Not done	Funds not availed
	Conduct exchange visit to well-established CFAs	No targets set	Not done	Funds not available
5. Community Development	Build capacity of the CFA on identified needs	No target set	Not done	Poor coordination by the stakeholders.
	Develop proposals for various developments facilities eg campsites	No target set	Not achieved	Poor coordination by the stakeholders
	Registration of a business company by CFA	No target set	Not achieved	Lack of Commitment
	Promote Agro-forestry by establishing demonstration woodlots, on-farm tree planting and carbon trading	No target set	Done	Done through the SLM and SFM.
	Encourage formation of CBOs,	No target set	Done	By Nature Kenya, KALRO and AGRA
	Involve community in planning and monitoring of the activities	No target set	Done	KFS ,CFA and NEMA
	Negotiate and renew Forest Agreement	1	Not done	Due to CFA wrangles.
	Establish linkage between CFA and WRUA to avoid	No target set	Not done	No initiatives were made towards this

Management Programme	Activity	Proposed target action	Achievements	Remarks
	conflicts			
	Identify suitable investments	No target set	Not done	Failure to approach investors.
	Promote suitable animal husbandry practices eg zero grazing	No target set	Done	Low acceptance.
	Establish linkage s with local investors for alternative of wood and non-wood forest products and facilitate value addition	No target set	Done	Has been achieved by GIZ and Mirembe Women Group.
	Encourage collection of NWFPs e.g Bee keeping, fish farming,..	No target set	Not done	No arrangements made to facilitate this.
	Conduct carbon baseline assessment and identify markets	No target set	Not done	Funds were not availed
	Promote extension services to the community to increase knowledge flow on farm forestry	No target set	Done ???	Funds were not availed ????Low
6. Human Resources	To recruit or deploy additional staff	No target set	Not done	Funds were not availed
	Assess staff training needs and conduct trainings	No target set	Assessment done for 16 KFS office staff and Rangers	This was done as per the requirements KFS

Management Programme	Activity	Proposed target action	Achievements	Remarks
	Improve term and conditions of staff	No target set	Kiptangus Forest Rangers camp improved	There was inadequate funds to improve other camps
	Conduct quarterly staff appraisals and set up motivation programmes	No target set	KFS conducts appraisal for its staff on half yearly basis	Achieved 50%
	Encourage team building between KFS, KWS and CFA	No target set	KWS & KFS work as a team	There is general understanding that KFS and KWS should work as a team as they have a common interest of conserving the forest
7. Infrastructure and Equipment development	Conduct infrastructure assessment	1	Not done	Funds not allocated
	Repair roads	14 Km of road	Not done	Funds not availed.
	Develop tourism facilities such as camping sites, Guest houses, nature trails etc	No target set	Not done	Funds not allocated
	Provide electricity and water connections to the proposed tourism facilities	No target set	Not done	Funds not allocated
	Construct houses for KFS Rangers	No target on number to be constructed	Kiptangus Forest Rangers camp improved	The improvement was done by Nature Kenya based on available resources.

Management Programme	Activity	Proposed target action	Achievements	Remarks
	Generate checklist of dilapidated KFS houses, work out the cost and repair	No target set	Done	checklist generated costed and report forwarded to kfs and other stakeholders
	Conduct an inventory on available equipment at the station	1	Not done	Funds not allocated ???
	Provide adequate funds for maintenance of vehicles and equipment	No target set	Not done	Funds not allocated
	Purchase communication equipment	No target set	Not done	Funds not allocated
8. Protection and Security	Initiate collaborative forest protection mechanism that will involve CFA, KFS and other related stakeholders	No target set	NEMA conducted river line protection through community scouts, KFS & KWS Rangers protected the gazetted forest area	More work required to be carried out on a regular basis to ensure proper protection
	Develop and implement security network for intelligence information gathering	No target set	Done	Rangers/Scouts/Informers' network organized
	Carry out joint patrols with relevant	No target set	KFS & KWS Rangers and	This should be intensified for

Management Programme	Activity	Proposed target action	Achievements	Remarks
	stakeholders		community scouts carried out joint patrols	good results
	Undertake training needs assessment	No target set	Not done	Funds not allocated. Trainings had been conducted during the previous plan period
	Train forest Rangers and community scouts on appropriate security and response	No target set	Not done	Funds not allocated. Trainings had been conducted during the previous plan period
	Secure necessary security equipment and vehicles	No target set	Not done	3 motorbikes had been provided during the previous plan period
	Identify relevant stakeholders to enhance security patrols	No target set	Not done	Also include informers'.
	Provide necessary incentives to community scouts	No target set	Not done	Funds not allocated
	Breed species resistant to diseases and pests	No target set	Not done	Funds not allocated
9. Research and Education	Undertake research on pests and diseases	No target set	Not done	Funds not allocated

CHAPTER TWO

DESCRIPTION OF THE FOREST ECOSYSTEM

2.1 Geographical Location

The North Nandi forest is located in Nandi County, and cuts across Chesumei and Nandi North Sub-counties and it occupies 10,500.7 Ha and GPS coordinates are 00°00'S, 35°00'E and the altitude is between 1,900 and 2,250 m asl. This is a strip of high-canopy forest on the edge of the Nandi escarpment, above and immediately east of Kakamega Forest. North Nandi stretches for more than 30 km from north to south and is 3–5 km wide for most of its length

The forest station offices is accessible from Eldoret through Mosoriot and then Kaiboi which is approximately 45 Km or from Kapsabet-Chepterit through Eastern Africa University of Baraton, Kaptel and Kipsamoite trading centres which is about 35 Km.(Ref Figure 2.1).

NORTH NANDI FOREST LOCATION MAP

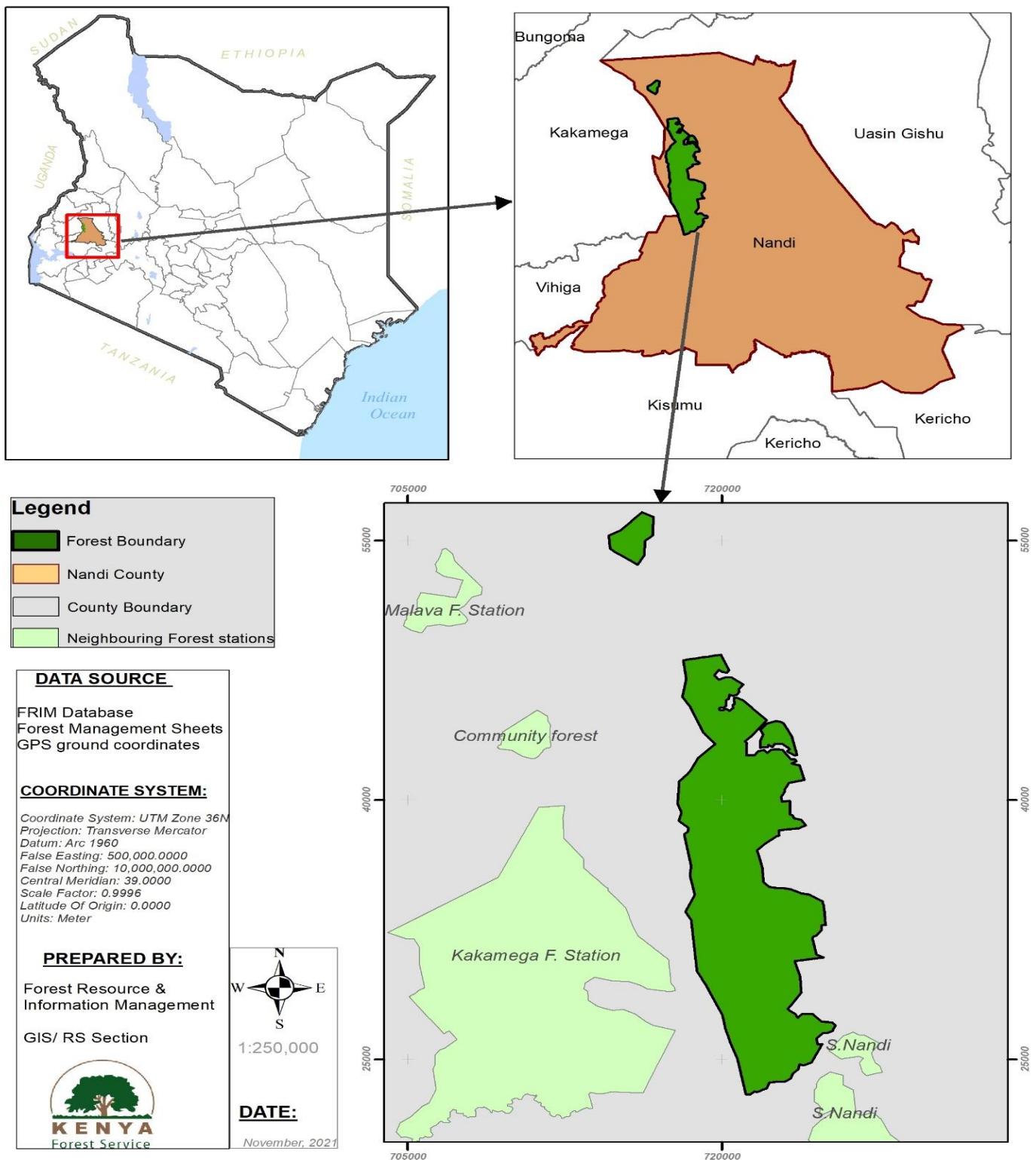


Figure2.1: Location map of North Nandi forest

2.2 Legal and Administrative status

2.2.1 Legal status

North Nandi Forest is part of the larger Mau Forest Complex. The forest station was declared to be a forest reserve vide Proclamation No.76 of 1936 with an aim of forest conservation. It is located in Northern part of Mau complex. The forest is comprised of two forest block which is further divided into six beats for ease of management as shown in table 2.1 below.

North Nandi Forest station is under Kenya Forest Service (KFS), within North Rift Conservancy, under County Forest Conservator Nandi. The station is managed by one Forest Station Manager assisted by Assistant Forest Station Manager (AFSM) and Forest Rangers.

Table 2.1: North Nandi forest Block and Beats

Station	Blocks	Beats	Out Posts
North Nandi Forest	Teresia	Teresia	Teresia
	North Nandi	Kiptangus	Kiptangus
		Septonok/Station	Station
		Kipsamoite	Kipsamoite
			Kamwega
		Kapchepkok	Kapchepkok
		Mwein	Mwein

2.2.2 Excisions

Since gazetttement, a total of 1,194 Ha have been excised, including part of the nature reserve; Kaptich 943 Ha, Kombe (1) 168 Ha and Kombe (11) 83 Ha. Of the present gazetted forest area (10,500.7 ha), approximately 8,000.0 Ha is indigenous closed-canopy forest, the remainder consisting of plantation 850.6, grassland 40.2, wetland 149.0 Ha. Nyayo Tea Zone 410.0 Ha and encroachment 1050.9 Ha. All areas outside the Nature Reserve were originally slated for conversion to plantation forest, but this has not taken place

2.3 Biophysical Descriptions

2.3.1 Topography

North Nandi forest lies between 1900m to 2250 m ASL. The forest area is hilly and underlain by outcrop of basement rock system that is distinct in the North. The topography is suitable for growth of natural forest, which covers an estimated 80% of total land area acts as watershed for numerous rivers.

In the intervention zone, there are four distinct features namely; the rolling hills to the west, adjacent to Kakamega forest, the Kapsabet plateau, the highlands and to the East Kingwal swamp in Baraton/Chepterit area.

2.3.2 Climate

The climatic condition of the Mau forest complex region is influenced by its altitude, which ranges between 1970m to 2900m above sea level. The climate around North Nandi forest whose altitude is between 1700m to 2130m is influenced by winds and humidity that prevail from Indian Ocean and the Congo rain forest through South-Westerly winds from Lake Victoria Basin. The mean annual temperature ranges between a minimum of 20.0 0C and a maximum of 30.0 0C. The climate is ideal for dairy and Agricultural farming activities.

2.3.3 Rainfall

North Nandi forest has two distinct rainy seasons with the long rains occurring in the months of March to June and the short rains from August to December. The mean annual rainfall range is between 1200mm to 2000mm. The distribution of rainfall is affected by topography and the South-Westerly winds from Lake Victoria Basin.. The dry spell is experienced between December and March. The eastern and north-eastern parts of the County receive the lowest rainfall. About 75% of the County is arable and capable of producing diverse crops such as tree crops, tea, horticulture, pyrethrum, coffee and cereals due to adequate and reliable rainfall (plate 2.1). The County has 7 major agro-ecological zones. The southern parts receiving higher amounts of rainfall of about 1,500mm form the tea belt while the relatively warmer areas of Kipkaren and Kabiyet are ideal for maize and wheat cultivation.



Plate 2.1: Photo of Tea farm adjacent to the forest

The average annual rainfall for the last ten year is 1824.65 mm with the highest being in 2021 when the area received 2855.40 mm and the lowest being in 2020 when the area received 1053.80 mm. The rainfall trends in the areas around the forest reserve for the last 10 years are as shown in the table 2.2 below.

Table 2.2: Rainfall figures for the last 10years

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Month	Amt (mm)	Amt (mm)								
January	69.92	22.12	9.41	63.33	37.50	69.04	23.81	35.5	186.54	30.0
February	12.72	46.85	8.86	16.68	61.60	83.43	48.09	37.5	47.79	100.5
March	166.45	107.91	62.35	82.27	119.22	254.33	60.73	41.0	232.99	64.8
April	334.85	100.33	448.56	271.11	132.96	430.40	154.79	63.5	340.81	264.9
May	151.18	244.38	263.10	234.50	161.54	233.94	225.81	78.0	325.03	152.3
June	121.42	212.47	219.22	132.04	154.16	294.19	185.50	164.1	302.99	134.2
July	120.60	107.30	139.03	185.23	156.56	226.87	199.65	144.8	236.97	60.4
August	305.89	244.27	179.96	166.02	263.22	203.44	220.19	126.70	358.46	213.9
September	255.27	159.53	89.90	181.56	243.10	88.93	224.18	119.50	361.02	176.9
October	189.64	220.15	195.99	136.70	215.61	138.43	311.76	215.40	254.54	81.1
November	150.91	81.67	150.08	108.04	145.64	53.73	216.88	66.70	122.78	59.9
December	162.18	30.24	83.89	34.36	32.39	109.79	225.73	24.60	85.48	67.4
Total	2041.03	1577.22	1850.35	1611.84	1566.96	2186.52	2097.12	1053.80	2855.40	1406.3

Source: Nandi Meteorological office

2.3.4 Geology and soil

The soils are derived from undifferentiated basement rocks and are well-drained, deep red to yellowish red friable sandy clays (Gebreselasse 2011). They are defined as ferralochromic Acrisols and have moderate to low inherent fertility. Sandy and clay loams are the main soil types found in the County but areas such as Kabiyet and Kilibwoni divisions have humic nitisols, which are generally suitable for production of various crops. Other areas like Ngecheck are rocky.

2.3.5 Hydrology

North Nandi Forest is an important catchment area of major ecological, environmental and economic importance to the country. It is the main source of permanent rivers, namely; Kipkaren, Kingwal and Kingwal swamp as shown in Figure 2.2.?? Permanent streams can also be found all over the district but are concentrated in Kilibwoni division. These resources can provide adequate quantities for domestic, livestock and industrial use.

However, there is limited access to safe and clean sources of water for domestic use. Over three-quarters of the households have restricted access to improved water points, especially piped sources. The rest of the population utilizes water mainly from polluted streams found all over the County.



Plate 2.2: Epeso Water Source highly polluted by livestock

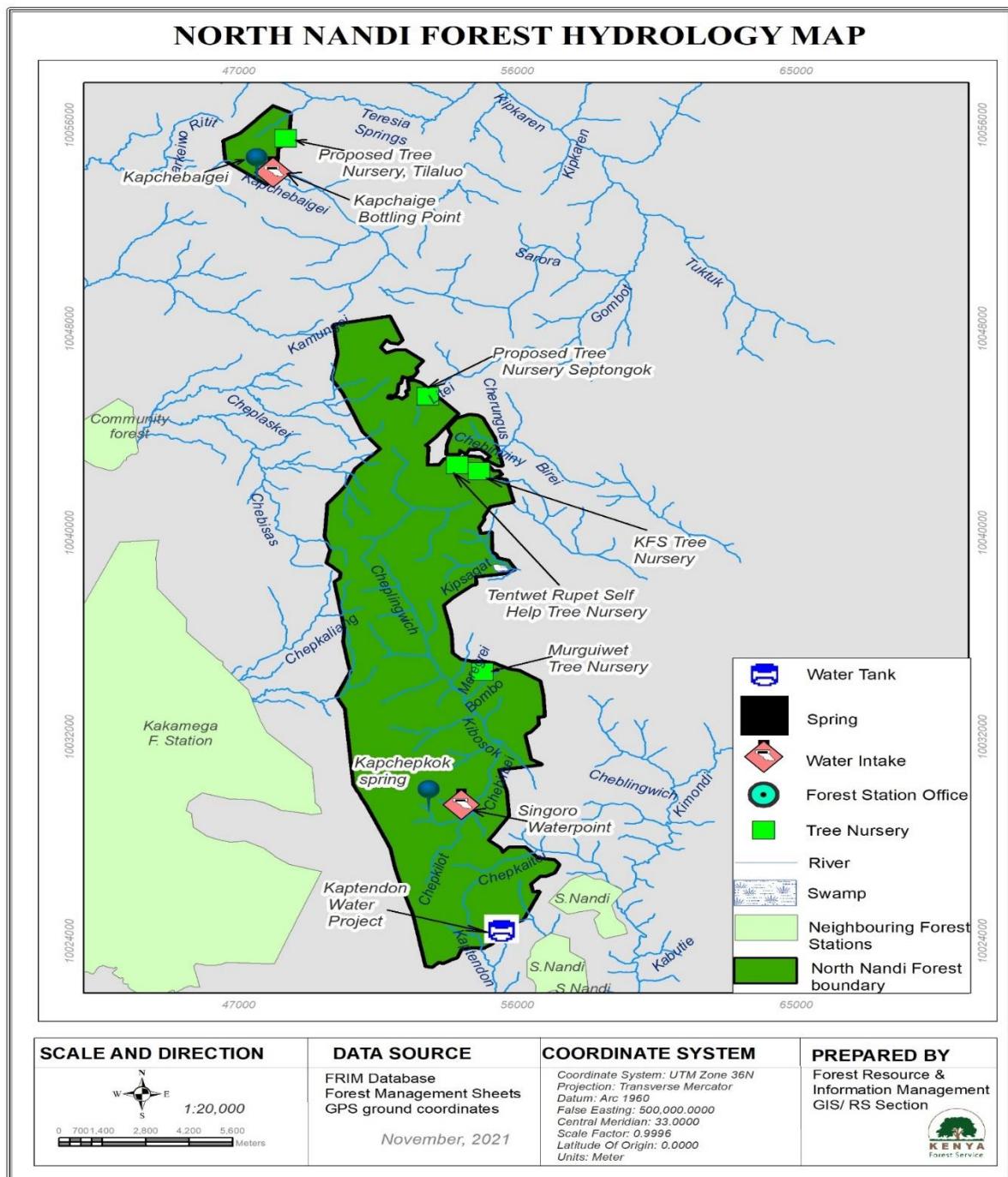


Figure 2.2: Hydrology Map of North Nandi Forest Station

2.3.6 Water Easements within North Nandi Forest

There are several existing Water abstractions for the community water projects from rivers originating from the forest such as Chemogonja, Kibosok, Chebirirbei, Epeso, Kipsasuron, Kipsuswai and **Teresia??** as shown in Table 2.3 is a list of water projects, sources and number of beneficiaries. **Plate 8??** is a photo of Birei river which is contaminated but a good bird watching site. At the time of reviewing the plan it was confirmed that there was no illegal water abstraction in the forest. **The plate referenced is 8 or 2.3? Harmonize.**

Table 2.3: Main Rivers, tributaries Water projects in North Nandi forest

No.	Name of project	Name of river or intake dam	No. of beneficiaries	Remarks
1	Kaptendon Water Project	Chemogonja Stream	280	Operational
2	Kiborgok Water Project	Chemogonja Stream	80	Operational
3	Kombe Water Project	Kibosok Stream	200	Operational
4	Kaptobongen Water Project	Chebirirbei	62	Operational
5	Kapchepkok Water Project	Epeso Stream	150	Operational
6	Tangula Water Project	Kipsasuron Stream	Data not available	Operational
7	Murkuywet (Tabolwa) Water Project	Kipsuswai Stream	128	Operational
8	Teresia Primary Water Project	Teresia Stream	400	Operational (School population)



Plate 2.3: Birei River in Septonok beat – an important Birdwatching site

2.4 Biodiversity description

2.4.1 Description of flora

The North Nandi forest ecosystem with a total area of 10,500.7 (Ha) constitutes an important reservoir for plants and tree species. The forest vegetation zones depend on density of the particular tree species, topography, soil type, soil depth and level of human interference. Domination of some species in some areas has resulted to development of different

vegetation zones within the forest. The dominant tree species in North Nandi forest include; *Prunus Africana* (Tendwet) *Croton macrosytachus* (Tebeswet), *Fagaropsis angolensis* (Noiywet), *Ekebergia capensis* (Araruet), *Schefflera volkensii* (Tinet) *zanthoxylum macropylla* (Sagawatiet) as shown in Table 2.4.

Some of the rare and threatened forest tree species found in North Nandi forest includes endemic tree species such as the *Fagaropsis angolensis* (Noiywet), *Prunus africana* (Tendwet) *Ekebergia capensis* (Araruet). The indigenous trees have a variety of values to the local communities which include but not limited to high quality hard wood timber, wood fuel and source of herbal medicine. A list of common trees with their local names and utilization in North Nandi forest is in Appendix 5

Table 2.4: Indigenous tree species with medicinal value

No.	Local Name	Common Name	Botanical	Uses
1	Mborosiat			Pneumonia , malaria
2	Sakawatiet	Africa Satin wood	<i>Zanthoxylum usambarensis</i>	Chest problems, flu
3	Noiywet (Nandi)		<i>Fagaropsis angolensis</i>	Malaria
4	Mororwet			ECF in cattle
5	Munyama (Luhya)	Natal mahogany	<i>Trichilia emetica</i>	Deworming animals
6	Kipkoskosit			Pneumonia
7	Kosisitiet (Kipsigis)	Leave buckthorn	<i>Rhamnus prinoides; Rhamnus staddo</i>	Women fertility
8	Seet (Nandi)	Peacock flower	<i>Albizia gummifera</i>	Cancer
9	Murguiwet(Nandi)	East African olive	<i>Olea capensis</i>	Worm treatment
10	Kakarwet (Nandi)	Red-hot-poker tree	<i>Erythrina abyssinica</i>	Mumps
11	Shokhoma	Satin wood	<i>Fagara Macrophylla</i>	Chest pains
12	Simbari (Luhya)		<i>Zanthoxylum milbraedii</i>	Malaria
13	Tebeswet (Nandi)	Broadleaved Croton	<i>Croton macrostachyus</i>	Treatment of Flue
14	Chepkererlong			Cattle
15	Sasurwet (Nandi)	Abysinnia banana	<i>Ensete ventricosum</i>	Wounds, disinfectant
16	Merigit			Skin diseases
17	Siksiket			Epilepsy
18	Kabikeryet			Ulcers
19	Ndagariat			Flue/ coughing
20	Mutereriet	Umbrella tree	<i>Maesopsis eminii</i>	Fever
21	Chesicheyot			Pneumonia
22	Musozo			Common cold
23	Lusoi/ Lusui (Luhya)	Abyssinian diospyros	<i>Diospyros abyssinian</i>	Pneumonia
24	Kuryiot/ Kuriot (Kipsigis)		<i>Vepris nobilis</i>	Cattle
25	Tendwet	Red stinkwood	<i>Prunus africana</i>	Prostate cancer

The North Nandi forest ecosystem have 8000 Ha of indigenous forest for conservation purposes and 850.6 Ha of exotic plantations for industrial forestry. The distribution of vegetation is as shown in the table 2.5 below

Table 2.5: Vegetation distribution in North Nandi forest

Vegetation type	Area (Ha)
Exotic (plantation establishment)	850.6 Ha
Indigenous	8000 Ha
Bamboo	--
Grassland	40.2 Ha
Others:-	
Nyayo Tea Zone Belt	410 Ha
Wetland	149.0 Ha
Encroachment and informal Excisions	1050.9 Ha
Total	10,500.7 Ha

The NTZDA belt was created to protect the forest from encroachment and illegal logging. This was done by planting of 410 ha of 100m width belt of forest with commercial tea along the forest boundary and adjacent to the farmlands after removal of indigenous trees. Presently most of the belt is under tea crop.

2.4.2 Description of the fauna

North Nandi forest is about 80% indigenous forest that is rich in a wide range of fauna ranging from the large to the small mammals, birds, reptiles and a variety of insects.

Mammals

The common mammals include; the Black and white Colubus monkeys (*Colubus guezera*), Blue monkeys (*Cercopithecus mitis*), Red tailed monkey (*Colubus Ascanius*), African giants squirrel (*Protoxerus stangeri*), Porcupines, Warthogs, wild pigs, Dik dik, antelopes, The primates are very common in areas bordering farm lands with the black & white colubus monkey *Colobus abyssinicus* (Koroitiet) and the Sykes monkeys *Cercopithecus mitis* (Chereret) that are widely spread and cause damage to crops. Several small mammals mainly rodents are a common feature throughout the forest boundary and include Rock begger (Keneriet) which are commonly spotted in the forest. Others are squirrels that have been domesticated and have made tree stands sited next to farm lands as their normal habitats from where they cause destruction to food crops. Other small carnivores found in the eco-system include several species of mongoose, and wild dogs- (Suiyot), fox-(lelwot) locally known for attacking homesteads in forest adjacent areas to pounce on livestock such as chicken. Such incidences are however not very frequently recorded. North Nandi forest is also habitat of the

African antelopes i.e. the beautiful Sitatunga *Tragelaphus euryceurus* (Rukutiet) once commonly found in the forest swamps has tremendously gone low and rarely found these days. The Sitatunga together with other antelopes such as the Harvey's Red duiker *Cephalophus harveyi* (Mindet) has been threatened to extinction by illegal hunting and habitat shrinkage. A list of common animals and their local names is in Appendix 2

Amphibians and reptiles

North Nandi forest is also a habitat for amphibians, reptiles. Some of the common amphibians that are found in the forest and swamps include; *Xenus victorianus*, *Bufo soloensis*, *Hyperolius kivuensis*, and *Ptychadena mascareniensis*. The reptiles include *Adolfus jacksoni*, *Mabuya striata*, *Agama kaimose*, *Acontocherus atricolis*, *Chamaeleo ellioti* and *Caususlichten* and *stenii* that are mainly found in rock sites.

Birds

North Nandi forest is an Important Bird area (IBA). The forest is a habitat for globally threatened and restricted range Chapin's Flycatcher *Muscicapa lendu*. Avifauna of North Nandi is similar to the adjacent Kakamega forest mostly comprising of Guinea-Congo forests and Afro-tropical highland. Species of regional concern include African Green Ibis *Bostrychia olivacea*, African Crown Eagle *Stephanaaetus coronatus* Red Chested owl *Glaucidium perlatum*, Thick-billed Hoenyguide *Indicator conirostris* among many others.

To complete the complex food webs and food chains that exist in North Nandi forest, there are a variety insects, while in the major rivers and their tributaries, Aquatic animals that thrive well. In addition, several insects, arachnids and molusca form an integral part of the biodiversity.

2.5 Other Resources

2.5.1 Non wood forest resources

North Nandi forest is endowed with several non-wood forest products that can benefit local community without destroying the forest. The main products include

- Forest grass utilized through grazing in the forest. No cut and carry for farmers practicing zero grazing
- Honey through wild collection and traditional hives. Modern practices through introduction of modern bee hives and harvesting gears has not been introduced in the forest.
- Tree seedlings through collection of wildlings or seed which are sown in the nurseries.
- Mushrooms for domestic use
- Termites for domestic use
- Wild fruits, nuts and berries used mainly by grazers as food and fruits
- Medicinal herbs for curing various diseases and ailments

However, utilization of some of these products is minimal with very few community members practicing bee keeping using the traditional hives, while a few of the old men and women extract herbs for medicinal value. There however exists great potential for extraction, value addition and utilization of the non- wood products in this forest.

2.5.2 Ecotourism sites

The adjacent local communities have attached great value to the forest due to its riches in special interest areas and sites of tourist attractions, cultural, religious, economic and scientific values.

The sites include picnic sites, viewpoints, unique vegetation, ridges and Valleys as can be seen in plate 2.4 & 2.5 below. A list of Ecotourism (potential and existing) sites is in appendix 4



Plate 2.4: Students at Tabolwa Rock picnic site

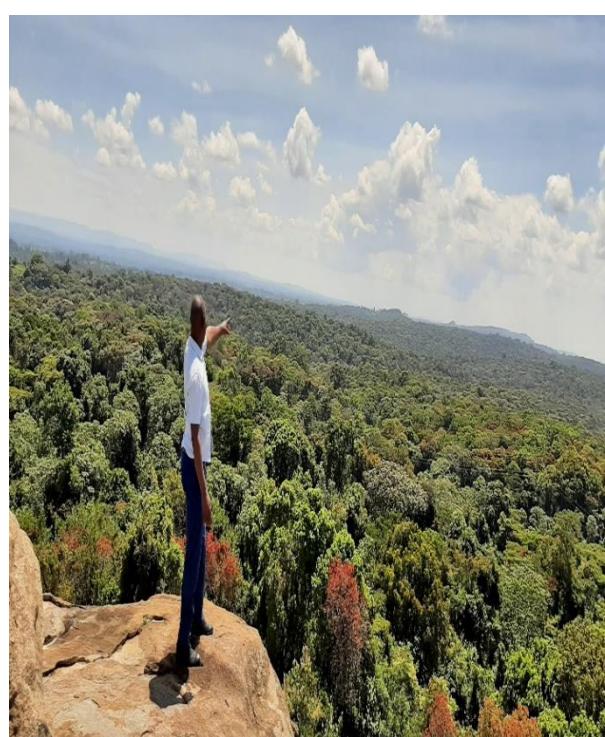


Plate 2.5: Tabolwa Rock view point site



Plate 2.6: Celebrations at Tabolwa View point

NORTH NANDI FOREST RESOURCES MAP

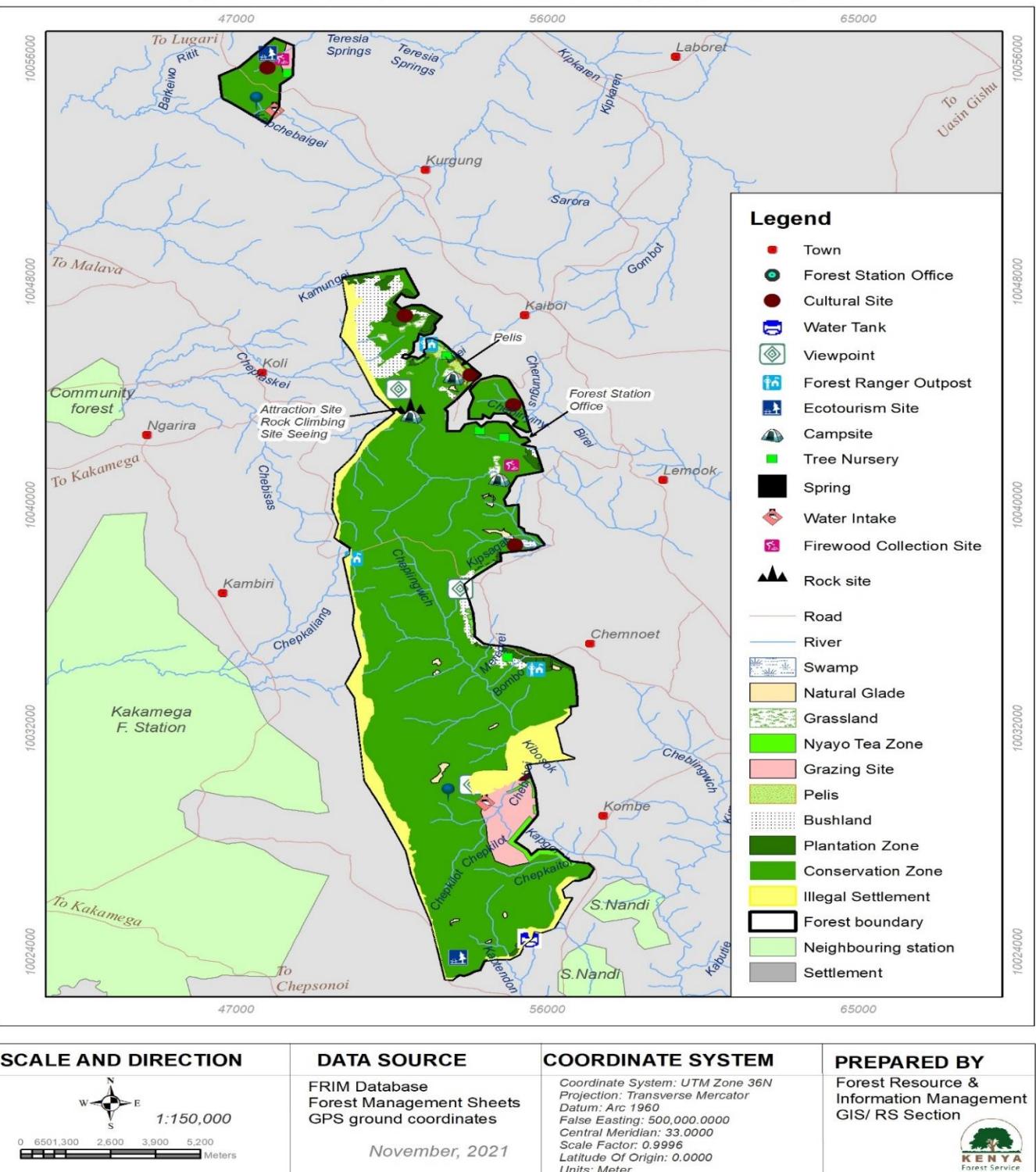


Figure 2.3: Map of Eco- tourism sites in North Nandi forest

2.5.3 Infrastructure and Equipment

The main types of infrastructure in this station include; buildings (offices, residential houses and Forest Rangers' outposts), roads and water intakes. The roads as shown in Table 2.6 run

for about 1-5km and make up about 30.5 km across the forest from the station offices, Forest Rangers posts and connecting to the community settlement areas.

Table 2.6: Status of the roads

No .	Roads	Length – Km	Condition	No. of bridges	Remarks
1	Septonok to Rubet	4	Serviceable	1	Bridge, clearing and drainage required
2	Tabolwa to Kamungei	5	Some sections not passable	1	Grading & murraming required
3	Kabose to Kamwega	2	Not serviceable	Nil	Grading and murraming required
4	Kapchepkok to Kamwega	4	Not Serviceable	1	Grading and murraming required
5	Kapchepkok to Kipsamoite	5	Not Serviceable	1	Grading and murraming required
6	Kimgoror to Koiban	1.5	Serviceable	Nil	Road in good condition
7	Ngatetia to Kipsamoite	3	Serviceable	Nil	Grading and murraming required
8	Chepyegoris to Kamwega	3	Not Serviceable	Nil	Grading and murraming required
9	Kamwega. Kipsuswal, Tabolwa	3	Not Serviceable	Nil	Grading and murraming required
	Total	30.5			

There are several undeveloped security tract running across the forest which if properly developed could assist in management and protection of the forest. The rest of the forest is served by footpaths which are often used by grazers and firewood collectors.

The station does not have a fire watch tower though fire is not a major concern as the forest reserve has a very low fire threat due to the high rainfall in the greater part of the year that ensures the vegetation is evergreen throughout the year.

The station has an office block and staff houses capable of accommodating 4 members and four guard houses of which two are in the station, one in Kiptangus and kipsamoite respectively (See Table 2.7). In terms of water access, the houses have no piped water.

Water supplied to the CFA Tree Nurseries come from the rivers and for the staff houses comes from both the roof water catchment and rivers in the adjacent forest areas.

There are buildings in the station are in dilapidated condition and are not able to adequately serve the housing needs of the staff. This includes; the office, fuel store and residential houses which are in need for renovation.

Table 2.7: List of buildings in the station and their Status at the Forest Station

NO	Type of Building / Reg No	CURRENT STATUS/Remarks	Estimated budget/ cost for repair/ maintenance
1	Office Block 4695	In good condition but needs renovation	300,000
2	Staff House 4684 (Station) Class 9	In good condition but needs renovation	200,000
4	Staff House 4685 (Station) Class 9	In good condition but needs renovation	150,000
5	Staff House (Kiptangus)	In good condition but needs renovation	100,000
6	Staff House 4492 (Kipsamoite) Class 9	In good condition but needs renovation	100,000
7	Forest Guard House 3642 (Station)	Habitable but needs repairs	100,000
8	Forest Guard House 3900 (Station)	Habitable but needs repairs	100,000
9	Forest Guard House (Station)	Habitable but needs repairs	100,000
10	Forest Guard House (Station)	Habitable but needs repairs	100,000

Table 2.8: Proposal list of CFA on buildings requirement

No.	Type of Building / Reg No	CURRENT STATUS/Remarks	requirement	Cost estimates
1	Office	0	3	2 m
2	Resource Centre	0	1	10m
4	Eco-lodge	0	1	10m
5	Camps sites	0	2	5m
6	Toilets/bathrooms	0	3	1.5m

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Table 2.9: List of vehicles, equipment and tools for Forest station

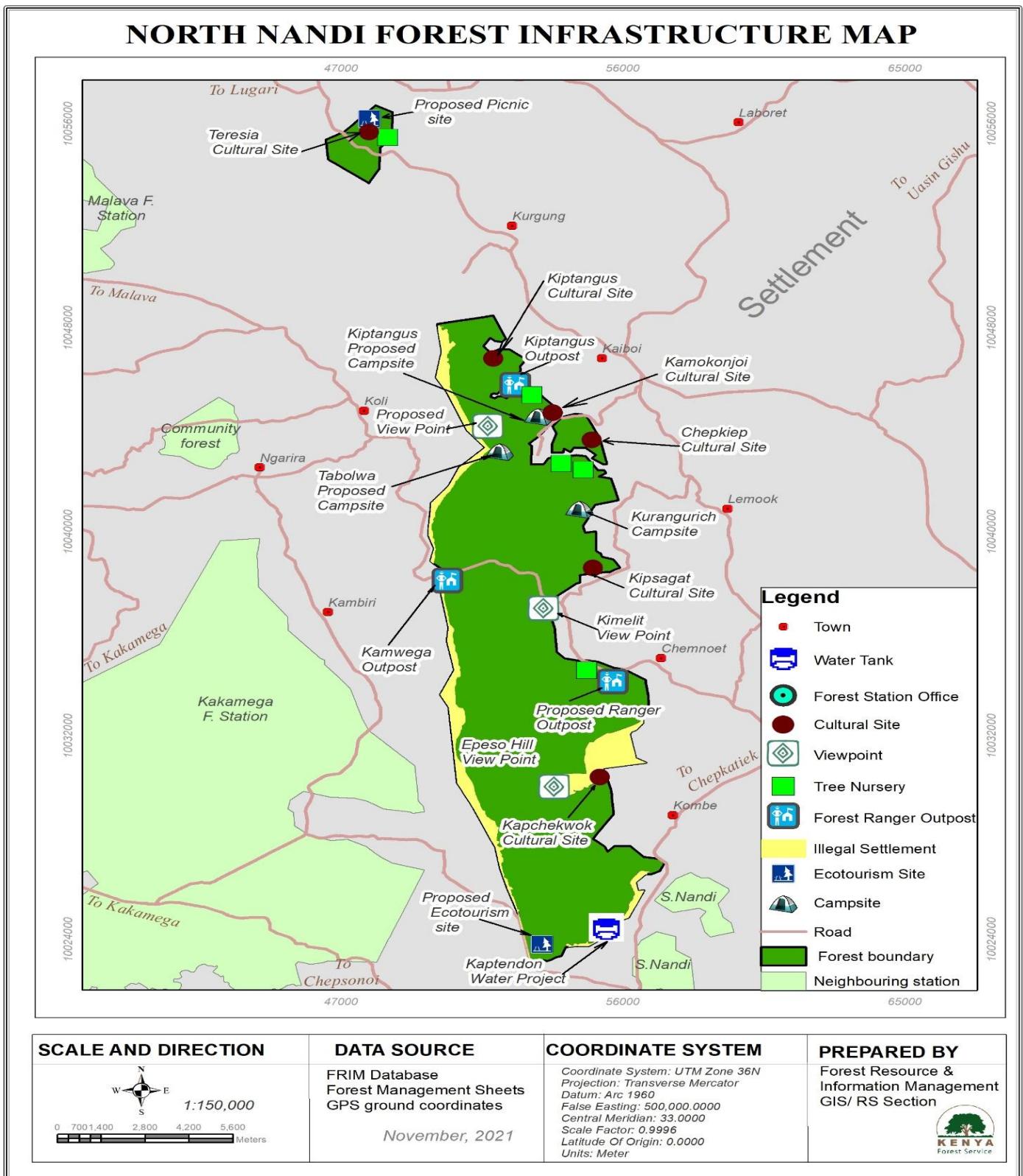
	Equipment	No. in stock	Requirement	Remarks
1	Vehicles	2	1	1 – serviceable, 1 – requires engine overhaul
2	Bulldozers(others)	0	0	Londiani Road Unit can provide when necessary
3	Tractor	0	0	Nandi CFC can provide when required
4	Lorries	0	0	Nandi CFC can provide when required
5	Motor cycles	0	4	To include this in the annual budget
6	Bicycles	0		Not required
7	Pangas			Required for Tree Nursery work
8	Pruning saws	2	20	Required for Tree Nursery, silvicultural treatment of plantations etc.
9	Jembes	0	4	Required for Tree Nursery work and repair of roads
10	Fork jembes	0	4	Required for Tree Nursery work and repair of roads
11	Wheel barrows	2	4	Required for Tree Nursery work and repair of roads
12	Felling Axe	0	2	Outdated
13	Shovels	0	4	Required for Tree Nursery work
14	Pruning knives	0	5	Required for Tree Nursery work
15	Secateurs	0	4	Required for Tree Nursery work and for

	Equipment	No. in stock	Requirement	Remarks
				maintenance of flowers in Office compound
16	Buckets	0	2	Required for Tree Nursery work
17	Grass slashers	1	6	Required for Tree Nursery, Office compound and Rangers camps
18	Watering cans	1	4	Required for Tree Nursery work
19	Knap sack pump	1	2	Required for Tree Nursery work
20	Horse pipe	1	3	Required for watering in Tree Nursery
21	Water tanks	2		Required for water storage in Tree Nursery
22	Sprinklers	0	6	Required for watering in Tree Nursery
23	Type writers	0	0	Out dated computers being used
24	Office computers	0	2	Required for office work
25	VHF	0	0	Mobile phones being used instead of VHF
26	Printers		1	Required for office work

Table 2.10: Proposed CFA List of vehicles, equipment and tools

S/NO	EQUIPMENT	REQUIRED	EXISTING	REMARKS
1	Vehicles	2	Nil	For patrols and any necessary movements
2	Motor cycles	3	Nil	For easy access on non-passable paths
3	Pangas	10	Nil	To clear bushes in preparation of nurseries
4	Pruning Saws	20	Nil	To be used in pruning season
5	Jembes	10	Nil	For seed bed preparation
6	Fork Jembes	5	Nil	Assist where murram is required in large quantity
7	Wheel barrows	4	Nil	To ferry seedlings, soil and manure
8	Felling Axes	2	Nil	To be used in felling cross cutting allen trees/branches
9	Shovels	4	Nil	For nursery and road repair work
10	Pruning Knives	10	Nil	During pruning season
11	Secateurs	5	Nil	Nursery work
12	Buckets	4	Nil	For watering the seed beds
13	Slashers	10	Nil	Clearing the grass in Nursery and Office compound.
14	Watering Cans	4	Nil	Watering seedlings in nurseries
15	Knap sacks pumps	4	Nil	Spraying chemicals for control of diseases and pests
16	Horse pipes	2	Nil	To transfer water to where required
17	Water Tank (5000l)	2	Nil	Preserve/store water to be used when required
18	Sprinklers	3	Nil	To assist spray the seedling at a wider range
19	Desk tops	2	Nil	Office use
20	Laptops	2	Nil	Office use
21	Camera	2	Nil	Office use
22	Office table	2	Nil	Office use
23	Secretarial table	1	Nil	Office use
24	Printers	1	Nil	Office use
25	Projector	1	Nil	Office use
26	Office Cabinet	1	Nil	Office use
27	Office cash safe	1	Nil	Office use

Figure 2.4: Map showing infrastructure in North Nandi forest



2.5.4 Human Resources

The staffing levels of North Nandi forest is inadequate as compared to the huge area it covers (10,005.7 Ha). The station is manned by one Forest Manager, one Assistant Forest Manager and 14 Forest Rangers that are in charge protection and policing of the forest. There is therefore need for immediate recruitment/posting of staff to ensure efficient management of forest station

The current staffing status and requirement in the station is shown in the table 2.11 below.

Table 2.11: Current staffing status and the immediate recruitment needs

No.	Designation	Current Number	Optimum No.	Variance or deficit
1	Forest Station Manager	1	1	0
2	Assistant Forest Station Manager	1	1	0
3	Sgt forest Ranger	0	1	1
4	Cpl Forest Ranger	1	2	1
5	Constable Forest Rangers	13	24	11
6	Records Management Assistant	0	2	2
7	Driver	0	1	1
8	Office Messenger/cleaner	0	1	1
9	Tree Nursery Headman	0	1	1
10	Tree nursery attendants	0	10	10
	Total	16	44	28

Source: Records of KFS North Nandi Forest Station 2023

Table 2.12: Proposed CFA staff recruitment needs

No.	Designation	Current Number	Optimum No.	Variance or deficit
1	Manager	Nil	1	NA
2	Accountant	Nil	1	NA
3	Auditor	Nil	1	NA
4	Coordinator	Nil	1	NA
5	Secretary	Nil	1	NA
6	Receptionist	Nil	1	NA
7	Support Staff	Nil	5	NA

2.6 History of the Forest

2.6.1 Pre-colonial period

During the pre-colonial period, North Nandi forest was managed by the community through traditional Nandi customs. The local community attached great importance of conserving the forest because of its cultural, social, religious and economic importance to the community. The traditional chiefs and council of elders played a great role in the management, utilization and conservation of the forest resources which resulted to its sustainable management.

2.6.2 Colonial Period

During the colonial rule, the forest station was managed by colonial foresters. Decisions on management and utilization of the forest resources were made by the foresters and the local community had no role in the management of the forest. It was during this time that forest villages were created with intention of providing cheap labour for forest operations.

2.6.3 Post Independence period

In postcolonial times, the management of the North Nandi forest was vested upon the Kenyan Forest department and foresters continued with the same forest management style similar to that of colonial period. During this time, local community members were still denied access and or any role in the management of the forest resources which resulted in the assumption that the forest resources either belonged to the forester in-charge or the Government. This system of forest management led to destruction of forest resources in most parts of the country in the 80s and 90s either by squatter invasion, illegal excision and other forms. However, although North Nandi is mainly a conservation forest, it was not spared from excessive destruction as we have thousands of illegal settlers in the forest. Just like other forests in other parts of Country, between 1988 and 1989 all the people that were living in the village that had existed in the station were removed.

2.6.4 Present Period

The Forest Conservation and Management Act 2016 and enactment of the Forests Act No.7 of 2005 and other subsidiary legislations have changed the manner in which forests are managed in Kenya. The Act recognizes the role of participatory forest management in sustainable management and utilization of forest resources. The community living adjacent North Nandi forest through NNECFA and other stakeholders are being involved in the management of the forest. The CFA is involved in forest protection, forest policing and in rehabilitation of degraded indigenous forest sites

2.7 Nandi North Escarpment Community Forest Association (NNECFA)

2.7.1 Overview

The Nandi North Escarpment Community Forest Association was initiated in September 2021 with the purpose of participating in the management and conservation of North Nandi Forest. The Association was established by forest adjacent community members from Nandi and Kakamega Counties. The North Nandi Forest being part of the Mau Complex as Kiptuiya, Kombe, Kaptel, Sang'alo, Kebulonik, Kurgung, Kamung'ei, Kipngoror, and Chepterwai Locations.

The predecessors are North Nandi CFA and Chesumei CFA whose intention was to participate in the management and conservation of North Nandi Forest. The CFA had even signed an agreement with KFS. However, due to leadership wrangles and failure to file returns, the CFAs became dormant in 2016. As a result of this, in 2019 the community adjacent to the forest decided to come together and form Nandi North Escarpment Community Forest Association.

The CFA has its constitution that governs how each member of association should conduct himself/herself. The CFA has representatives from all user groups in the forest from six forest beats namely; Septonok, Teresia, Kiptangus, Kipsamoite, Kapchepkok and Mwein

The key objective is protection, conservation and sustainable utilization of the natural resources of the forest such as Herbal medicine, rivers, streams, glades and wildlife habitats.

The Nandi North Escarpment Community Forest Association (NNECFA) has been registered with Registrar of Societies, under Cap 108. The CFA will enter into Forest Management Agreement with Kenya Forest Service once the PFMP is approved by CCF.

2.7.2 Vision

Opening statement??

“To have an empowered community that would effectively participate on participatory forest management”

2.7.3 Mission

To support and promote sustainable management of Natural Resources in North Nandi Forest through planning, implementation, advocacy and transformation of community for equitable sharing of accrued benefits among all stakeholders

2.7.4 Goals and Objectives

- Create awareness on importance of participatory forest management
- Capacity building of members so as to effectively participate in participatory forestry management initiatives
- To enhance sustainable forest management practices in North Nandi
- To develop and disseminate information on forest issues
- To strengthen the collaborative engagement of NNECFA with the government, other local CSOs, international organizations and the private sector in sustainable forestry management
- To advocate for the development and implementation of favourable policies and laws for sustainable management of forestry resources in Kenya

2.7.5 CFA Main Activities

Some of the projects currently being carried out by Nandi North Escarpment Community Forest Association (NNECFA) include; raising awareness on the importance of the forest, catalysing environmental action among forest user groups and forest restoration programmes

(Seedlings production and tree growing). With assistance from GBM and Kenya Forest Service (KFS) and other well-wishers, The former CFA has successfully managed to plant 141 Ha of indigenous trees in 2018/19 through ECOSIA funding. The CFA members were among those that were trained on PFMP that led to development of a Management Plan for the forest in 2016 that is now being reviewed.

2.7.6 Membership

The association has three (3) types of membership;

- a) Ordinary members
- b) Community members
- c) Cooperate members
- d) Associate member
- e) Honorary Member

Eligibility for membership

- a) Must be legally registered user group
- b) The User group must show evidence of involvement in environmental conservation
- c) Be willing to pay membership fees that will be decided by members during AGM from time to time
- d) Must subscribe to the Association's constitution and core values

2.7.7 Governance

- The CFA has executive committee composed of Chairman, Vice Chairman, Treasurer, Secretary, Vice Secretary, youth and Women rep
- Committed to holding regular and transparent elections as per their constitution.
- Works alongside the Kenya Forest Service (KFS) to maintain and conserve the forest.
- Monitors and controls all community users of the forest

2.7.8 Key achievements to date

The following are some of the achievements of Nandi North Community Forest Association (CFA) to date;

1. We have revamped the CFA
2. We have created awareness to the community in monitoring of forest status
3. Participatory in Forest management plan.
4. Livelihood improvement.

- 2.7.9 Core values
- We are community with customary rights
- We value others, animals and plants
- We are stewards of God's creation
- We value partnerships

2.7.10 Motto

Thorough protection, conservation and sustainable utilization of Natural Resources for the betterment and empowerment of the community for present and future generation

2.7.11 Membership

The association has about 1,628 members as shown in table 2.13 below and figure 2.5. The membership to the association comprises of the following:

- Ordinary members
- Community members
- Cooperate members
- Associate member
- Honorary Member

Table 2.13: Membership distribution by gender

Category	Number
Men	853
Women	657
Youth	113
People with Disability	5
Total	1,628

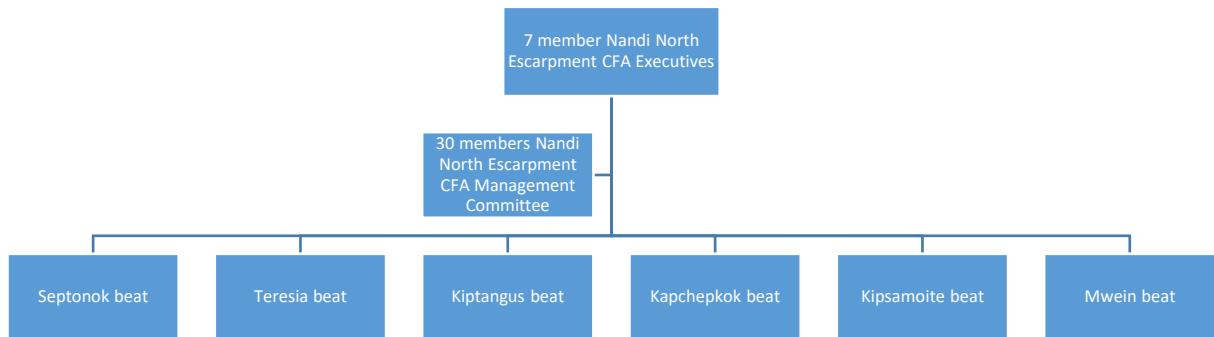


Figure 2.5: The Organizational Structure of the CFA

The membership is comprised of members from nine User groups drawn from the six beats that form Nandi North Escarpment Community Forest Association as shown in table 2.11.

Table 2.14: Composition of Nandi North Escarpment CFA within the Six Forest beats

Name of beat	Name of Forest User Group	Key Interest	Membership			Total	Name of contact person	Tel No. of Contact person
Septonok	Grazers	Grazing	77	13	0	90	Benjamin Tirop	0723907782
	Tree Nursery	Seedlings production	6	3	0	9	David Buluny	0710165762
	Firewood collection	Firewood	3	60	0	63	Clara Jepkirui	0725155786
	Bee keeping	Honey	2		0	2	Nicodemus	0715436427

Name of beat	Name of Forest User Group	Key Interest	Membership			Total	Name of contact person	Tel No. of Contact person
			Men	Women	Youth			
		harvesting					Munai	
	PELIS	PELIS	28	4	0	32	John Ngeny	0727389327
	Herbal medicine	Traditional medicine	2		0	2	Noah Buluny	0727592167
Teresia	Grazers	Grazing	39	4	0	43	Samuel Masie	0711896609
	Firewood collection	Firewood	5	55	0	60	Dorcas Jeserem	0714582397
	Herbal medicine	Traditional medicine	1	2	0	3	Paul Barng'etuny	0791499307
	Water Conservation	Water harvesting	5	15	0	20	Eunice Yego	0710580804
	Sand Harvesting	Sand	1	-	0	1	Shadrack Chirchir	0729844201
	Tree Nursery	Seedlings production	7	3	0	10	Eunice Ruto	0704477314
Kiptangus	Tree Nursery	Seedlings production	10	10	0	20	Philip Biwot	0727511940
	PELIS	PELIS	103	63	30	196	Stanley Kipchirchir	0713190358
	Firewood collection	Firewood	32	166	52	250	Gideon Boit Sang	0723960633
	Forest Conservation group	Rehabilitation of degraded areas	33	3	10	46	Ishmael Steve Kiplagat	0718154822
	Herbal Medicine	Traditional medicine	2	-	0	2		
	Grazing	Grazing	101	27	0	128	Philip Biwot	0727511940
	Sand Harvesting	Sand	4	-	0	4	Ishmael Kiplangat steve	0718154822
Kapchepkok	Water Project	Water Harvesting	2	-	0	2	Obadia Keny	0729359238

Name of beat	Name of Forest User Group	Key Interest	Membership			Total	Name of contact person	Tel No. of Contact person
			Men	Women	Youth			
	PELIS	PELIS	97	9	0	106	Solomon langat	0715629014
	Grazers	Grazing	23	1	0	24	Francis Chumo	0724012783
	Sand Harvesting	Sand	2	-	0	2	Earnest Sitienei	0790682296
	Herbal	Traditional medicine	1	2	0	3	Joseph Ngenoh	0728065336
	Beekeeping	Honey	11	4	0	15	Kiplimo Busienei	0712550887
	Fuelwood collection	Firewood	1	20	0	21	Lucy Jerotich	0725872098
Kipsamoite	Grazers	Grazing	15	31	6	52	Philip Kenduiywo	0720264744
	Firewood collection	Firewood	62	18	0	80	Jonathan Yego	0718877688
	Tree Nursery	Seedlings production	2	4	0	6	Clementina Ngisirei	0714295895
	Bee keeping	Honey harvesting	4	4	0	8	Rosa Jelagat	0705869311
	PELIS	PELIS	14	25	2	41	Sigey Nahashon	0714529038
	Sand harvesting	Sand			5	5	Raphael Kemboi	0717139885
Mwein	Grazers	Grazing	105	27	8	140	Isaac Koech	0720683011
	Firewood collection	Firewood	5	55	0	60	Lorua Kwendoh	0714451797
	Tree Nursery	Seedlings production	1	-	0	1	Philemon Kibet Kmboi	0710940700
	Bee keeping	Honey harvesting	1		0	1	Emily Minayo	0725937435
	Sand Harvesting	Sand	1		0	1	Nicholas Rop	0713363751
	Water	Water	5	10	0	15	David	0727615270

Name of beat	Name of Forest User Group	Key Interest	Membership			Total	Name of contact person	Tel No. of Contact person
			Men	Women	Youth			
	conservation	harvesting					Kiptoo	
	PELIS	PELIS	45	19	0	64	John Akenga	0722209332

CHAPTER THREE

SOCIO-ECONOMIC STATUS OF THE FOREST ADJACENT COMMUNITIES

3.1 Methodology

3.1.1 Selection and Training

The socio-economic survey was conducted in forest adjacent communities in North Nandi Forest Station. The purpose of the survey was to find out the types of activities that the communities are engaged in, the economic status and the education levels of the families living adjacent to the forest which has a direct correlation with their interaction with the forest.

The survey comprised of community sensitization exercise where members of LPT were informed of the impending exercise and its importance. They were taken through the key questions and their relation to the forest, and criteria for selection of enumerators for the survey. Training of enumerators was conducted on 10th November 2021 where participants were taken through data collection protocol, sampling procedure, use of Kobo collect Kit application on their smart phones, and how to submit the filled forms. Questionnaire pre-test was also undertaken on site where enumerators from different forest beats interviewed each other and gave feedback for correction and incorporation into the forms as shown in plate 3.2 below



Plate 3.1: Training of enumerators



Plate 3.2: Pairing of enumerators for pretesting of questionnaires

3.1.2 Population

Nandi North has a population of 166, 171 persons, of whom 82,512 are male, while 83,656 are female and 3 intersex. The number of households are 35, 257 as per the Kenya National Bureau of Statistics (KNBS) Census 2019. There is an average of 5 persons per household. (Persons/sq./km...Give implications in relation to forest conservation)

3.1.3 Sampling Area

This rapid assessment was undertaken using simple sampling technique, where houses adjacent to the forest within 5km radius was selected and thereafter other houses were selected at random and geo-referenced as shown in Figures 3.1 & 3.2. The sampling was undertaken in the following locations; Sang'alo, Kimng'oror, Kombe, Kiptuiya, Kebulonik, and Kiptangus as shown in Table 3.1, and these was also reduced to sub-locations as shown in Table 3.2 and down to forest beats as shown in Table 3.3.

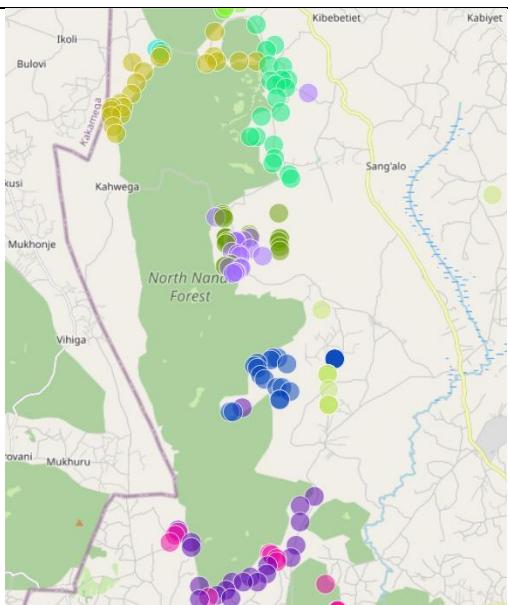


Figure 3.1 Street map on sampled areas

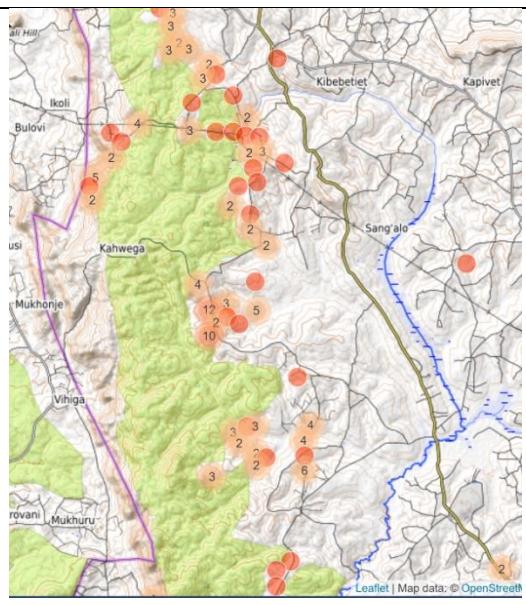


Figure 3.2: Topographic map of sampled areas

Table 3.1: Locations sampled

Location	Frequency	Percentage
Sang'alo	69	30
Kimng'oror	48	21
Kombe	41	18
Kiptuiya	37	16
Kebulonik	18	8
Kiptangus (Kurgung)	17	7

Table 3.2: Sub-locations sampled

Sub-location	Frequency	Percentage
Kombe	40	17
Kipsamoite	39	17
Kiptuiya	37	16
Kaptel	23	10
Kiptangus	16	7
Kamwega	15	7
Rubet	15	7
Sanga'alo	13	6
Kebulonik	6	3
Koiban	5	2

Table 3.3: Forest Beats Sampled

Forest Beat	Frequency	Percentage
Teresia	48	21
Kapchepkok	41	18
Kipsamoite	40	17
Septonok/Station	40	17
Mwein	37	16
Kiptangus	24	10

3.2 Household sampled

The number of Household sampled was 230, out of which 168 were male headed and 61 female headed as shown in Table 3.4. In terms of gender, this translates to 73% male headed household heads and 27% female headed household heads. The age structure of respondents ranged from 33 to 92 years and the average was 49 years. The average household in North Nandi was 5 persons, and with 3 female and 2 male. Each household had an average of 3 school going children. **Give implications in relation to forest conservation)**

Table 3.4: Households sampled

Gender	Frequency	Percent
Male	168	73
Female	62	27
Total	230	100

3.3 Literacy levels of household heads

Majority (57%) of the household heads have primary school education as their highest level of literacy, 24% secondary school, 9% had no formal education, while 8% had college level and 3% had university level of education as shown in figure.

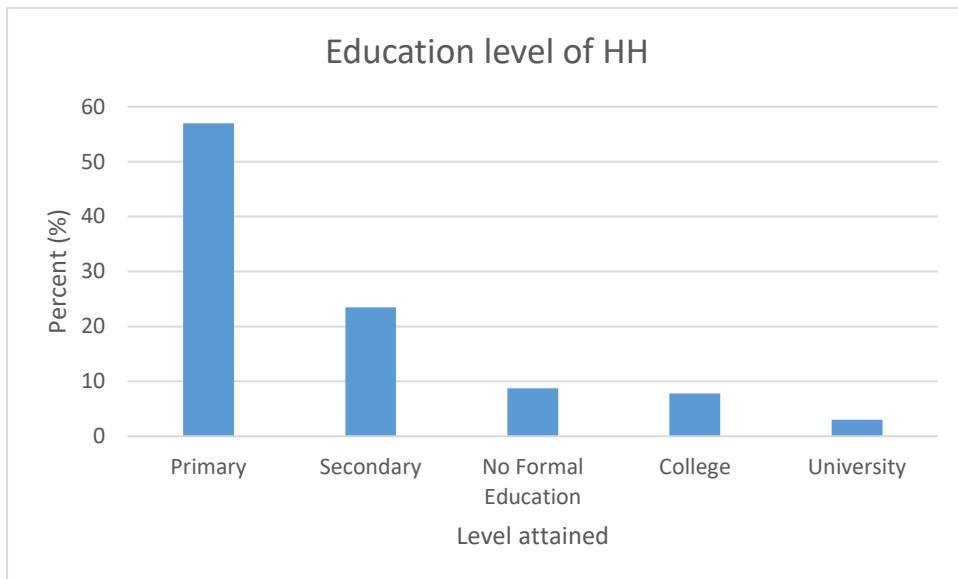


Figure 3.3 Literacy levels of household heads

3.4 Literacy levels of their children

Most (88%) of the respondents had their children attending school while 12% did not. Those in primary school were 43%, secondary 30%, nursery 12%, college 11% and university 4% as shown in figure 3.4 below. Cases of school drop outs due to financial issues, early marriage, early pregnancy and being over age was as reported by 17% of the respondents. **Give implications in relation to forest conservation)**

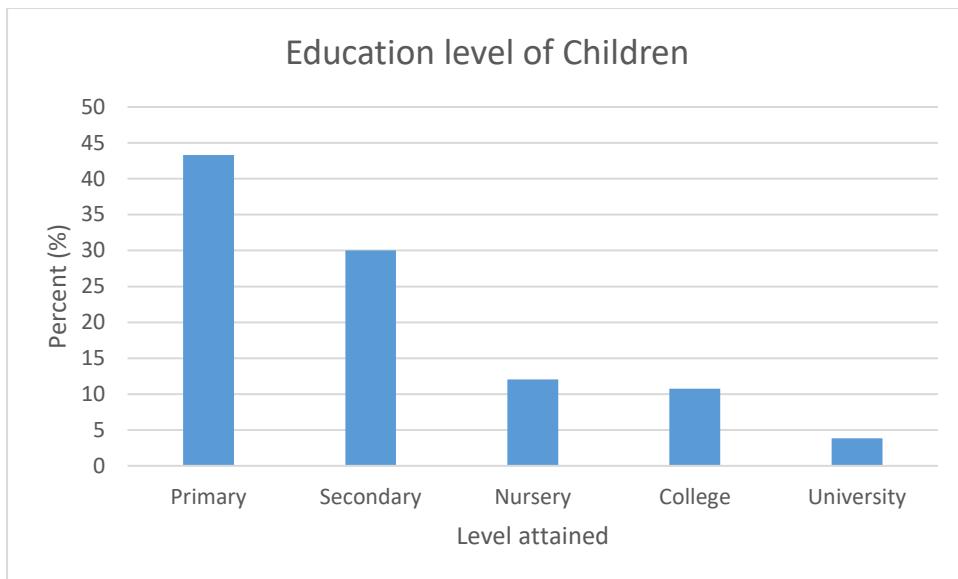


Figure 3.4: Literacy levels of the household heads' children

3.5 Disability

Cases of disability were noted by 8% of respondents and nature of disability was in the form of physical disability 4%, Hearing 2%, Mental disability 1%, and visual disability 1% as shown in Table 3.5. (Give implications in relation to forest conservation)

Table 3.5: Forms of disabilities

Nature of disability	Frequency	Percentage
Physical disability	10	4
Hearing challenge	4	2
Mental Challenge	1	1
Visual disability	1	1

3.6 Land size

In terms of farm sizes, 46% of respondents had one acre and below, whereas 31% had 2-3 acres and 20% had 4-5 acres as shown in Table 3.6. (Give implications in relation to forest conservation)

Table 3.6: Farm sizes

Farm size in acres	Frequency	Percentage
<1	110	46
2-3	73	31
4-5	45	20

3.7 Land tenure and ownership

Land ownership was mainly family held 36%, Private with title deed 31%, Private with no title 23%, and communal 6%, and private with allotment letters 4%, as shown on figure 3.5 below. In terms of land ownership by forest beats, those with no titles were more pronounced

in Kipsamoite followed by Teresia, while family held was more in Kapchepkok, whereas those with title deeds were more in Septonok/station and followed by Mwein. The CFA should devise tree planting and livelihood strategies that respond to the needs and current status of the communities in the respective beats and landownership status.

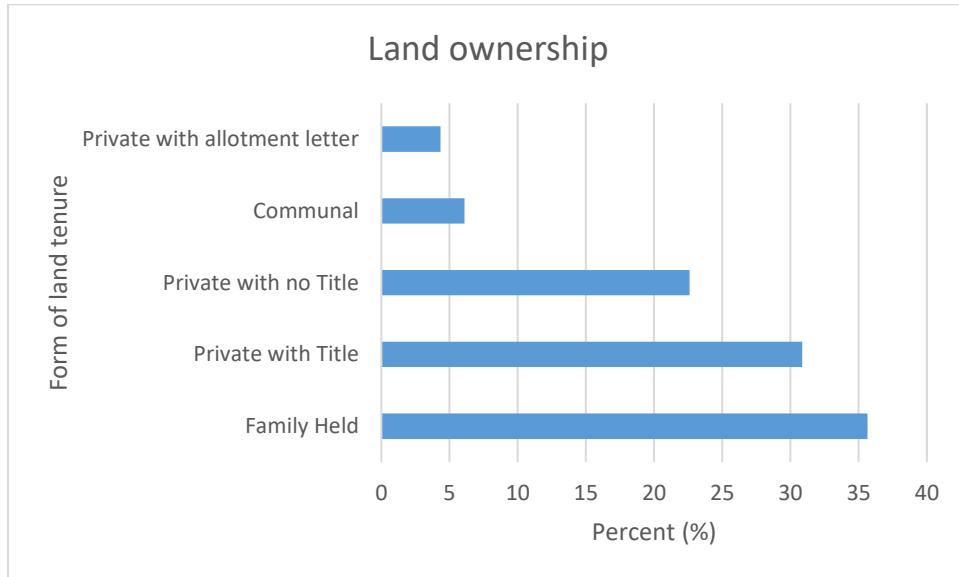


Figure 3.5: Land ownership and tenure status

3.8 House types

The main types of houses found were; 77% were iron roofed and mud walled, 20% were iron roofed and brick walled, 3% were iron roofed and stone walled, and 1% grass thatched and mud walled as shown on figure 3.6 below. (Give implications in relation to forest conservation)

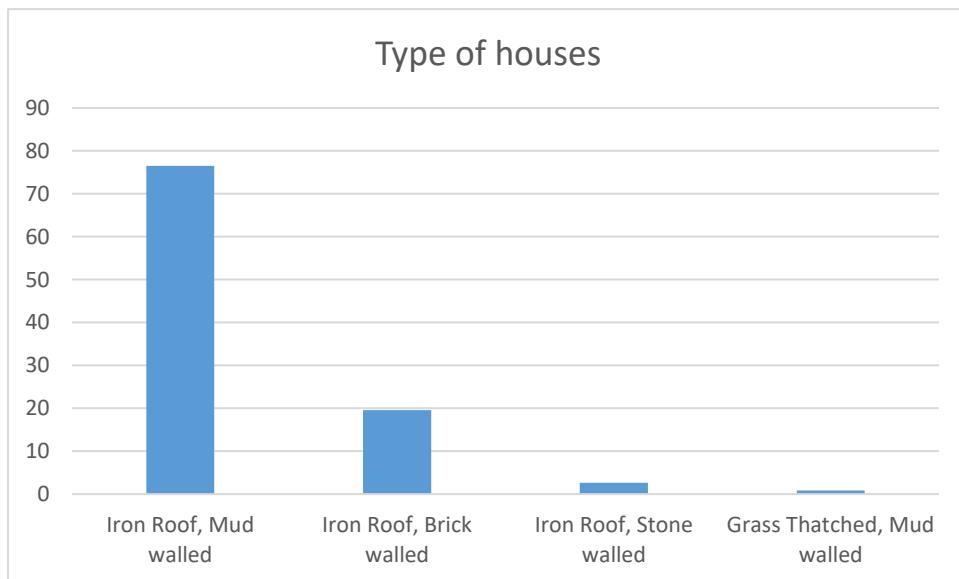


Figure 3.6: Types of houses

3.9 Assets owned

Main assets owned in the households were; radio 32%, mobile phone (mulika mwizi) 23%, TV 14%, mobile phone (smart phone) 10%, motor bike 7%, ox drawn plough 4%, bicycle 3%, water pump 2%, car 2%, Posho mill, Tractor, and Power saw 1% each as shown in Figure 3.7. (Give implications in relation to forest conservation)

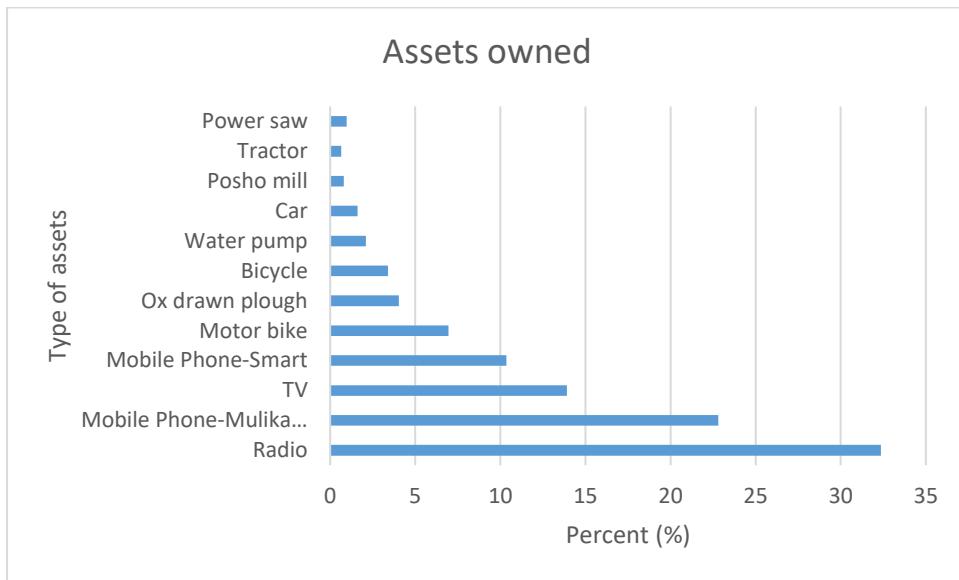


Figure 3.7: Assets owned

3.10 Energy source for cooking

The main source of energy for cooking was firewood 92%, LPGas 6%, Biogas and Charcoal 1% each as shown in figure 3.8. There is heavy reliance on firewood as primary source of energy for cooking which needs to be supplemented with other alternative sources such as LPG and Biogas. The heavy reliance on firewood from the forest (Plate 3.4 &3.5) which is not sustainable as farm sizes are relatively small and characterised with tea farming which does not support tree planting. Hence the CFA needs to promote alternative sources to reduce pressure on the forest.

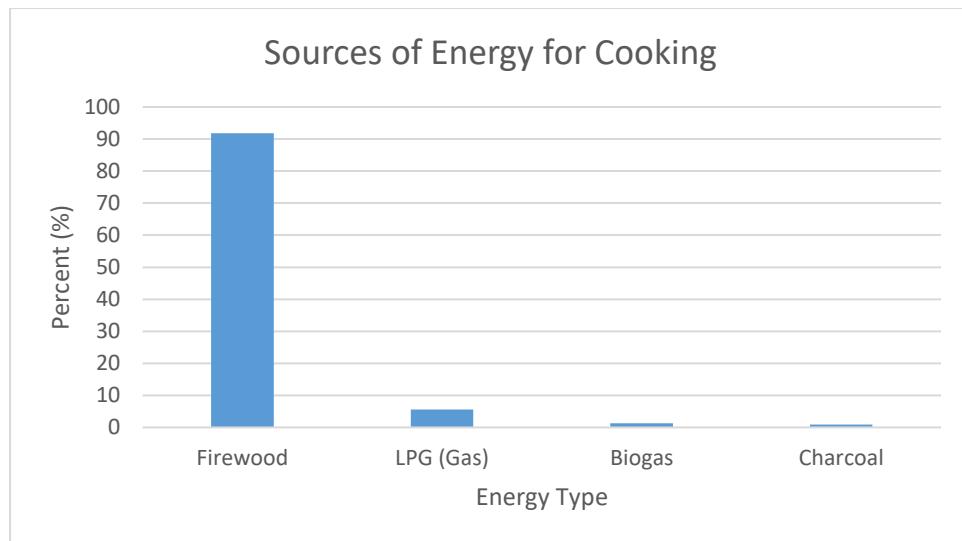


Figure 3.8: Energy sources for cooking



3.11 Firewood head loads used per week

The number of Firewood head loads used per week were 64% used 2-3, 16% used 1, while 14% used 4-5, and 7% used above 5 as shown in Table 3.7. There is a heavy usage of firewood head loads per week which needs to be reduced to at least one head per week to reduce pressure from the forest. These may require enhancing efficiency of the local cooking devices known as *Chepkube* to curb energy losses.

Table 3.7 Firewood head loads used per week

Headloads	Frequency	Percentage
2-3	147	64
1	36	16
4-5	32	14
Above 5	15	7

3.12 Source of firewood

The main source of firewood was, forest 63%, own farm 30%, and purchase 7% as shown in figure 3.9. The average price of the firewood purchased was Kshs. 150. There is heavy reliance on the forest as source of firewood which needs to be checked by the CFA and promote on farm forestry.

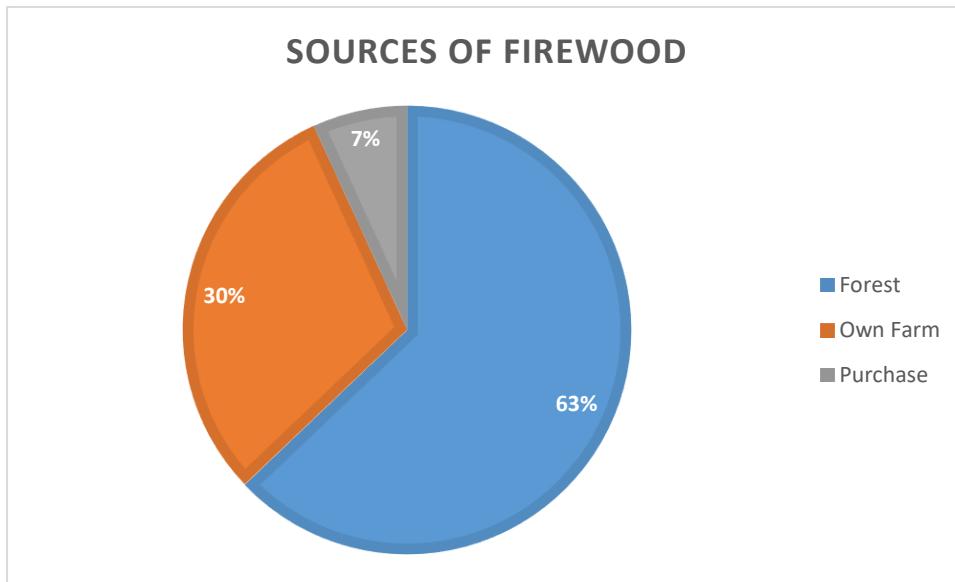


Figure 3.9: Source of firewood

3.13 Energy source for lighting

The main source of energy for lighting was Solar 61%, paraffin 21%, firewood 15%, LPGas 2%, and electricity 1% as shown on figure 3.10. (Give implications in relation to forest conservation)

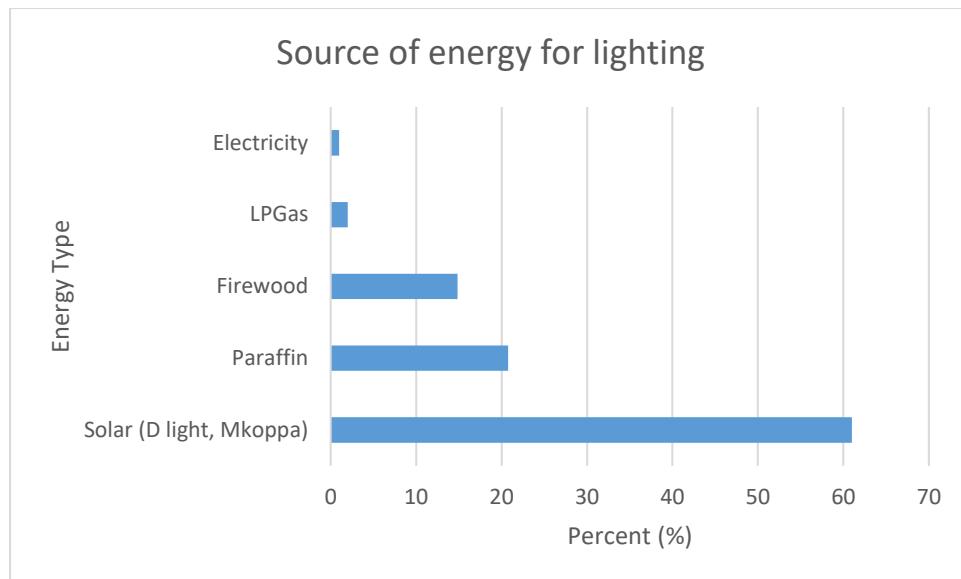


Figure 3.10: Sources of energy for lighting

3.14 Source of energy for warmth during cold seasons

The main source of energy for warmth during the cold season was firewood 65%, and charcoal 35% as shown in Figure 3.11. There is notable rise in use of charcoal during the cold season, and it might be worth assessing whether it comes from sustainable sources or it is from the forest.

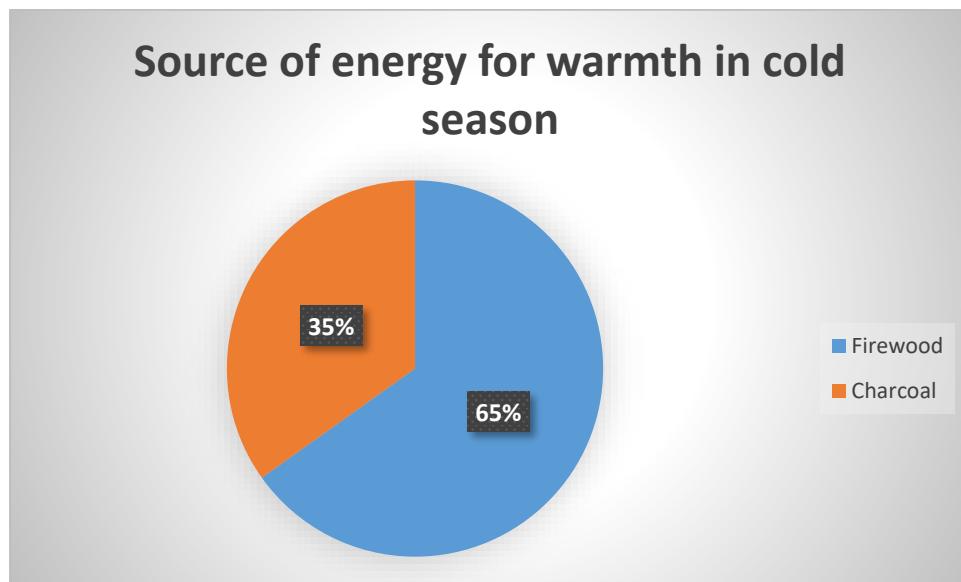


Figure 3.11: Sources of energy used for warmth

3.15 Types of cooking devices

The main type of cooking devices used were Improved Jiko (Chepkube) 55%, three stones 40%, and Gas cooker 5% as shown in figure 3.12. *Chepkube* which is a traditional home made energy saving cook stove is used for cooking, and warming food in other compartments as well as warming water as shown in Plates 3.7 &3.8. It is an energy saving device that needs to be improved further to enhance its efficiency and make provision for a chimney to reduce smoke and improve health. The CFA can promote *chepkube* usage through training of local artisans who can improve coverage from 55% to 90%.

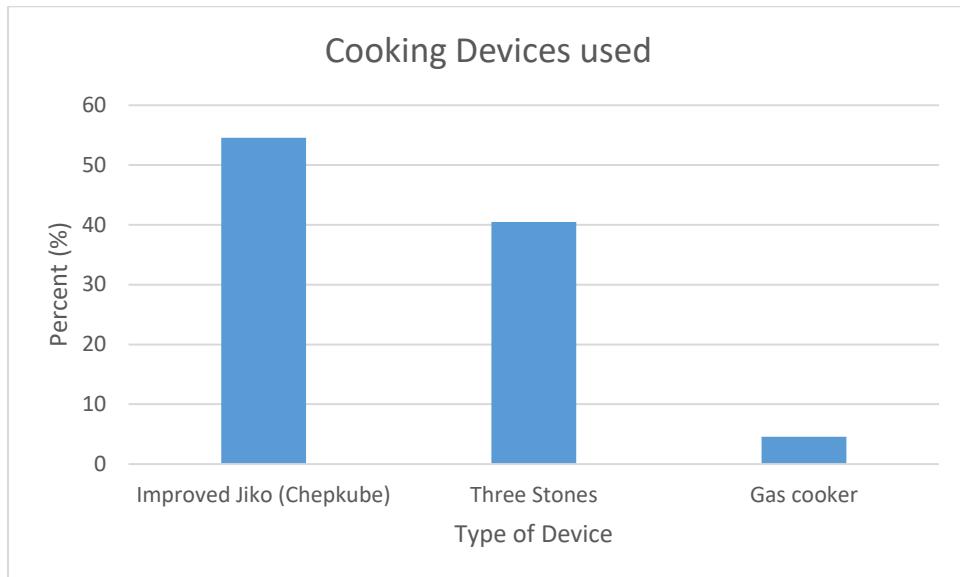


Figure 3.12: Types of cooking devices



3.16 Perceptions on energy-saving technologies

This study has shown that respondents in North Nandi have a high preference for *chepkube* as an energy saving device as opposed to conventional energy saving jikos which had a score of below 0.4%. However, the perception of respondents were that these conventional energy saving devices cook faster 47%, conserve energy 35%, are not good for multi-tasking like *Chepkube* 4%, cumbersome 4%, provide no warmth 4%, not durable , takes too long to light

3% each and its food taste better (not smoky) 1% as shown in Fig. 3.13. (Give implications in relation to forest conservation)

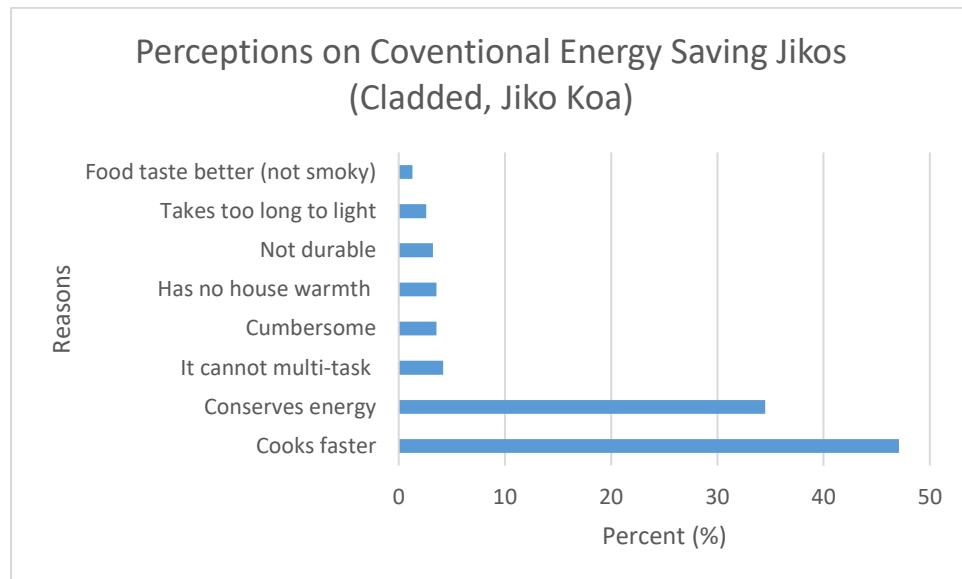


Figure 3.13: Perceptions on conventional energy jikos

In terms of costs, the energy saving devices were considered expensive 49% for some respondents whereas other indicated they were affordable 39%, and only 6% said they were not available. In terms of cost effectiveness only 2% considered them to be so, whereas 1% indicated they are not as shown in Table 3.8. Based on these perceptions on conventional energy saving devices, it would be prudent to enhance efficiency of locally made energy saving jikos and promote them as they will have a buy in of the community and will be easy to sell as they serve all their needs and can multi-task.

Table 3.8: Perceptions on costs of conventional energy saving devices

Costs	Frequency	Percent (%)
Expensive	113	49
Affordable	89	39
Not available	13	6
Cost effective (Value for M)	4	2
Not cost effective	2	1

3.17 Economic Income

3.17.1 Sources of income

The main sources of income was Informal employment 20%, milk sales 19%, Tea farming 19%, Livestock production 15%, sale of surplus subsistence food crop 14%, trade 6%, formal employment 3%, charcoal production, Bee keeping, PELIS and selling firewood 1% each, as shown in figure 3.14 below. (Give implications in relation to forest conservation & livelihood)

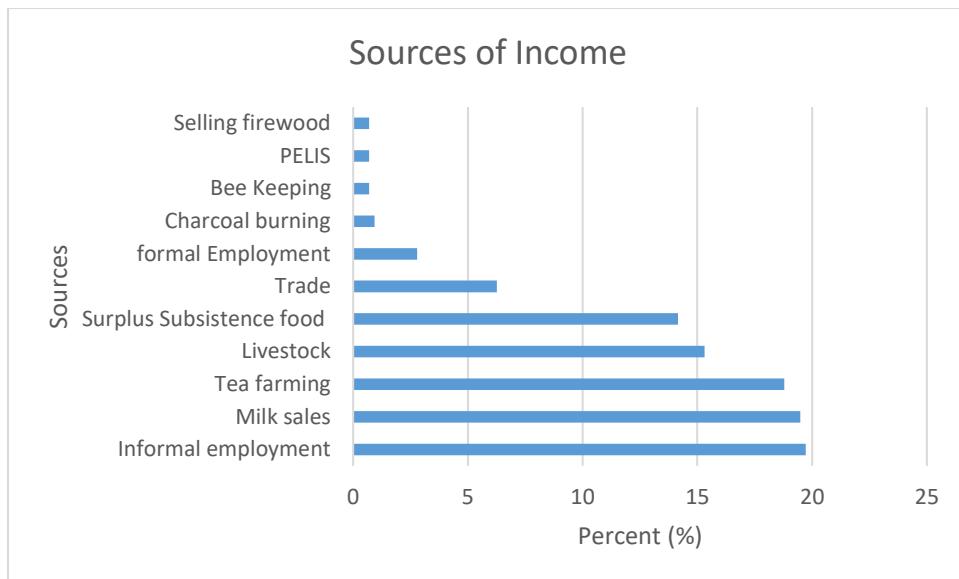


Figure 3.14: Sources of income

3.17.2 Monthly income

Majority (58%) of those interviewed indicated that they earn Kshs. 1-5000 per month, whereas 21% earn kshs. 5001-10,000, and 11% earn Kshs. 10,001-15,000, while 7% earn Kshs. 15001-20,000, and 3% earn Kshs. 20,001-30,000, and only 1% earn above Kshs. 30,000 as shown in Table 3.9 (Give implications in relation to forest conservation and livelihood)

Table 3.9 Household income per month

Monthly Income	Frequency	Percentage
0-5000	133	58
5001-10000	49	21
10001-15000	25	11
15001-20000	15	7
20,000-30,000	6	3
Above 30,000	2	1

3.17.3 Expenditure spent on water and energy

The average monthly income spent per household on cooking energy was 1072. The average monthly income per household spent on water was 338. (Give implications in relation to forest conservation and livelihood)

3.18 Crops grown in the area

The main crops grown in the area were both cash and subsistence crops. The crops include; maize 19%, beans 14%, Tea 12%, Cabbages 9%, traditional vegetables 8%, Bananas 8%, Potatoes 7%, avocado 4%, onions 4%, pumpkins 3%, sweet potatoes 3%, tomatoes 3%, sorghum 2%, passion fruits 2%, carrots and finger millets 1% each as shown in Figure 3.15. (Give implications in relation to forest conservation and livelihood)

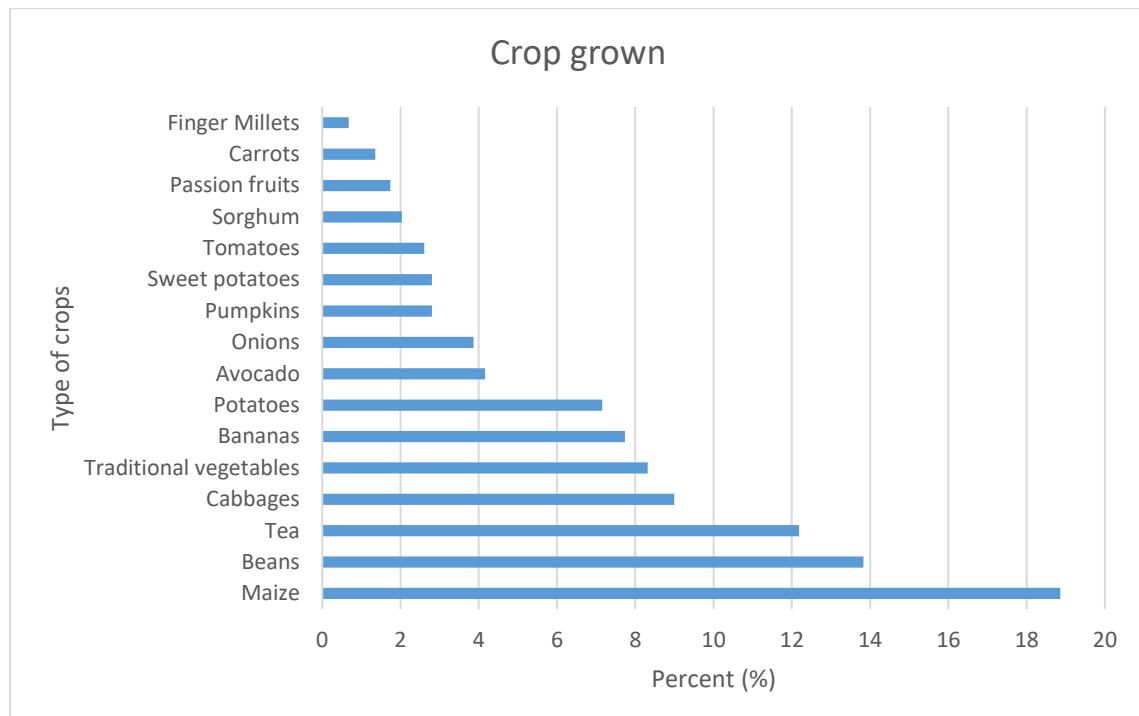


Figure 3.15: Crops grown in the area

3.19 Challenges experienced in marketing crops grown

The main challenge for crops grown in these areas adjacent to North Nandi forest was lack of market 24%, pest and diseases 18%, lack of capital 14%, poor road network 13%, Lack of farm inputs 10%, lack of climate information 6%, brokerage and middlemen 6%, and lack of certified seeds 3% as shown in figure 3.16. (Give implications in relation to forest conservation and livelihood)

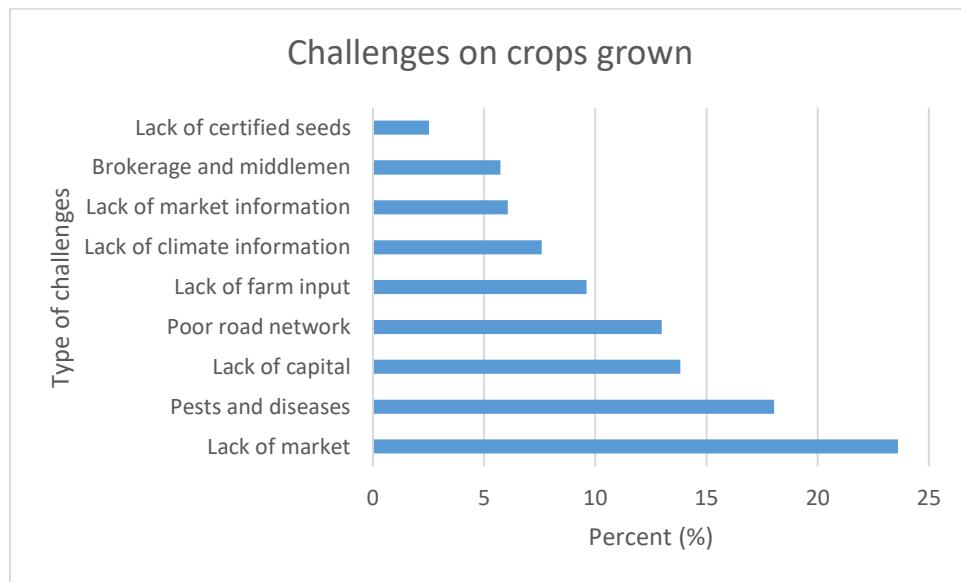


Figure 3.16: Challenges experienced in marketing farm produce

3.20 Livestock and poultry farming

3.20.1 Cattle

Majority (49%) of the respondents had 1-2 cattle, whereas 25% had 3-4, and 11% had none, as 9% had 5-6, and 4% had 7-10. And only 1% had above 10 cattle as shown in Table 3.10. (Give implications in relation to forest conservation and livelihood)

Table 3.10: Number of cattle per household

Cattle kept	Frequency	Percentage
1-2'	113	49
3-4'	58	25
None	25	11
5-6'	21	9
7-10'	10	4
Above 10	3	1

3.20.2 Goat keeping

Majority (88%) of the households had no goats, 7% had 1-2 goats, whereas 5% had 3-5 goats as shown in Table 3.11. (Give implications in relation to forest conservation and livelihood)

Table 3.11: Number of goats per household

Goats kept	Frequency	Percentage
None	202	88
1-2	17	7
3-5	5	5

3.20.3 Sheep

There was a significant percentage (54%) of farmers that did not keep sheep, and those who did had 1-3 (27%), 4-6 (10%), 9-10 (4%), and above 10 (3%) as shown in Table 3.12. (Give implications in relation to forest conservation and livelihood)

Table 3.12: Number of sheep per household

Sheeps kept	Frequency	Percentage
None	124	54
1-3'	61	27
4-6'	23	10
7-10'	15	6
9-10'	10	4
Above 10	7	3

3.20.4 Poultry keeping

In terms of poultry keeping, 36% kept 4-7 chicken, whereas 17% had none, and another 17% had 8-10, and a similar 17% had 1-3 chicken as shown in Table 3.13. There were no large scale chicken farmers identified in this study as the numbers went high the percentage decreased. The challenges experienced in poultry keeping include; lack of market, poultry diseases are prevalent in the area and insufficient capital. (Give implications in relation to forest conservation and livelihood)

Table 3.13: Poultry keeping per household

Chicken kept	Frequency	Percentage
4-7'	85	36
None	40	17
8-10'	39	17
1-3'	39	17
10-20'	20	9
30-40	7	4

3.20.5 Challenges experienced in livestock keeping

The main challenge in livestock farming identified by respondents was Pests and diseases 50%, lack of pasture 41%, lack of livestock extension service 5%, lack of market 3%, and lack of livestock security 1% as shown in Figure 3.17. (Give implications in relation to forest conservation and livelihood)

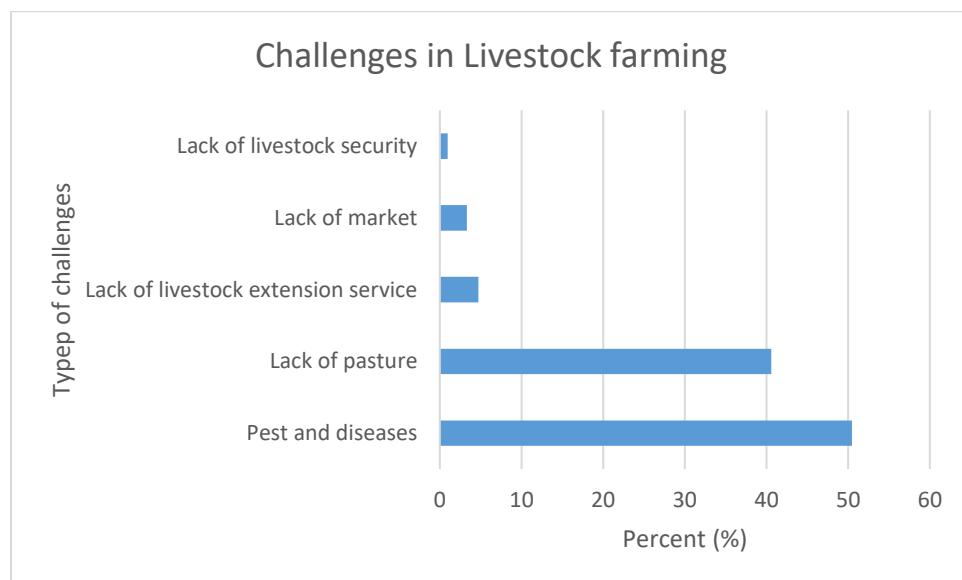


Figure 3.17: Challenges experienced in livestock keeping

3.20.6 challenges in poultry farming

The main challenge encountered in poultry farming was pests and diseases 79%, lack of feeds 19%, lack of market and lack of extension services at 1% each as shown in Figure 3.18. Pests and diseases are challenges which can be reduced through training and provision of extension services. It is envisaged that the CFA can take up these challenges and train farmers on control of pests and diseases so as to improve their livelihoods. (Give implications in relation to forest conservation and livelihood)

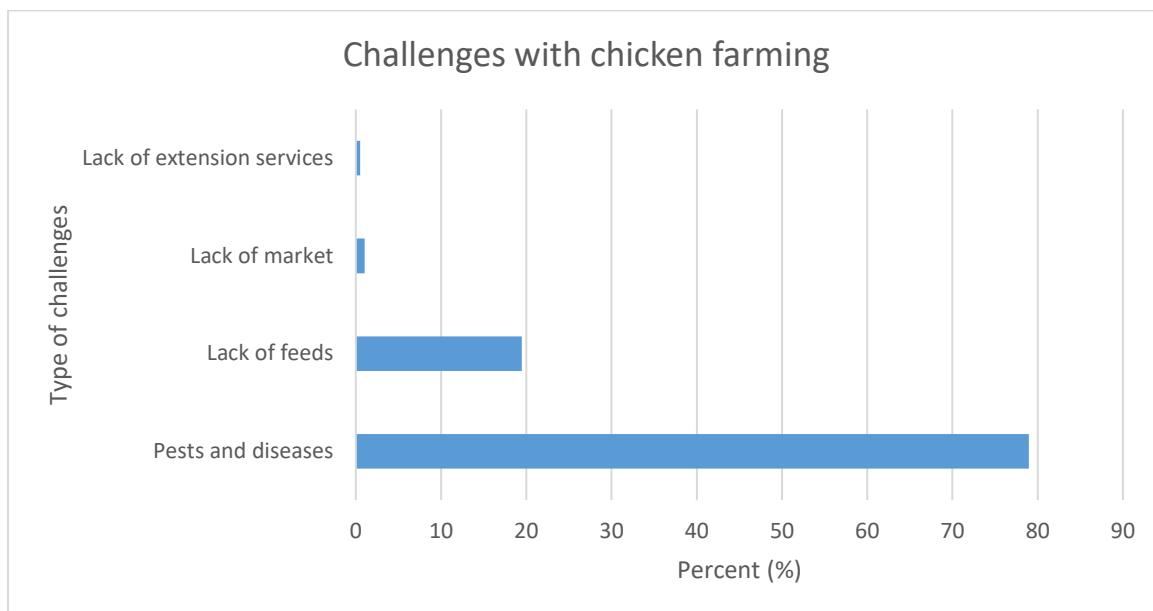


Figure 3.18: Challenges in poultry farming

3.21 Community interaction with the forest

3.21.1 Forest Beats

North Nandi forest station is made up of six forest beats namely Teresia, Kapchepkok, Kipsamoite, Septonok/station, Mwein, and Kiptangus. The survey was carried out in these forest beats in order to understand how the communities interact with the forest. The survey covered Teresia 21%, Kapchepkok 18%, Kipsamoite 17%, Septonok/Station 17%, Mwein 16%, and Kiptangus 10% as shown in Table 3.14.

Table 3.14: Forest beats

Forest Beat	Frequency	Percentage
Teresia	48	21
Kapchepkok	41	18
Kipsamoite	40	17
Septonok/Station	40	17
Mwein	37	16

3.21.2 Training on tree planting and forest conservation

A larger part (68%) of the respondents stated that they have not received some form of training on tree planting and forest conservation while 32% had received training on planting and forest conservation. Those who have received training reported that they got the information from Kenya Forest Service Extension Officers 39%, Local chief in Baraza 17%, Agriculture Extension Officers 17%, Radio 14%, School 6%, Nearest neighbour 4%, Television 3%, and Internet 1% as shown in figure 3.19. The CFA can work with nearby schools to promote tree planting through school greening programmes as that will inculcate the culture of tree planting in children and in turn protect the forest. (Give implications in relation to forest conservation and livelihood)

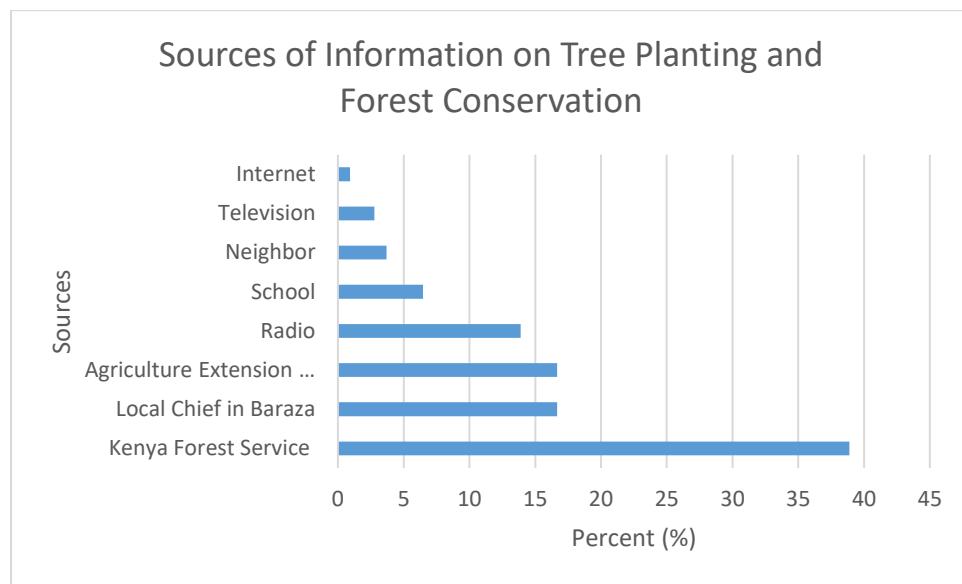


Figure 3.19: Sources of information on tree planting and forest conservation

3.21.3 Tree planting on farm

Those interviewed, 97% indicated that they plant trees on farm, whereas 3% did not. On average, the number of trees planted in the last three years was 192, which translates to 64 trees per year. The main reasons for planting the trees was; to get firewood 30%, to sell for timber 22%, to provide shade 19%, windbreak 14%, to mark farm boundary 8%, and to sell for electricity poles 7% and due to enforcement by local chief 1% as shown on figure 3.20. The preferred tree species was Eucalyptus species 27%, Cypress 24%, Avocado 14%, Indigenous trees 13%, Grevillea robusta 9%, Pine 7%, medicinal trees 4%, and wattle trees 1% as shown in Table 3.10. The average price for exotic tree seedlings was Kshs. 10, indigenous tree seedlings Kshs. 20. (Give implications in relation to forest conservation, livelihood & presidential directive)

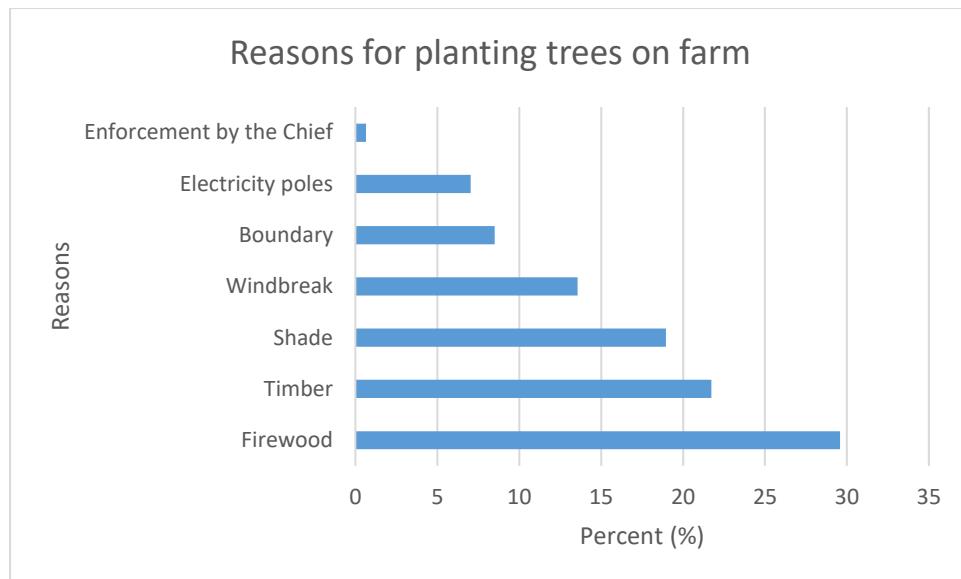


Figure 3.20: The main reasons for planting trees on farm

Table 3.15: Preferred tree species

Preferred tree species	Frequency	Percent (%)
Eucalyptus Species	144	27
Cypress	128	24
Avocado	73	14
Indigenous trees	71	13
Grevillea Robusta	50	9
Pine	35	7
Medicinal trees	21	4
Wattle tree	7	1

3.21.4 Perception on Tree Planting on farm

Majority of those interviewed indicated that planting trees on farm is beneficial as it will increase tree cover on farm, provide alternative source of income 29%, provide firewood 15% and provide timber 6% as shown in Figure 3.21. Those with dissenting views indicated that trees will prevent crops from sunlight 12%, it will increase competition on farm hence no space for tree planting 2%, and reduce crop nutrients on farm 1%. (Give implications in relation to forest conservation and livelihood)

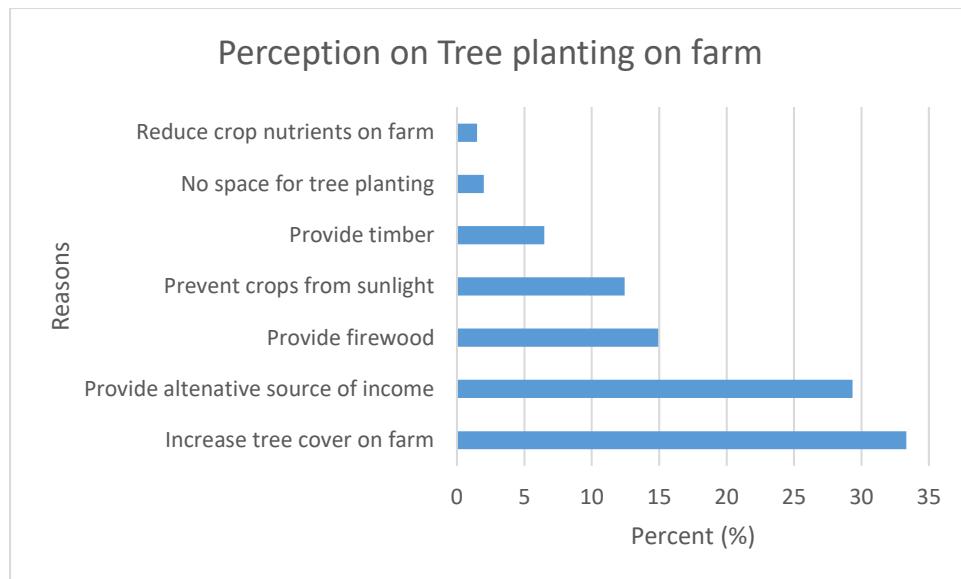


Figure 3.21: Perception on Tree planting on farm

3.21.5 Distance to the nearest tree nursery

Majority (43%) of those interviewed were within less than a kilometre to the nearest tree nursery, whereas 40% were within 2-5 kms as shown in Table 3.16. Those within 6-10 km were 9% and above 10 kms 8%. There is need for the CFA to promote tree nurseries on farm to increase access to seedlings and reduce distances travelled to source them.

Table 3.16: Distance of the households to the nearest tree nursery

Distances	Frequency	Percentage
<1	97	43
2-5	90	40
6-10'	20	9
Above 10	18	8

3.21.6 Interest in conserving the forest

A greater part (93%) of the respondents stated that they are willing to conserve the forest whereas 7% indicated they are not. The reasons for the lack of interest and information on the importance of the forest and community involvement in its management as shown on figure 3.22. The CFA should target the 7% who have no interest in conserving the forest as part of its awareness campaign.

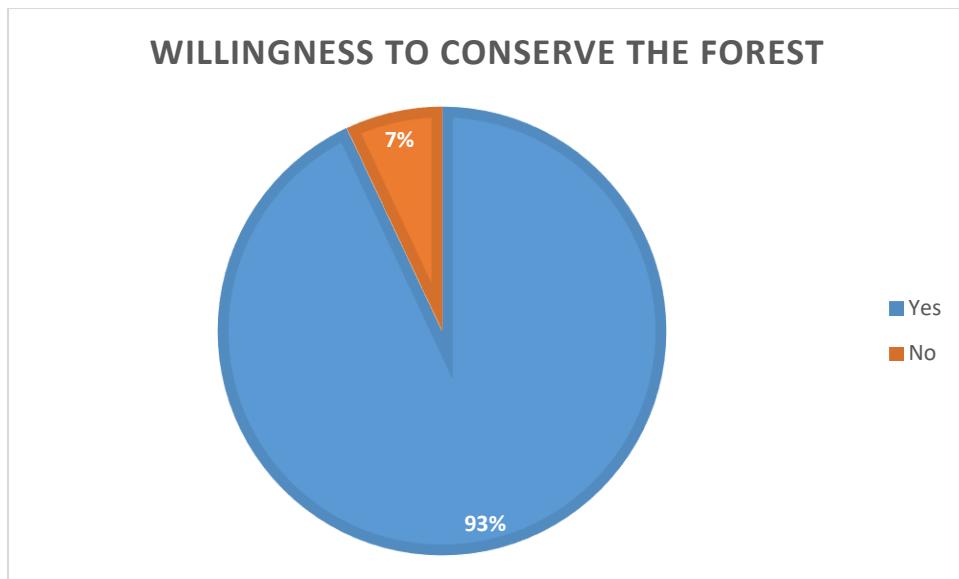


Figure 3.22: Interest in conserving the forest

In terms of willingness by forest beat, notable cases of disinterest were noted in Mwein 2.6% and Kapchepkok 1.7%, whereas in Teresia Beat there was none as shown in Figure 3.23. (Give implications in relation to forest conservation and livelihood)

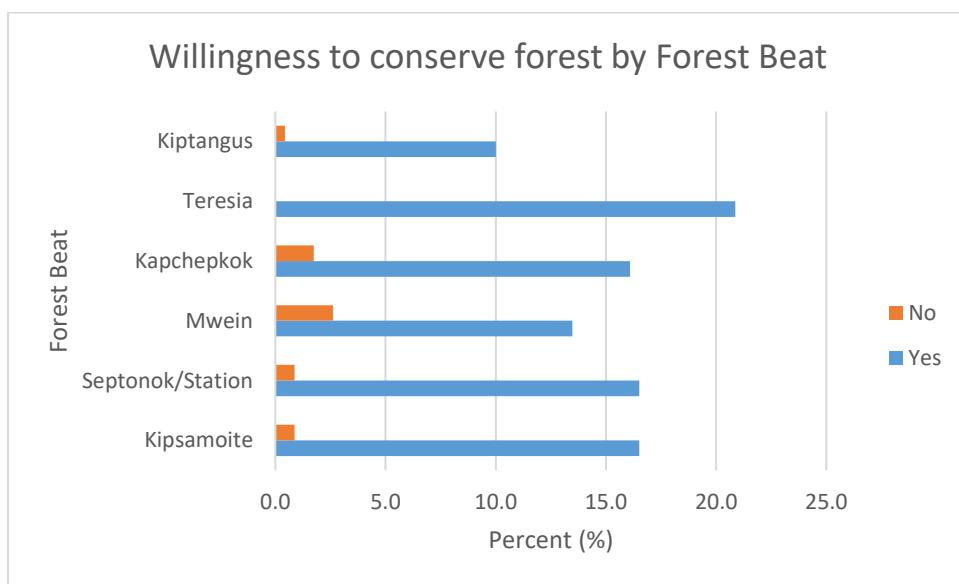


Figure 3.23: Willingness to conserve the forest by forest beat

3.21.8 Forest Products in North Nandi Forest Station

Important forest products in North Nandi Forest Station as noted by respondents were as follows; herbs 22%, firewood 18%, honey 16%, water 15%, fruits 12%, grass 8%, seeds 4%, and timber 4% as shown in Figure 3.23. The challenges identified in harnessing these products were lack of permits 73%, lack of information 20%, lack of capacity 5%, poor access roads 2% as shown in Table 3.17. It is worth noting that the reasons provided for not

harnessing forest products are wanting as it speaks more of an issue of lack of awareness, as KFS office is open to handle permit issues. Notable too is issues of marketing of forest products was non-existent, hence CFA needs to take up the task of creating awareness on the PFMP as an entry point in harnessing forest products.

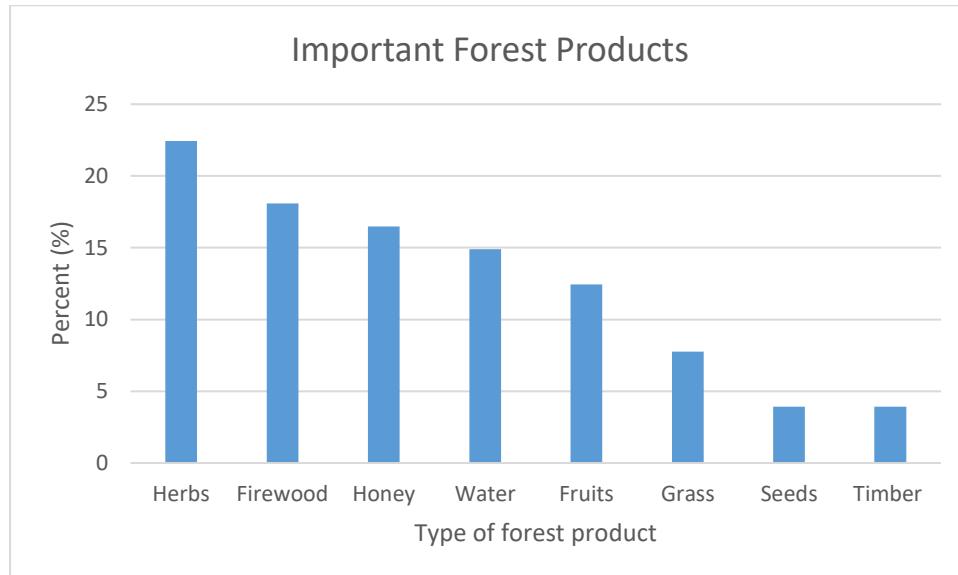


Figure 3.23: Important forest products

Table 3.17: Challenges in harnessing forest products in North Nandi Forest Station

Challenges in harnessing forest products	Frequency	Percentage
Lack of permit	166	73
Lack of information	45	20
Lack of capacity	11	5
Poor access roads	5	2

3.21.9 Threats to the forest

Majority (25%) of the respondents indicated illegal logging as a major threat to the forest, charcoal burning 23%, encroachment 13%, illegal grazing 13%, poaching activities 12%, invasive species 8%, fire 5%, and Bamboo damage by animals 1% as shown in figure 3.24. (Give implications in relation to forest conservation and livelihood)

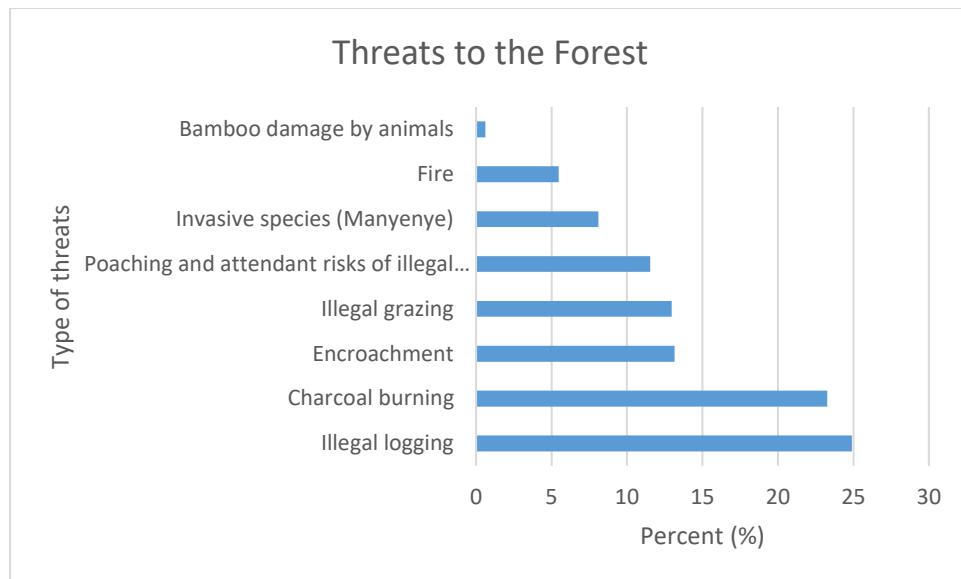


Figure 3.24: Threats to the forest

3.21.10 Forest Management

Those interviewed, 94% indicated that they are aware of the need to get permits to access the forest whereas 6 % did not. In terms who is responsible for forest management the respondents indicated the forest guard 31%, whereas 30% indicated the CFA, 20% local administration and forest manager 19% as shown in Figure 3.25. It is worth noting that whereas there are issues of forest threats and enforcement as seen previously in these report, the role of the forest guard is more pronounced and a lot of efforts needs to be put in place to create awareness and enhance community ownership of the forest.

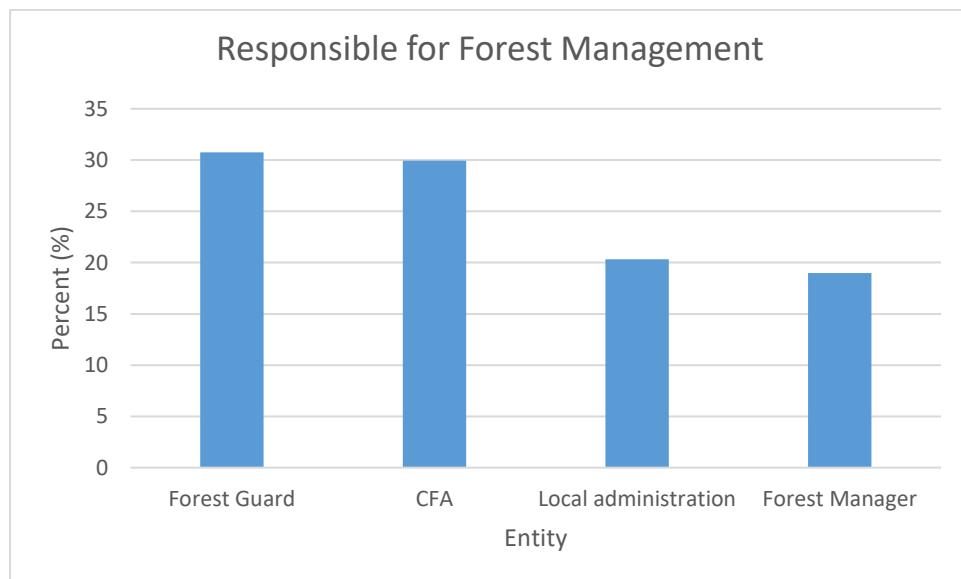


Figure 3.25: Forest management

3.21.11 Awareness on PFMP

It was impressive to note that 58% of the respondents were aware of an existing PFMP, while 42% did not. In order to promote the PFMP and have a buy-in from community, it was noted that there is need to enhance community participation 60%, capacity building of CFA 21%, and enhance community benefit sharing 19% as shown in Figure 3.26. (Give implications in relation to forest conservation and livelihood)

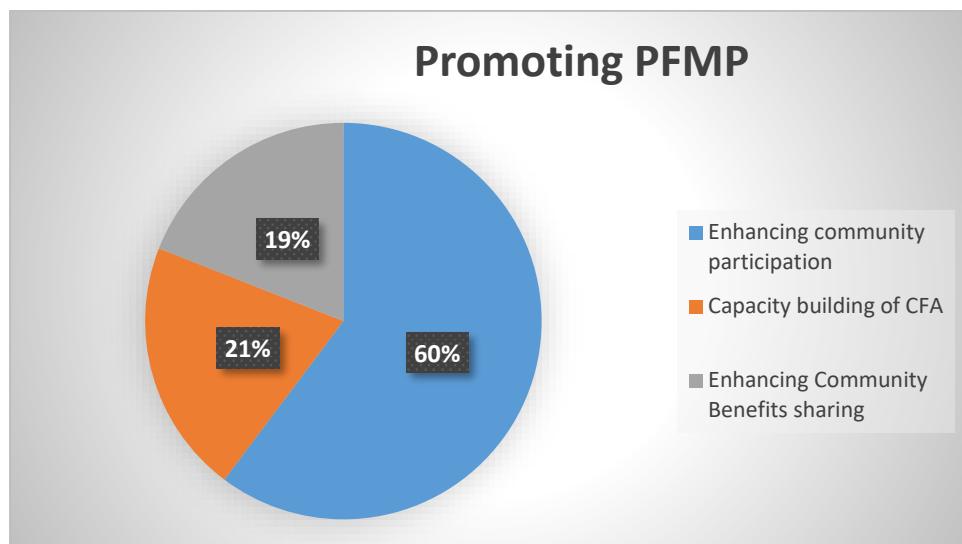


Figure 3.26: Ways to enhance community participation in forest management

3.22 Awareness on climate change

3.22.1 Adaptation

A better part (79%) of the respondents affirmed that they are aware of climate **change** with 21% stating that they are not aware. Those who confirmed to be aware of climate change pointed out that the strategies they use to cope with it are; plant climate adaptive crops 48%, get climate information before planting 19% irrigate farm 18%, get certified seeds 11%, change of diet to other available foods 3%, and migrate to other areas 1% as shown in figure 3.27.

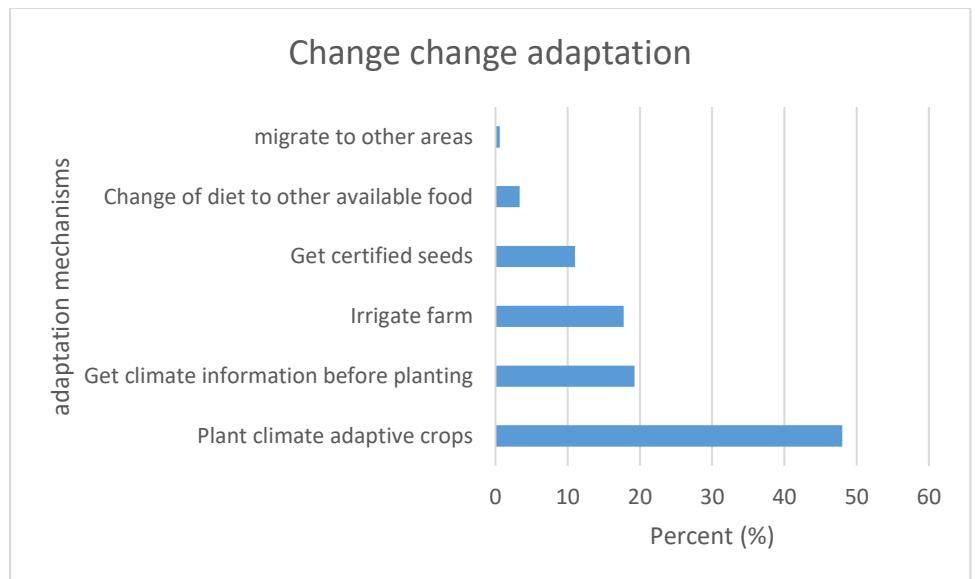


Figure 3.27: Climate adaptation strategies

3.22.2 Mitigation

The respondents pointed out that they plant more trees 45%, promote climate change awareness 18%, promote women empowerment in climate information 11%, provide climate resistant and certified seeds 8%, support women in climate decision making 8%, reduce greenhouse gases production 7% and those polluting to held accountable 3% as shown in figure 3.28.

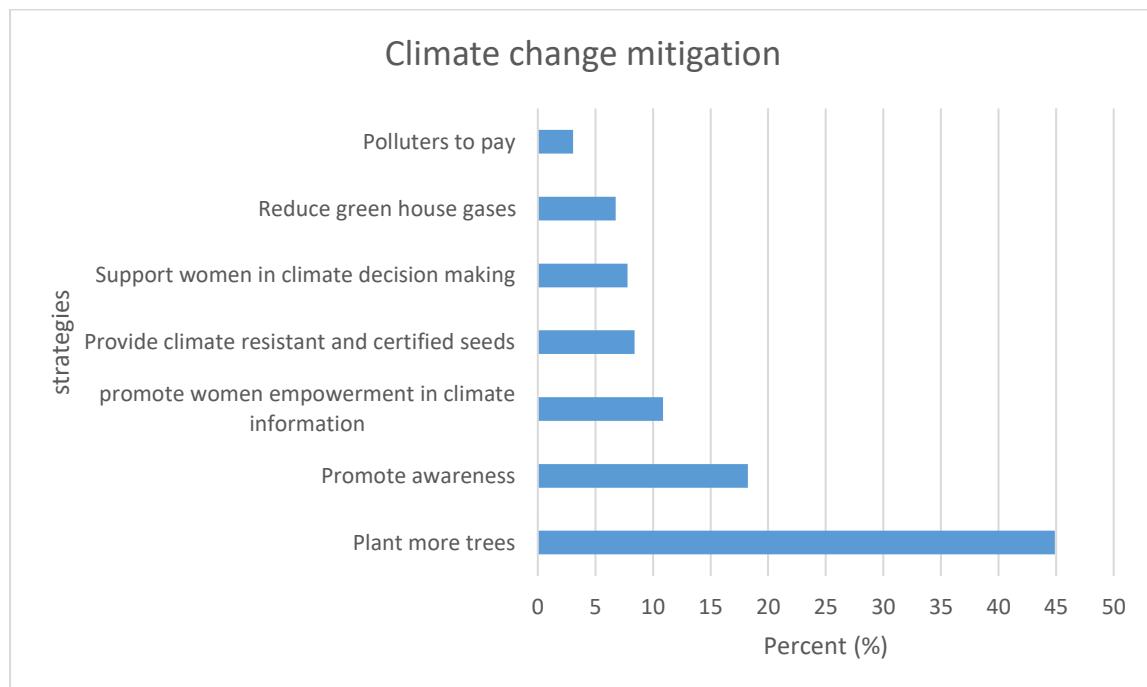


Figure 3.28: Climate change mitigation strategies

3.23 Water access and conservation

The main source of water was River 60%, piped water 21%, borehole 7%, well 7%, and spring 6% as shown in Figure 3.29. In terms of distances travelled to get water 90% of respondents had water access within 0-1km, and only 10% travelled 1-2kms. In terms of water harvesting, majority (85%) of respondents indicated they harvest water from roof catchment whereas 15% did not. Those who harvested water they used drums and buckets 60%, 500 litres tank 19%, and water collection in small dams and basins 7%. The amount of water conserved per season was 500 litres for 45% of respondents, whereas those who conserved between 100-500litres were 32%, and above 10,000 litres were 8% as shown in Table 3.18. (Give implications in relation to forest conservation and livelihood)

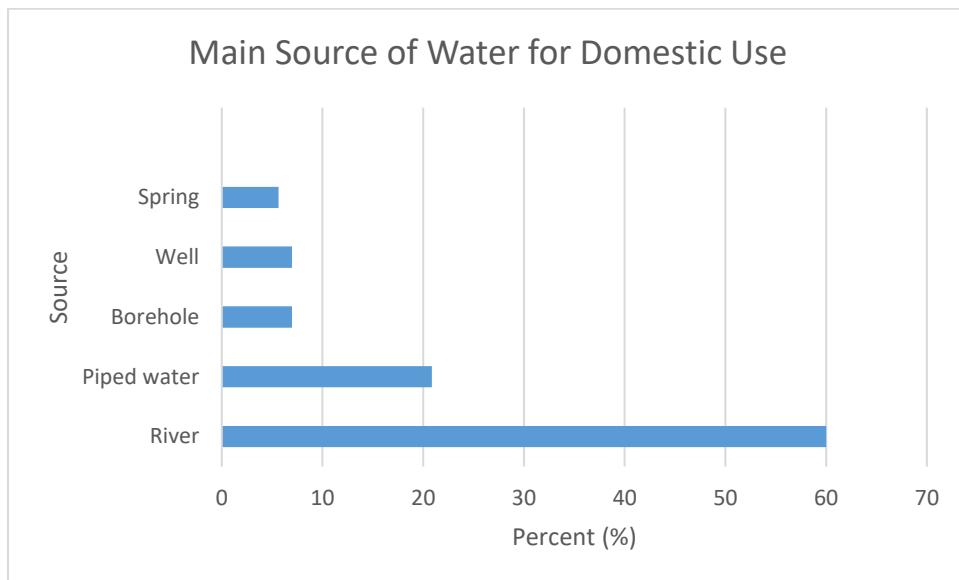


Figure 3.29: Main source of water for domestic use

Table 3.18: Amount of water harvested from roof catchment per rainy season

Amount of water harvested in Litres	Frequency	Percentage
500	103	45
1000-5000	74	32
>10000	19	8

3.24 Soil conservation

Majority (65%) of the respondents stated that they had not received any training on soil conservation while 30% stated that they had received some form of training. Those who stated that they had received some type of training listed their sources as; from an agriculture extension officer 50%, from local chief 15%, Kenya Forest Service 11%, Radio 10%, School 9%, and NGOs 5% as shown in figure 3.27 below. The training focused on terracing, agroforestry, crop rotation, mulching, planting cover crops, and soil pH and sampling. The desired training was mainly agroforestry and crop rotation techniques.

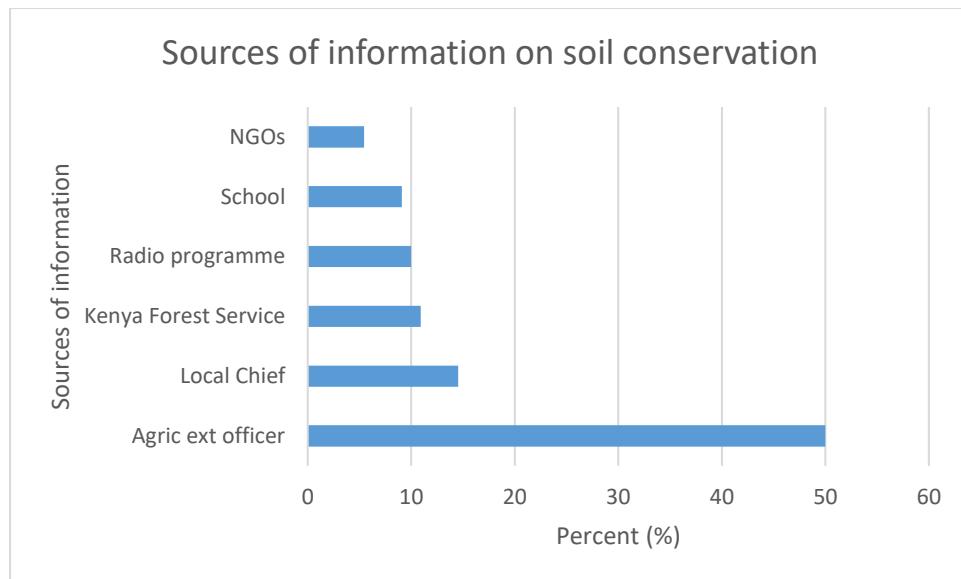


Figure 3.30: Sources of information on soil conservation

3.25 *Gender*

3.25.1 Role of women in community

The role of women in society was considered to be community work (education, cooking, wellbeing of children) 86%, reproductive role i.e. promoting continuity in society 10%, leadership 2%, and decision making 1% as shown in Table 3.19. It is important for the CFA to look at these views of the community and effect change from within through promoting women role in decision making and leadership within its governance structure which are poorly rated here. (Give implications in relation to forest conservation and livelihood)

Table 3.19: Perceived role of women in society by respondents

Role of women	Frequency	Percentage
Community work (education, cooking, overseeing well-being of children)	198	86
Reproductive role (precipitating continuity in society)	24	10
Leadership	5	2
Decision making	2	1

3.25.2 Women and economic empowerment

Those interviewed indicated that women are allowed to start their own business 94% while 6% indicated no. The reason being that business is a preserve for men. In terms of access and control to income earned from their business 98% indicated women are allowed to control their income. In order to empower women in North Nandi Forest Station, those interviewed indicated that there is need to train and sensitize community on gender issues and women empowerment 40%, train women on income generating activities 30%, train women in leadership 19%, and provide capital for business start-ups 3% as shown in Figure 3.31. (Give implications in relation to forest conservation and livelihood)

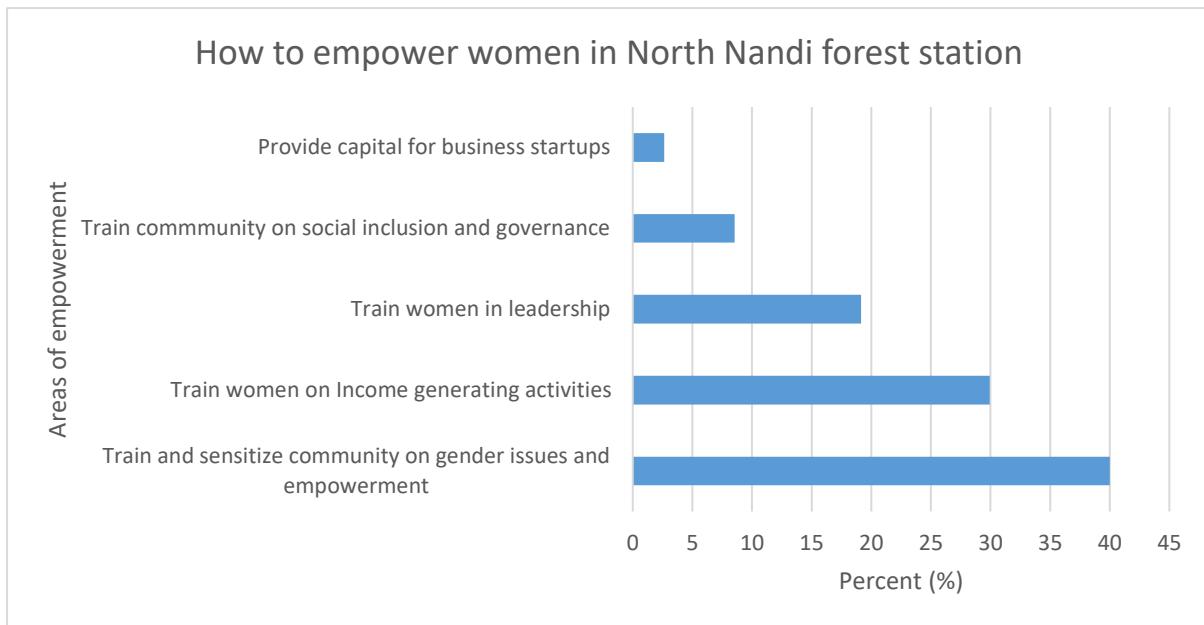


Figure 3.31: How to empower women

3.2 Stakeholders Analysis

3.2.1 Stakeholders Range

The stakeholders in North Nandi forest is made up of Government institutions, groups and individuals who have interest in the management, conservation and sustainable utilization of its natural and physical resources. They include KFS, KWS, NEMA, WRA, KEFRI, NTZDA, KWTA, KTDA, County Government of Nandi, Nandi North Escarpment Community Forest Association (NNECFA, NGOs/CBOs, Donors, staff from ministry of interior coordination and various Government line Ministries/Departments such as Agriculture, Livestock, Water, Tourism & Wildlife

3.2.2 Roles and responsibilities of stakeholders

The stakeholders in North Nandi forest have specific roles and responsibilities based on institutional mandate, influence and special interests. The analysis of the roles and responsibilities of each stakeholder are shown in table 3.20 below;

Table 3.20: Stakeholder Analysis

Stakeholder	Status	Roles	Responsibilities
KFS	State corporation	Management & protection of state forests	Establishment, conservation, protection and sustainable management of forests Maintenance of roads within the forest, Promotion of farm forestry and

Stakeholder	Status	Roles	Responsibilities
			ecotourism Sustainable utilization of Wood and NWFP by the local community and other interested stakeholders
CFA	Registered Association	Co-management of the forest and assist KFS in protection, policing and fighting forest fires. Promotion of IGAS	Establishment of tree nurseries for raising suitable indigenous seedlings for enrichment planting and rehabilitation of degraded areas and river lines. Assist KFS in decision making on forest governance, awareness creation and lobbying for forest conservation to the rest of the community. Developing and managing eco – tourism sites for income generation with other stakeholders
KWS	State corporation	Management and conservation of wildlife	Protection of the forest through joint patrols with KFS. Community sensitization and awareness creation on wildlife conservation and management
KEFRI	State corporation	Research in Forestry	Conduct forest research on indigenous & Exotic tree species to determine best sites for planting, best management practices, biodiversity richness and sustainable utilization
NEMA	State corporation	Sensitization on environmental governance	Enforcement of environmental laws, EIA and Environmental Audits
To be absorbed by the CFA.		Management and Protection of water catchment areas	Tree planting and protection of riparian areas Environmental awareness creation
County Government of Nandi	County Government	Collection of cess and provision of public services	Roads maintenance, tree planting on farmlands and trust lands, issuance of trade licenses etc. Enhance forest Conservation and protection through awareness creation

Stakeholder	Status	Roles	Responsibilities
			<p>Raise fund required for conservation and management of the forest</p> <p>Promote and encourage Tree planting in individual farms, trust lands , schools, road reserves, market centres and urban areas</p>
Ministry of Interior Coordination	Government department	Maintenance of Law and Order	<p>Dissemination of National Government policies and enforcement of law and order.</p> <p>Assist in forest protection through awareness creation during public barazas and meetings</p>
MoA L&F	County Government department	Food security through improved farming methods and promotion of livestock development	Promotion of better farming methods, Agroforestry, soil and water conservation on farmlands, appropriate crop production, promotion of improved breeds and fodder conservation, assessment of livestock carrying capacity in the forest areas, promotion of Fish farming
Ministry of Tourism and Kenya Tourism Board	Government department and State corporation	Marketing of tourism	Capacity build User groups on eco-tourism and Marketing of tourism facilities
National Museums of Kenya (NMK)	State corporation	Conduct Research in indigenous knowledge	Conduct research and education especially on indigenous knowledge on conservation of local biodiversity and sites of historic importance
Development partners e.g. NGOS, Trust, Government agencies and private sector	Donor agency	Funding and capacity building	Awareness creation and capacity build the community on conservation matters, Funding IGAs for CFAs
Faith Based	Community	Conserve	Promote protection of the forest and

Stakeholder	Status	Roles	Responsibilities
Organizations	faith-based organization	spiritual sacred sites	other cultural sites
WRA	Government department and State corporation	Conservation of water catchment areas	Development & review of SCMP, Capacity build WRUAs and CFA on the water conservation activities and other areas that would improve their performance and livelihoods
Research and Education institutions	State Corporation, Institutes of higher learning	Forest research and education	Undertake research on emerging forestry challenges, dissemination of research findings, seed collection and storage, effective PFM arrangements
Ministry of Labour, social Security and Services	Government department	Formation of Groups and their dynamics	Support capacity building in initiation and registration of FUGs, CBOs and general plan implementation
NTZC	State Corporation	Establishment and management of Tea zones along forest boundary	Protection of the forest from illegal encroachment Establishment of Eucalyptus plantations for firewood production on sites along the tea belt that are not suitable for Tea growing
KWTA	State Corporation	Management of Water Towers	Support capacity building of community living adjacent to the Water Towers, Rehabilitation of degraded sites

CHAPTER FOUR

PLANNING CONSIDERATIONS

4.1 Policy and Legal Frameworks

The management and protection of forests in Kenya is based on several policies articulated by different government sectors. The preparation, planning and implementation process of North Nandi Forest Management Plan recognizes the existence of various policies and legislation, whose objectives have a direct impact on sustainable conservation, management and utilization. These include the Constitution of Kenya, 2010, Forest Conservation and Management Act 2016, Water Act 2016, Wildlife Management and Conservation Act 2013; EMCA 2015. These policies and laws as well as some other national, regional and international agreements are briefly analysed in table 4.1 below.

Table 4.1: Policy and legal framework relevant to implementation North Nandi PFMP

No .	Act/Policy	Issues covered
1	The Constitution, 2010	<p>This was promulgated in August 2010 and has dedicated chapter five to deal with land and environment. The New constitution Chapter 5, Part 2 section 69 (a, b & d) which is also applicable to North Nandi forest requires the state to:-</p> <ul style="list-style-type: none">• Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits.• Work to achieve and maintain a tree cover of at least 10% of the land area of Kenya.• Encourage public participation in the management, protection and conservation of the environment.• Equitable distribution of natural resources.
2	Environmental Management and Coordination Act of 2015 (EMCA)	<p>The Environmental Management and Coordination Act (EMCA) No. 5 of 2015, embraces all environmental management issues in the country. The Act addresses the environmental concerns and safeguards against environmental degradation within and outside protected areas. The Act provides the legal framework for the implementation of the National Environment Action Plan (NEAP), which gives due regard to ensuring that people live in healthy environments. It also emphasizes maximum participation by stakeholders in the development and implementation of policies, plans and actions geared towards environmental management.</p> <p>The implementation of North Nandi Forest Management Plan will take into account various provisions of the EMCA such as Environmental Impact</p>

		Assessments and Audits especially when developing Eco- tourism sites and other infrastructures that will have an impact to the environment
3	Forests Conservation and Management Act 2016	The Act recognizes the forest adjacent communities as key stakeholders and users of forest resources, which is important for the successful long-term sustainable management of the forest. The development of this management plan and the involvement of North Nandi CFA (NNECFA) and other stakeholders in management of North Nandi forest are anchored in the provisions of the Forests Act.
4	The Forest policy 2005(sessional paper No.9)	The policy requires that the communities and stakeholders living adjacent to North Nandi forest reserve to form Community Forest Associations (CFAs), have a provision to enter into a forest management agreement (FMA) with KFS. The policy further addresses the needs of the local communities and other stakeholders and their user rights and provides for partnership in the management of state forests as per the Forest Conservation and Management Act, 2016.
5	Water Act, 2016	The Water Act No. 43 of 2016 lays out a mechanism for the development of a national water resources management strategy, for the protection, management, use, development, conservation and control of water resources. This Act promotes participatory forest management in which water catchments are and participatory water resource management which is achieved through the devolution of roles and responsibilities to the stakeholders through Water Resource Users Associations (WRUAs), who not only participate in the development of catchments management plans, but also are responsible for conflict resolutions, catchments conservation and management advice to regional office of the Water Resource Authority. This allows social, economic and ecological aspects of the catchments to be incorporated in the management plans. Equally WRUAs and CFA are required to work together in conservation and rehabilitation of water catchment areas within North Nandi forest and in farms adjacent to the forest.
6	The Wildlife Conservation and Management Act, 2013	The Act mandates the Kenya Wildlife Service to manage and conserve wildlife within and outside protected areas and to support community initiatives towards wildlife conservation. It also mandates KWS to play advisory role to provide flexible regulations that enable the generation of optimum returns from wildlife through non-consumptive uses.

		North Nandi Forest is a home to unique birds and animals serving as an attraction to tourists, educationists and researchers which can generate income for the local communities.
7	Grass Fire Act, Cap. 327	The Act provides for protection of the vegetation by regulating burning of bushes, shrubs, grass, crops waste and stubble through issuance of permits to carry out planned burning within protected areas, trust land and in private lands. The act recognizes controlled burning as a natural resource conservation measure to help in controlling pests, invasive plant species and improving pasture. North Nandi forest though not a high fire risk area may face fire outbreaks especially during the dry seasons. This Act is very relevant for the control of forest fire occurrences.
8	The Crop Production and Livestock Act (Cap. 321)	This is an Act of Parliament that makes provision for the control and improvement of crop production and livestock, and the marketing and processing thereof. Livestock grazing is one of the activities in North Nandi forest and it is important to ensure sustainable use of grass and other forms of fodder in the forest for livestock
9	Farm forestry Rules, 2009	<p>The rules aim at promoting and maintaining farm forest cover of at least 10 per cent of every agricultural land holding and to preserve and sustain the environment in combating climate change and global warming. Farm forestry may include trees on soil conservation structures; rangeland and crop land in any suitable configuration provided the tree species or variety planted shall not have adverse effect on water sources.</p> <p>Under these rules, the Director of Agriculture can issue land preservation orders to land owners that may prohibit the clearing of vegetation or grazing of livestock in vulnerable ecosystems, require the afforestation of land to reclaim areas threatened with degradation or demand the use of farming techniques compatible with the conservation requirements</p>
10	National Energy Policy and Energy Act, 2019	The broad objective of the energy policy is to ensure adequate, quality, cost effective and affordable supply of energy to meet development needs, while protecting and conserving the environment. This law delineates the function of National and County Governments in relation to energy to provide for exploitation of renewable energy sources

11	National Government Co-ordination Act, No. 1 of 2013	The Act establishes an administrative and institutional framework for co-ordination of national government functions at the national and county levels of governance, thus restructuring the former provincial administration. The key role of the staff of the Interior ministry is to enforce law and order and disseminate National Government policies. They have no mandate in the conservation and management of gazetted forests; however, the ministry has been useful when dealing with forestry issues outside gazetted forests especially on individual private lands and public lands.
12	The County Governments Act, 2012	This Act empowers County Governments to make by laws used to control cutting of trees, destruction of trees and shrubs and also afforestation in trust lands and public lands where natural resource exploitation needs control. This act in its present form may not have direct impact to the management of North Nandi forest but on forestry practices in the intervention zone.
15	Other relevant Government Acts such as Physical Planning Act 2019, the Trust Lands Act 1948 and the Land Act 2012	These are critical as they guide and ensure that there is order in the way trees are planted particularly in Urban centres.

4.2 Links to Multilateral Environmental Agreements (MEAS)

Table 4.2: Multilateral Agreements Relevant to implementation North Nandi PFMP

No.	Agreement	Issues covered
1	The Convention on International Trade in Endangered Species of Flora and Fauna (CITES)	The Convention regulates the international trade in wild plants and animals that are at risk of extinction as a result of trade. The convention seeks to control trade not only in live species, but also in dead specimen and their derivatives. Kenya ratified the Convention in 1978 and it was domesticated in the Wildlife (Conservation and Management) Act. The Act prohibits the importation of any trophy, or un-manufactured ivory or rhinoceros'

		horn. One possible outcome of the Convention is protection and preservation of endangered and threatened species around North Nandi forest that include; the three horned chameleons (<i>Chameleon jacksonii</i>), beautiful Bongo (<i>Tragelaphus euryceurus</i>), <i>Prunus africana</i> among other species of fauna and flora.
2	United Nations Framework Convention for Climate Change (UNFCCC) 1992	The objective of this convention is to establish methods to minimize global warming and in particular the emission of green-house gases. The North Nandi Forest management plan addresses this convention through conservation of the forest and rehabilitation of degraded areas, which serve as important carbon sinks to minimize greenhouse gases in the atmosphere.
3	United Nations Convention to Combat Desertification (UNCCD)	<p>The purpose of UNCCD is to address the problem of the degradation of land by desertification and the impact of drought, particularly in arid and semi-arid areas of Kenya.</p> <p>The effect of the Convention on North Nandi forest would be the extent to which land is utilized for tree planting, nurturing tree nurseries or the reservation of forests while limiting alternative lands use activities for cultivation, human settlement and other developments that may lead to clearing of forest.</p>
4	Reducing Emissions from Deforestation and Degradation (REDD)	<p>REDD is a proposed mechanism under the UNFCCC to slow the loss of forest in order to mitigate against climate change and address rural poverty and preserve biodiversity. It embraces all the degraded areas in natural forests and promotes conservation of trees of special concern.</p> <p>REDD provides an opportunity for the stakeholders of North Nandi forest to ensure that the natural forest remain standing and continue to serve as natural carbon sinks and as the lungs of the world. This will ensure natural forests which sustain livelihoods and provides essential ecological services are distinguished from commercial plantations</p>
5	Sustainable Development Goals (SDGs)	<p>This plan addresses the following SDGs:</p> <ol style="list-style-type: none"> 1. Goal 1. End poverty in all its forms everywhere. 2. Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture. 3. Goal 7. Ensure access to affordable, sustainable, and reliable modern energy services for all.

		<p>4. Goal 13. Take urgent action to combat climate change and its impacts.</p> <p>5. Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forest, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>From the socio-economic survey it was evident that most of the community adjacent to North Nandi forest depends on the forest for their livelihood and on the facility which is home to a number of terrestrial species of animals, plants and insects</p>
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4.3 Regional Environmental Agreements (REA)

Table 4.3: Regional Environmental Agreements Relevant to implementation North Nandi PFMP

No.	Agreement	Issues covered
1	African Convention on the Conservation of Nature and Natural Resources	<p>The objective is to facilitate sustainable use of these resources. It emphasizes on preventive and precautionary measures to conserve and preserve these natural resources. The provisions of the Convention are contained in the Agricultural Act with regard to soil conservation measures. The Wildlife (Management and Conservation) Act provides for the preservation of wildlife, especially endangered species in their natural habitat or in game parks, wildlife reserves or sanctuaries.</p> <p>The relevance of this Convention to North Nandi forest is direct, in that, in order to conserve natural resources, the land on which the resources are situated has to be restricted for that purpose</p>
2	The East African Community (EAC)	<p>The objective of the agreements is to achieve various goals within its mandate through “Promotion of sustainable growth and equitable development of the region including rational utilization of the region’s natural resources and protection of the environment.” It has developed Protocols on Environment and Natural Resources, which commits member states to sound environment and natural resources management. Other specific areas of co-operation in environment and natural resources management include diversity of biodiversity, climatic change and issues related to pollution and policy arrangement. This treaty will assist in providing mechanism for conservation and management of North Nandi forest natural resources.</p>

4.4 Links to National Planning Process

Table 4.4: National Planning Process relevant to implementation of North Nandi PFMP

1	Kenya Vision 2030	<p>Vision 2030 aims at making Kenya a newly industrializing middle-income country providing high quality life for all its citizens by the year 2030. The vision is based on three pillars namely: Economic, Social and the political.</p> <p>Economic pillar deals with providing prosperity of all Kenyans through an economic development programme aimed at achieving an average Gross Domestic Product of 10% per annum, Social pillar aims at building a just and a cohesive society with a clean and a cohesive environment while the political pillar aims at realizing a democratic political system founded on issue-based politics that respects the rule of law and protects the rights and freedom of every individual in the Kenyan society.</p>
2	Flagship Projects for the Environment	<p>Some of the flagship environmental projects are:</p> <ul style="list-style-type: none"> • The water catchment management initiative- Rehabilitating the water towers. • The Wildlife Corridors and Migratory Routes Initiative- reclaiming all wildlife corridors and migratory routes. • The Land Cover and Land Use Mapping Initiative – Comprehensive mapping of all land use pattern in Kenya • Clean and healthy environment for every citizen. • Sustainable utilization of natural resources • Increase forest cover to 10% by 2030 • Control of invasive species to restore degraded areas
3	National Forest Programme 2016 - 2030	<p>The strategic objectives of the programme which was launched on 17th May 2017 are to increase forest and tree cover and reverse forest degradation, enhance forest-based economic, social and development policies, enhance capacity development, research and adoption of technologies, increase investments in forest development and integrate national values and principles of good governance in forest development. The objectives are put into 8 clusters which are forest productivity, forest governance, Natural forest management and conservation, forest for water, forest for energy, forestry education training and research, forest financing and forest and climate change.</p>

4	Links with KFS Strategic Plan 2018 to 2022	<p>It recognizes the community and other stakeholders' participation in forest management. It links poverty with forest degradation and proposes mobilization, awareness creation and participation in forest management to address the same.</p> <p>The plan aims at empowering the community through the formation of Community Forest Associations and development of participatory forest management plans. The strategic plan supports livelihood improvement activities such as PELIS, IGA's in and around the forest.</p>
5	Payment of Environmental Services (PES)	<p>Payment of Environmental Services (PES) is a mechanism of creating incentives to manage natural resources, address livelihood issues for the rural poor and provide sustainable financing for protected areas. Those who provide environmental services by conserving natural ecosystems should be compensated by the beneficiaries to the service. Natural ecosystem provides a wide range of environmental services for which people benefit and upon which all life depends e.g. provision of food, fuel, building materials and flesh water, climate regulation, flood control, nutrient and waste management, maintenance of biodiversity and cultural practices.</p> <p>Those who provide environmental services should be paid for doing so. Compensation to the land managers must make them meet benefits derived from maintaining environmental services to be greater than those derived from alternative land uses. PES provides an opportunity for the stakeholders managing North Nandi forest to gain incentives for conserving the forest and delivering environmental services such as watershed services, carbon sequestration landscape beauty and biodiversity conservation.</p>
6	County Planning	<p>The responsibility of making County Integrated development plans lies with the County Development Committee (CDC) which is comprised of County Government, National Government Departments and state corporations, working in that County. The CDC's may have some interest in the implementation of some activities in the intervention zone and it is therefore expected that they will refer to the contents of this plan as they implement Nandi County Integrated Development Plan which was revised in 2018 and especially the Management plan of North Nandi forest in Nandi North and Chesumei Sub-counties of Nandi County.</p>

4.5 Rationale for Management Planning

4.5.1 Value of forest reserve

The forest is of great value to the adjacent local communities who depend on it as a source of livelihood (figure 4). They rely on forest products such as wood for building materials, firewood, grazing, grass for livestock and thatching; medicinal herbs, indigenous fruits, bee keeping. The forest also provides intangible regulatory and cultural services. These include biodiversity conservation, climate moderation, ecotourism, research and educational values. Documentation on research work that has been done in North Nandi is stored by KEFRI Research Centre in Londiani. However, although different forest resources are extracted from the forest continuously by local communities, the forest managers do not have information on sustainability of extraction.

4.5.2 Threats to Forest Conservation

The Socio-economic survey revealed that the forest was under threat as follows; - (25%) of the respondents indicated illegal logging as a major threat to the forest, charcoal burning 23%, encroachment 13%, illegal grazing 13%, poaching activities 12%, invasive species 8%, fire 5%, and Bamboo damage by animals 1%. The main drivers of the illegal activities are therefore human activities.

Solutions to these threats include establishment of a strong security personnel, fencing of the forest, prosecution and imposing of heavy fines to law breakers, sensitization and creation of awareness to the community on the importance of the forest and its benefits. Sustainable extraction of forest products can be also be allowed which will also be a means of controlling illegal activities.

Table 4.5: Threats to Forest

Threat	causes	solutions
Illegal grazing	Unsustainable number of livestock, inadequate pasture on farms	Increase security personnel and train farmers how to keep few and high-quality breed of animals
Illegal encroachment and settlement of forest land	Greed for shambas/land	Remove all illegal settlers and re-establish the forest boundary
Illegal charcoal making	Unemployment and Greed for money	Increase security personnel, high fines sensitization and creation of awareness to the community on the importance of the forest and its benefits
Forest fires	Honey gatherers, improvement of pasture	Creating awareness and training on use of fire as management tool. Increase monitoring and control. Introduction of new honey

		harvesting equipment and methods
Hunting of game (poaching)	Greed for meat/trophy, unemployment and greed for money	Involve KWS and local Interior and National Government. Intensify patrols by KWS and KFS rangers and community scouts
Illegal logging	Unemployment and greed for money	Increase KFS security personnel and involve Interior and National Government

4.5.3 Constraints to Forest Conservation

According to the socioeconomic survey and participants in the various FGDs held, the main causes of poor management of the forest include; inadequate staff particularly the Forest Rangers, poor roads, and inadequate housing for staff as summarized in Table 4.6. Both KFS and CFA should be responsible for improving forest management by soliciting for funds for training of community members on need to conserve the forest for the benefit of the current and future generations. The high dependence on forest to supply firewood and other wood products can be reduced by farmers adjacent to the forest planting trees on their own farms, which would meet their wood products requirement, efficient and effective use of wood and improved micro-climate. Additionally, the livelihood of the community living adjacent to the forest can be improved by adopting agricultural technics that would increase crop yields and reduce on post harvesting losses. The rehabilitation of degraded forest areas can also give the adjacent community that have Tree Nurseries an opportunity to sell their seedlings and provide labour during planting thereby increasing their disposable income.

Table 4.6: Constraints that the Forest Faces

No.	Constraint	Causes	Solution
1	Poor forest management	Inadequate financial resources	Allocation adequate financial resources
2	Inadequate number of staff members	Inadequate financial resources	KFS to allocate additional staff to the station
3	Poor roads network	Inadequate financial resources	Government and partners to allocate adequate financial resources for this activity
4	Inadequate housing for KFS staff	Inadequate financial resources	Government and partners to allocate more funds for construction and repair of houses

5	Inadequate security	Inadequate number of rangers	Post more Rangers, recruit and train community scouts.
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4.5.4 Problem analysis

Participatory Forest Management as has been practiced in this forest has not been very effective mainly due to inadequate resources and lack of knowledge on how some of the activities particularly those that requiring value addition can be carried out. There is need therefore to raise funds for capacity building of the community members for them to fully participate in the implementation of various proposed activities. On the other hand, all other stakeholders should support CFA in fund raising and sourcing of the appropriate organizations that can capacity build the community on various value addition technologies

4.5.5 Vision of the plan

To be a leading Forest Ecosystem in sustainable management of resources in North Rift Conservancy for the benefit and transformation of the adjacent community

4.5.6 The overall Objective

To sustainably conserve and manage North Nandi forest using best forest management practices to enhance biodiversity, water catchment and economic values for increased benefits to community and resource managers.

Main objectives

- To enhance protection and conservation natural forest
- To enhance conservation of water catchments and ecologically sensitive areas
- To support establishment and management of ecotourism facilities
- To improve forest infrastructure and communication
- To improve human resource development
- To support community-based livelihood activities
- Promote on farm-forestry in adjacent areas

4.5.7 Forest Management and utilization

4.5.7.1 Forest zonation

The forest zonation of the previous plan was reviewed and found to be inadequate. Because of this, management objectives of each zone have been revised based on experiences on the implementation of the previous plan and the resources that are allocated to each programme. The table 4.7 below gives a list of criteria used to zone the forest into different management zones (figure 4.1). For each zone, management objectives have been developed.

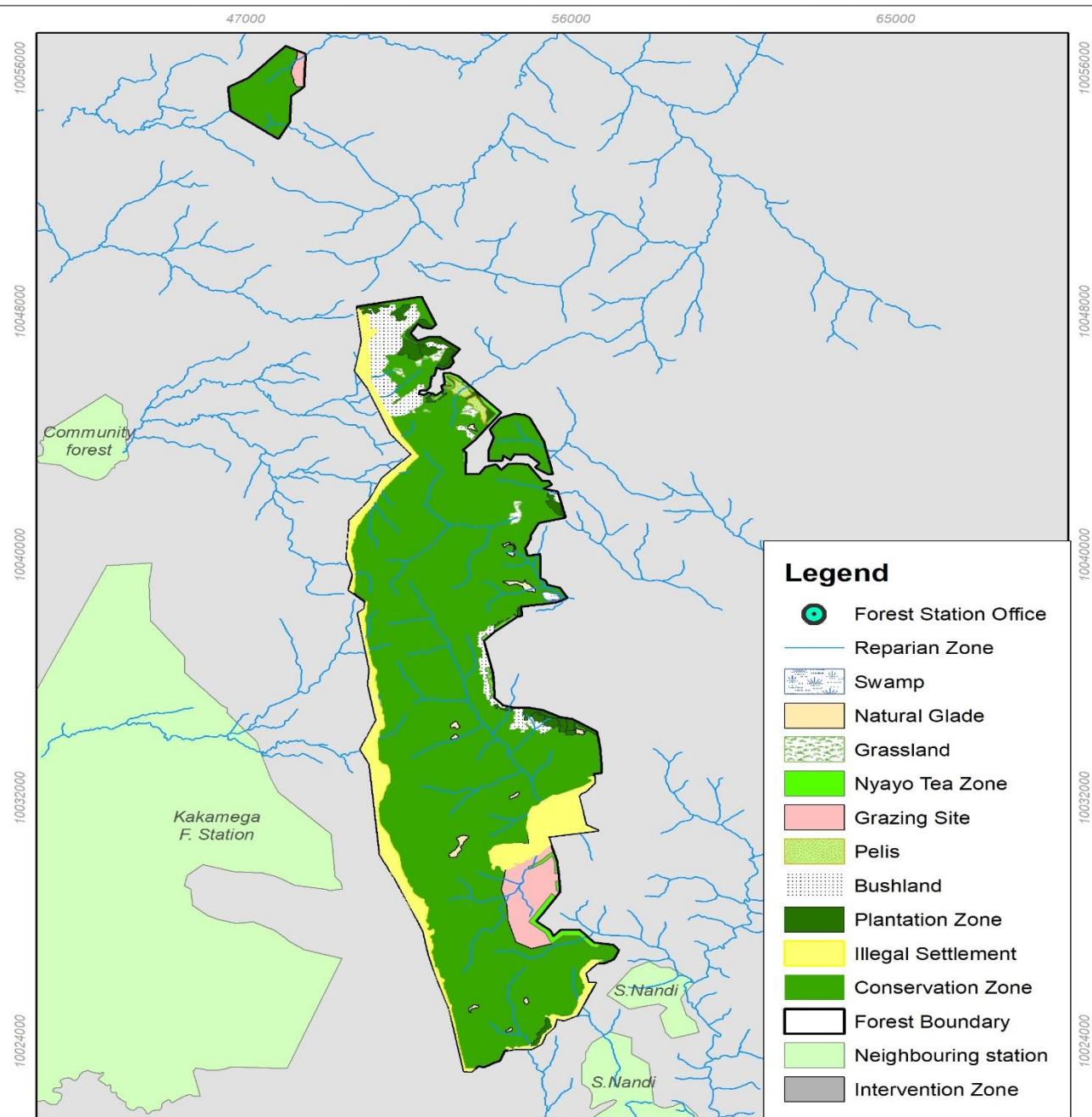
Table 4.7: Criteria for forest zonation

Zone	Zonation criteria	Management objectives
Natural forest	Natural forest Natural glades	To protect the existing natural forest To Maintain all-natural glades

Zone	Zonation criteria	Management objectives
	Designated water catchment areas wetlands	<p>Protection of natural regeneration and restore degraded areas through enrichment planting</p> <p>Ensure minimal vegetation clearance when installing or maintaining installations such as electricity and water pipes</p> <p>Controlled grazing in areas that are not ecologically fragile or within water catchment areas.</p> <p>Non extractive IGAs allowed</p> <p>Develop of eco-tourism facilities in all ecotourism attraction sites as per KFS ecotourism guidelines</p> <p>Create access tracks and Nature trails with minimal ecological impact</p>
Plantation Management Zone	Forest plantation area	<ul style="list-style-type: none"> • All plantations to be commercially managed • Establishment of plantation through PELIS • Grazing allowed in mature plantation areas and within the agreed carrying capacity • IGAs that enhance plantation establishment allowed
Encroachment and informal settlement	Natural forest Forest plantation area	All illegal settlers to be removed from the forest and forest boundary established
Intervention zone	Forest adjacent zone comprised of community land	<ul style="list-style-type: none"> • Promote farm forestry and fruit orchards • Promote Alternative income for livelihood improvement • Promote alternative and affordable energy technologies
Grassland	Existing forest glades	<ul style="list-style-type: none"> • Grazing/grass cut and carry • Bee keeping • Cottage industry
Rehabilitation/ Bush land	Forest areas with scattered bushes	Remove invasive species through clearing of bushes and shrubs. Where practical allow natural regeneration or carry out enrichment planting on sites that are heavily degraded.
Nyayo Tea Zone	100 m strip along forest boundary	<p>Development of Tea plantation</p> <p>Establishment of Eucalyptus plantations on</p>

Zone	Zonation criteria	Management objectives
		sites not suitable for tea growing

NORTH NANDI FOREST ZONATION MAP



SCALE AND DIRECTION	DATA SOURCE	COORDINATE SYSTEM	PREPARED BY
 N E S W 1:150,000 0 700 1,400 2,800 4,200 5,600 Meters	FRIM Database Forest Management Sheets GPS ground coordinates November, 2021	Coordinate System: UTM Zone 36N Projection: Transverse Mercator Datum: Arc 1960 False Easting: 500,000,000 Central Meridian: 33.0000 Scale Factor: 0.9996 Latitude Of Origin: 0.0000 Units: Meter	Forest Resource & Information Management GIS/ RS Section

Fig 4.1: Forest Management Zones

CHAPTER FIVE

MANAGEMENT PROGRAMMES

5.0 Management Programmes

The success of implementation of this plan will largely depend on how the forest managers, the community Forest Association members and other key stakeholders will be able to understand this section and implement the proposed activities. The section is developed based on the objectives of this plan and strategies on how to overcome the challenges and bottlenecks encountered during the previous plan. After review of the previous plan, most of the proposed programmes were found to be ambitious while others were poorly implemented. Activities in programmes in the previous Management Plan that are still relevant to the current plan have been included. After the situational analysis and identification of threats, constraints and problems have been proposed to deal with the primary and secondary forestry issues in North Nandi Forest.

These programmes presented below and are namely: -

1. Natural forest conservation and Plantations management programme
2. Water resources management programme
3. Wildlife and ecotourism management programme
4. Community development programme
5. Infrastructure and equipment development programme
6. Protection and security programme
7. Human resources development programme
8. Research and Education programme



Plate 5.1: photo of LPRT during visioning (**Move to approach to plan preparation**)



Plate 5.2: photo of LPRT participating in the development of programmes(**Move to approach to plan preparation**)

5.1 Natural forest conservation and management programme

The following criteria has been considered in this programme: -

- Protection of the ecological integrity of the zones
- Preservation of the water catchment function
- PFM activities and user rights
- Payment for Environmental Services (PES)
- Development of ecotourism and nature-based enterprises
- Controlled utilization of wood and NWFP

5.1.1 Background

The natural forest programme will focus on forest areas comprised of a total of 8,189.2Ha (8000 Ha of indigenous forests 40.2 Ha of grassland and 149 Ha of wetland) which is rich in biodiversity including unique plant and animal species.

(**Highlight the importance of the natural forests**)

Threatened tree species such as *Prunus Africana* (Tendwet), *Olea capensis* (Murguiwet) and a host of numerous other plant and tree species are found in North Nandi forest.

Threatened wildlife include; the beautiful Sitatunga, whose population has gone tremendously low due to illegal hunting and shrinkage of habitat. The natural forest is a vital water catchment for numerous rivers that drain into the Yala River that drains into Lake Victoria.

The natural forest is very important in sustaining surrounding local communities, majority of who are farmers. The local communities also make use of the forest for grazing, source of fuelwood, harvesting honey and extraction of herbal plants. They are also spectacular sites suitable for eco- tourism development. (**Reference the plates below in the narrative above**)



Plate 5.3: Photo of indigenous forest at Tabolwa



Plate 5.4: Photo of strangling fig tree

5.1.2 Management challenges

The key challenges currently facing this program are;

- Poaching of game
- Illegal removal of building material and fuel wood
- Invasive species such as *Cestrum aurantiacum*
- Illegal grazing and overgrazing
- Human encroachment and illegal settlement
- Poor infrastructure (Roads)

5.1.3 Programme objective

The programme objective is to protect, conserve and sustainably manage and use the natural forest for continued provision of forest products and services

The specific objectives to be addressed in this programme include; -

- Awareness creation on the importance of Natural forest
- Remove invasive species and rehabilitate the degraded sites
- Step up patrols to control illegal removal of forest products
- Control grazing
- Remove illegal settlers

Table 5.1: Natural forest conservation and management programme Management actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)	
				1	2	3	4	5			
Objective 1: To create awareness on the importance of Natural forest											
Awareness creation through meetings and public barazas in areas adjacent to the 6 beats of forest	No.	30	Records on attendance, photos and minutes	6	6	6	6	6	KFS, CFA and other stakeholders	0.30 M	
Hold a Capacity building workshop for CFA & WRUA management committee on Natural forest	No.	5	Attendance list, Training manual, reports, photos	1	1	1	1	1	KFS, CFA and other stakeholders	1.0 M	
Establishment of on farm woodlots	No.	6	Demo units	1	1	1	1	2	KFS, CFA and other stakeholders	700,00	
Objective 2: Removal of invasive species and rehabilitation of degraded forest area (80 Ha)											

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)
				1	2	3	4	5		
Removal of invasive species	Ha	80	Area cleared	30	20	10	10	10	KFS, CFA and other stakeholders	840,000
Seedlings production	No	80,000	Seedlings	30,000	20,000	10,000	10,000	10,000	KFS & CFA	2.0 M
Planting	Ha	80	Area planted	30	20	10	10	10	KFS & CFA	400.000
Spot Weeding	Ha	80	Area weeded	30	50	60	40	30	KFS & CFA	2 M
Objective 3: To protect the forest against illegal extraction of timber and other forest products								Importance of compliance with forest legislations & regulations,		
Enhance forest patrols and policing	No	60	KFS and CFA reports	12	12	12	12	12	KFS, CFA and Partners	200,000
Objective 4 : To address illegal grazing and over grazing										
Determine the forest carrying capacity	No	1	Animal carrying capacity research report	1	0	0	0	0	KFS, CFA and Partners	200,000
Develop a grazing plan	No	1	North Nandi Forest grazing plan	1	0	0	0	0	KFS, CFA and Partners	400,000

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)
				1	2	3	4	5		
Implementation of the grazing plan	NO	1	list of grazers	1	1	1	1	1	KFS ,CFA	300,000
Objective 5 : To address illegal settlement and encroachment										
Determine the number of illegal settlers in the forest	No.	1	List of illegal settlers	1	0	0	0	0	KFS, CFA, Central and County Governments	500,000
Develop a mechanism of removing illegal settles	No.	1	Strategy put in place	0	0	1	0	0	KFS, CFA, Central and County Governments	200,000
Removal of illegal settlers	No	1	All illegal settles removed	0	0	0	0	1	KFS, CFA, Central and County Governments	2 Million

5.2 Plantation development programme

5.2.1 Background

The plantation zone is comprised of 522.2 Ha of exotic forests of Pine, Cypress, Eucalyptus and Acacia melanoxylon trees. This area is currently utilized for industrial forest plantation and controlled grazing. (Give the importance of plantations and segregate the areas for each plantation species in the narrative)-Ref. FPMP 2015-2025 for North Nandi.

Table 5.2: Age class distribution of plantation

Species/Age class	<5 -	6-10	11-15	16-20	21-25	26-30	Over 30	Total Ha
Cypress spp	161.9	50.1	7.81				14	233.8
Pine spp	136.6	46.2			0.5			183.3
Eucalyptus spp	75.6	8.6	33.1					117.3
Acacia melanoxylon	7.8							7.8
Total	381.9	104.9	40.91	0.00	0.5	0.00	14.0	522.2

The station has a backlog of silvicultural operations (specify; pruning? thinning? Harvesting?) attributed to inadequate funding and low staff levels. However, the station Manager has used his own initiative to involve the community in carrying out some of silvicultural activities.

5.2.2 Management challenges

The key challenges currently facing this program are;

-Any backlog in planting? Pruning? thinning? Harvesting?

- Poor quality stands
- Damage to trees by Livestock
- Illegal removal fitos...withies??
- Poor infrastructure (Roads)

5.2.3 Management objectives

To establish high quality exotic forest plantations for sale to wood based industries within Nandi County.

- Establishment of plantations through PELIS
- Improvement of stands by carrying out timely silvicultural operations
- Protect plantations from illegal removal of fitos and livestock damage
- Improvement of forest roads through regular grading and maintenance.
- Lifting of ban on logging??

(Move the plates below to chapter 2; description of the forest)



Plate 5.4: Nyayo Tea Zone



Plate 5.5: Beans planted under PELIS in Kiptangus Beat



Plate 5.6: Young Pine plantation at Kiptangus 5A established through PELIS

Table 5.3: Plantation development programme actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget. (Kshs)	
				1	2	3	4	5			
Objective 1: Establishment of plantations through PELIS (100) Ha											
Seedling production ('000)	Ha	100?? what informed this figure? Backlog or harvesting?	Seedlings produced	0	20	20	20	40	CFA and KFS	1 M	
Plots allocation	No.	200	PELIS register & maps	0	40	40	40	80	CFA and KFS	CFA to organize	
Land preparation through PELIS	Ha	100	Area prepared	0	20	20	20	40	CFA and KFS	To be done under PELIS arrangement	
Planting	Ha	100	Area planted	0	20	20	20	40	CFA and KFS	300,000	
Weeding	Ha	100	Area weeded	0	20	40	60	80	CFA and KFS	PELIS	
Objective 2 Maintenance of plantations											
Pruning	Ha	261	Area pruned	40	50	60	60	51	CFA and KFS	2 M	
Thinning	Ha	92	Area thinned	12	20	20	20	20	CFA and KFS	Commercial thinning	
Objective 3: Protection of plantations from theft and damage by game. More management actions??											

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget. (Kshs)
				1	2	3	4	5		
Undertake patrols	No.	60	PELIS register	12	12	12	12	12	CFA,KFS and KWS	600,000
Errect fire/observing towers.	No	3	Fire tower erected	1	0	1	0	1	CFA and KFS	8M
Objective 4: Opening up and maintenance of plantation management roads and firebreaks										
Opening and maintenance of roads	Km	12	Roads unit and Station records	5	7	5	7	5	KFS	300,00
Opening and maintenance of firebreaks	Km	4	Station records	4	4	4	4	4	KFS/CFA	200,000

5.3 Water resources management programme

5.3.1 Background

The conservation zone is comprised of 8,189.2Ha of indigenous forests, bush land and grassland which is a major water catchment within the forest and in the intervention zone.

North Nandi forest is major water catchment areas with several permanent rivers originating from there. The rivers include; Kingwal and the Kingwal swamp leading to Kimondi and Yala rivers and eventually to Lake Victoria. Other numerous water springs and streams are found in the forest and the forest adjacent areas. The community adjacent to the forest benefit enormously from the water from the rivers that originate from this forest for domestic, livestock and Industrial use. However, there is limited access to clean and safe water sources for domestic use. The drainage is divided into two, those that are draining eastwards into Kingwal and Kimondi river systems and finally to Yala river and those flowing westward through south Nandi forest and finally to Yala river.

5.3.2 Management challenges

The key challenges currently facing this zone are;

- Illegal grazing and overgrazing causing degradation
- Water pollution-cleaning clothes and vehicles along rivers in market centres, agricultural chemicals, soil erosion, spraying livestock near rivers at homesteads level.

5.3.3 Management objectives

- ❖ Awareness creation on importance of proper management of water
- ❖ To improve water resources conservation and utilization
- ❖ To conserve and protect riparian area through planting of friendly indigenous trees
- ❖ To improve health of the community through provision of clean and safe water
- ❖ To improve soil and water holding capacity



Plate 5.6: Tilalwa River in Teresia beat highly polluted by animals

Table 5.4: Water resources management programme actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)	
				1	2	3	4	5			
Objective 1: To create awareness on the importance of proper management of water resources											
Awareness creation through meetings and public barazas.	No.	6	Records on attendance, photos and minutes	1	1	1	2	1	KFS, WRA	60,000	
Awareness creation on role of women and youth in participating in forest conservation and protection of riparian area	No.	6	Reports	2	1	1	1	1	CFA and KFS and WRUA	300,00	
Hold a Capacity building workshop for CFA & WRUA management committee on management of water resources	No.	1	Attendance list, Training manual, reports, photos	0	1	0	0	0	KFS, WRA & consultant	500,000	
Objective 2: Improve water resources conservation and utilization											
Control pollution through	No.	60	Reports on	12	12	12	12	12	CFA, WRUA,	200,000	

Action	Unit	5 yr targets	Means verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)	
				1	2	3	4	5			
scouting			quarterly basis						WRA& KFS		
Objective 3: Protection and conservation of riparian areas											
Seedling production ('000')	No	30	Seedlings produced	6	6	6	6	6	CFA, WRUA, WRA& KFS	600,000	
Planting of water friendly tree species on riparian areas	Km	5	Riparian belt planted	1	1	1	1	1	CFA & KFS WRUAs	300,000	
Fencing of water springs both in forest and in the intervention zone	Km	10	Springs fenced off, photos	2	2	2	2	2	CFA, WRUA, WRA & KFS	200,000	
Objective 4: Livelihood improvement through provision of clean and safe water (Generate more management actions?)											
Construction of common intakes in the intervention for each beat	No	7	Intakes, photos	2	2	1	1	1	CFA, WRA & KFS	2.1 M	
Objective 5: To improve soil water holding capacity (Generate more management actions?) Do we have a WRUA?											
Hold a Capacity building workshop for CFA & WRUA management committee on importance of soil and water	No	6	Attendance list, Training manual, reports, photos	1	1	1	1	1	CFA, WRA & KFS	300,000	

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)
				1	2	3	4	5		
conservation										

5.4 Wildlife and Ecotourism Management Programme

5.4.1 Background

North Nandi forest has several sites such as (Plate 5.7&5.8), camping sites, viewpoints and Bird watching sites that are of varied importance to the local community. In addition, poor infrastructure and inadequate allocation of resources has also contributed to lack of exploitation of the tourism potential.

Human wildlife conflict in the area is minimal, as we do not have big game such as Elephant in the forest. However, primates regularly stray to the farms that are adjacent to the forest causing damage to crops.

If the existing sites are properly developed and marketed which can effectively done in collaboration with other stakeholders that have expertise in this sector the facilities would generate income for the community members and alleviate poverty of the people living adjacent to the forest.

5.4.2 Management challenges

The implementation and economic viability of the Eco-tourism programme face some challenges key among them been;

- ❖ Low community understanding on the economic importance and potential of the eco-tourism activities
- ❖ Encroachment and illegal settlements
- ❖ Poaching of game
- ❖ Poor infrastructure such as nature trails, access roads
- ❖ Lack of eco-tourism facilities such as camping sites, Guest house etc
- ❖ Poor marketing of the ecotourism potential

5.4.3 Management objective

Awareness creation on the importance of wildlife and benefits nature can bring to the community

- ❖ To create awareness on the importance of wildlife and benefits of eco-tourism
- ❖ To improve the roads for ease of access to Eco-tourism sites
- ❖ To establish recreational facilities at the proposed sites such as Camps sites, nature trails
- ❖ To create Publicity on the existing sceneries through Brochures, Road shows and media
- ❖ To conserve wildlife and habitat through intensified security patrols and planting indigenous fruit trees such as Syzgium Spp, wild bananas etc

(Move plates below to chapter 2)



Plate 5.7 : Proposed site for Eco lodge
camping site at Mwein beat



Plate 5.8: snake found close Tabolwa rock



Plate 5.9: Tabolwa Rock suitable for picnic site and view point Plate5.10: Celebrations at Tabolwa Rock



Table 5.5: Wildlife and Ecotourism Management Programme management actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)	
				1	2	3	4	5			
Objective 1: To create awareness on the importance of wildlife and benefits of eco-tourism											
Hold a Capacity building workshop CFA management committee on eco-tourism	No	1	Attendance list, Training manual, reports, photos	0	1	0	0	0	CFA, KFS	200,000	
Conduct Exchange visits with successful stations (Kereita, Hombe, Arab Sokoke & Menengai)	No	4	List of participants and photos	1	1	1	1	0	CFA, KFS	1,600,000	
Objective2: To improve the road infrastructure for ease of access to Eco-tourism sites											
Development and improvement of roads to tourist sites	Km	10	Reports and photos	2	2	2		2	KWS, KFS & CFA	1.8 M	
Objective 3: Establish facilities at proposed Eco-sites											
Develop Camping sites in four beats (Mwein, Kapchepkok) Septonok and	No	4	Fully operational camp sites, photos and	0	1	1	1	1	KFS, CFA, stakeholders and investors	4M	

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)
				1	2	3	4	5		
Kiptangus)			records							
Establish a Nature Trail with Toilet facilities and litter bins in Septonok beat	Km	10	Nature trail fully operational and photos	5	5	0	0	0	KFS, CFA, stakeholders and investors	1,000,000
Purchase binoculars	No	4	Store records, inventory	0	2	2	0	0	KFS, CFA, stakeholders and investors	400,000
Purchase mountain bikes for hiring out	No	8	Store records, inventory	0	8	0	0	0	KFS, CFA, stakeholders and investors	200,000
Establish a visitor security/ monitoring system	No	1	Store's record	0	1	0	0	0	KFS & CFA	0.5 M
Recruit tour guides and porters??move to HR and increase the number -Add training as a management activity	No	30	Visitors	5	10	10	5	0	KFS, &CFA	1 M

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget (Kshs)	
				1	2	3	4	5			
Objective 4: Promote domestic tourism and improve visibility of various sites											
Publicity through -Brochures	No	4	Records on promotions		1	1	1	1	KFS & CFA	250,000	
Road shows -Signage and billboards		5		1	1	1	1	1		300,000	
Print and electronic media		5		1	1	1	1	1		275,000	
Promotion of visitors' home stays in homes adjacent to the forest		3		1	1		1			175,000	

5.5 Community Development Programme

5.5.1 Background

The Forests Conservation and Management Act 2016, provides an opportunity for community involvement in forest management through Community Forest Associations (CFAs), through which the CFAs enter into a Forest Management Agreement (FMA) with KFS on behalf of local communities. The purpose of this approach is to promote ownership of the forest by community that would enhance forest conservation, sustainable utilization of the forest resources and improve local community's livelihoods

Most of the community members living adjacent to the North Nandi forest rely on the forest as a source of fuel wood, building materials and source of fodder for their animals. The average farm size is 1-3 acres which is about 71% of the population living adjacent to the forest. Majority (58%) of those interviewed indicated that they earn Kshs. 1-5000 per month. Livestock is a major activity among the community members but there is little practice of zero grazing and paddocking. According to the Socio-economic study that was carried out, most of the households are grazing their animals in the forest. There is also a high level of unemployment and School drop outs due to financial issues, early marriage, early pregnancy which was as reported at 17% of the respondents. This has resulted to illegal activities in the forest such as illegal removal of fuel wood and building materials for domestic use and sale that requires be addressed.

There is therefore need to have a programme in place with activities both in the forest reserve and adjacent areas that will address the illegal activities and improve the livelihood of the community living adjacent to the forest. Some of the proposed activities to be carried out in the intervention zone include; increased tree cover, adoption of improved agricultural practices and Alternative Sources of Renewable Energy.

5.5.2 Management challenges

The key challenges faced by this program include

Inadequate awareness on forestry and on farm technologies that can improve community livelihood

- ❖ Inadequate capacity by the community on PFM and forest conservation issues
- ❖ dependence on forest for wood fuel
- ❖ dependence on forest as source of fodder
- ❖ Increased cutting of the few trees existing on farms
- ❖ Soil erosion in the farms

5.5.3 Management objectives

Based on the current status and challenges faced in this program, this plan proposes the implementation of the following objectives;

- ❖ Awareness creation to promote on farm tree growing and other farming technologies that would increase farm food production
- ❖ Build capacity of the community on PFM and forest conservation issues
- ❖ To promote use of alternative renewable energy sources to reduce dependence on wood as source of energy and promote growing of trees on farms

- ❖ Promotion of zero grazing and planting of fodder crops on farms.
- ❖ Strengthening the governance and leadership of the CFA
- ❖ To support community livelihoods through IGAs



Plate 5.11: Growing of Onions before planting trees
Nursery



Plate 5.12: Murguiwet community tree
Nursery

Table 5.6: Community Development Programme management actions

Action	Unit	5yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
Objective 1: awareness on forestry and on farm technologies for community livelihood improvement											
Awareness creation through meetings and public barazas.	No	7	Attendance list, minutes, reports, photos	3	4	0	0	0	KWS, KFS	350,000	
Hold a Capacity building workshop CFA management committee on simple forestry and on farm technologies -Exchange visits? -Education tours?	No	1	Attendance list, Training manual, reports, photos	1	0	0	0	0	CFA, KFS	200,000	
Organise bench markings on well-established CFA'S KFS		3		1		1		1	CFA,KFS	600,000	
Organise Educational tours to improve forestry and farm technologies for CFA,KFS members		2			1		1		CFA,KFS	400,000	
Objective 2: Promotion of Soil and Water Conservation and on farm tree planting to achieve 30% cover on individual farms(Revise											

Action	Unit	5yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
<i>(targets based on 30% tree cover presidential directive)</i>										
Seedlings production ('000').	No	50	Seedlings	10	10	10	10	10	CFA	1 M
Promotion of Agro forestry	No.	50	Beneficiaries	0	20	10	10	10	CFA, KFS & KEFRI	400,000
Establishment of woodlots	No.	100	Beneficiaries	20	20	20	20	20	CFA	100,000
Construction of Soil and Water Conservation structures eg Terraces	No.	40	Demo sites	5	5	10	10	10	CFA, MoALF, KFS, CGB	1M
Objective 3: Promotion of Alternatives Sources of Energy										
Demonstration of Energy conservation technologies eg solar, Biogas, improved cook stoves etc	No	4	Types of Technologies promoted	0	2	0	2	0	CFA, MOE, KFS& NGOS	400,000
Adoption of Energy conservation technologies	No	100	Beneficiaries(Revise)	0	20	20	30	30	CFA, MOE, KFS& NGOS	150,000
Objective 4: Promotion of zero grazing										

Action	Unit	5yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
Introduction of fodder crops in all 6 beats/ locations	No	6	Beneficiaries	1	2	2	1	0	CFA, MoALF, CGB, SNV	140,000	
Construction of zero grazing demonstration units & biogas plants development in all 6 beats/ locations using local material (separate) & support farmers to start zero grazing -Exchange visits	No	6	Beneficiaries	1	2	2	1	0	CFA, MoALF, CGB, SNV	630,000	
Support farmers to start zero grazing		5		2		2		1	CFA, MoALF, CGB, SNV	525,000	
Objective 5: Enhancement of CFA Governance issues											
Membership renewal and recruitment of new members of CFA(Target 100%)	No	650??	New members recruited	50	100	100	100	300	CFA,	50,000	
Establish local level forest management committee (LLFMC)??	No	1	LLFMC established	1	0	0	0	0	CFA, KFS &NGAO	50,000	

Action	Unit	5yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
FLMC??											
Hold CFA meetings to discuss new developments and activities(more meetings..)	No	30	Meetings held	6	6	6	6	6	CFA, KFS &NGAO	480,000	
Conduct CFA elections	No	1	Elections held, reports	1	0	0	1	0	CFA	100,000	
Filing of returns to the registrar	No.	5	Records/ reports	1	1	1	1	1	CFA	50,000	
Maintenance of CFA records	No	5	Records	1	1	1	1	1	CFA	10,000	
Adherence to statutory requirements	No	5	Records	1	1	1	1	1	CFA	10,000	
Develop proposals for funding IGAs	No	5	Proposals	1	1	1	1	1	CFA	250,000	
Objective 5: Livelihood improvement											
Development of wood and non-wood-based industries eg basketry, Water bottling and honey harvesting(More	No	3	Reports	0	0	1	1	1	CFA & Private investor	5M	

Action	Unit	5yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
viable IGAs)										
Training of local Artisans on fabrication of Energy saving jikos	No.	12	IGAs adopted	6	6	0	0	0	CFA, MOE, KFS& NGOS	250,000
Fabrication of Energy saving jikos for sale to the community	No.	1680	Records & photos	120	120	480	480	480	CFA, MOE, KFS& NGOS	252,000

5.6 Infrastructure and Equipment development programme

5.6.1 Background

Most of the buildings in North Nandi forest are dilapidated and in bad state due to old age or poor maintenance. The 14 Kms of forest roads that connects to various parts of the forest from the station offices, have not been maintained or graded for a long time and have deep gullies and trenches. The station office which is located at the edge of the forest affects the forest management particularly the beats that are far. The office and staff houses are old and dilapidated. The station has seven outposts (7) and only four have Forest Ranger's houses. Similarly, an inventory on forest tools and equipment revealed that the station has inadequate stock and others in poor condition for various forest operations/ activities.

5.6.2 Management challenges

- ❖ Lack of an office facility for CFA
- ❖ Inadequate number and poor conditions of houses at the station and at the outposts
- ❖ Lack of electricity supply to the office block and staff houses
- ❖ Poor state of access roads and bridges in the forest
- ❖ Inadequate and poor conditions of tools and equipment for use in forest operations
- ❖ Lack of signage to different sites and facilities

5.6.3 Management objectives

- ❖ Improve the existing infrastructure (Roads, buildings etc)
- ❖ Connect supply of electricity to the office block and staff houses
- ❖ Provide the appropriate equipment and tools such as Motor bikes, Knap sacks, jembes, watering cans that currently at a worrying level
- ❖ Enhance visibility to various Forest sites and other resources (signage)

Table 5.7: Infrastructure and Equipment development programme management actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget.	
				1	2	3	4	5			
Objective 1: Develop and improve infrastructure											
Establish CFA Office	No	3	Office	0	1	1	1	0	CFA	5 M	
Establish a Resource centre in station beat(Harmonise the no)	No	1	Photos and Resource centre	0	0	1	0	0	CFA, KFS and other partners	10 M	
Establish KFS Rangers' camp at Kipsamoite and Kiptangus	No	2	Photos and Rangers houses	0	1	0	1	0	KFS	2.5 M	
Upgrade and renovate forest office and staff houses	No.	5	Repair and maintenance done	1	2	2	0	0	KFS	2.4 M	
Roads grading and gravelling/murraming in all beats	Kms	30.5	Grading and gravelling done	6.5	6	6	6	6	KFS and other stakeholders	4M	
Fire watch Tower	No.	1	Watch tower installed	0	1	0	0	0	KFS and other stakeholders		
Objective 2: Supply of electricity to the existing and other facilities to be developed											
Connect supply of electricity power supply to the office block, CFA Office and staff houses	No	6	Connection done	1	2	3	0	0	KFS	300,000	

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget.
				1	2	3	4	5		
Connect supply of electricity from main or solar power to Rangers posts	No	3	Connection made	0	0	2	1	0	KFS & CFA	150,000
Objective 2: Provide equipment										
Purchase Motor cycles	No	2	Equipment availed	0	0	2	0	0	KFS	200,000
Allocation of equipment and purchase tools required for maintenance of roads, compounds and tree Nursery	No	Various (Assorted)	Tools availed and entered in the stores ledger						KFS	500,000
Objective 3: Improve visibility of the Forest and other resources										
Make signage to office, forest Rangers' posts and resource site locations	No	8	Signage availed	2	2	1	1	2	KFS, CFA & KWS	160,000

5.7 Protection and Security Programme

5.7.1 Background

An elaborate and properly functioning forest protection and security programme is required in to address the problems in North Nandi forest station. The problems identified and to be addressed include; Illegal settlement, illegal logging, illegal grazing and Illegal poaching of game. The protection and security programme and other management programmes are all designed to ensure that these illegal activities are contained or reduced. **North Nandi forest** has inadequate number of security personnel in comparison to its area and the complexity of tasks that need to be carried out. To address these problems collaborative arrangements with stakeholders and other partners such as the National government administrators are required

5.7.2 Management challenges

- ❖ Illegal settlement and encroachment
- ❖ Illegal removal of wood products
- ❖ Illegal grazing.
- ❖ Poaching of game
- ❖ Inadequate number of Forest Rangers and scouts

5.7.3 Management objectives

- ❖ To evict illegal settlers and stop encroachment
- ❖ To enhance forest protection and reduce illegal activities
- ❖ To regulate and control grazing in the forest
- ❖ To control poaching of game
- ❖ To train additional community scouts

Table 5.8: Protection and Security Programme management actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
Objective 1: Enhance forest protection and reduce illegal activities											
Awareness creation meetings	No	30	No. of public barazas held	6	6	6	6	6	CFA, KFS, NGOA and KWS	500,000	
Recruit and train volunteer community scouts	No	14	Station/CFA records	6	8	0	0	0	KFS, CFA & other stakeholders	4.2M	
Train the joint team (Scouts, KFS Rangers & KWS Rangers	No.	5	Training manual, Station records and photos	1	1	1	1	1	CFA, KFS, NGAO and KWS		
Undertake joint patrols twice a month	No	750	M/days	150	150	150	150	150	CFA & KFS	400,000	
Maintenance of forest boundaries	Km	41	Length protected and maintained	41	41	41	41	41	CFA, KWS & KFS	1.75 M	
Objective 2: Regulate and control grazing in the forest											
Carry out a study to determine livestock carrying capacity of the forest	No	1	Report on carrying capacity of the forest	0	0	1	0	0	KFS & CFA	250,000	
Develop a grazing plan	No	1	Grazing plan	0	0	1	0	0	KFS & CFA	800,000	

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
Prepare a grazing register every year	No	1	Grazing register	1	1	1	1	1	KFS & CFA	50,000
Objective 3: To regulate and control poaching of game										
Conduct joint Patrols	No	60	Reports and records	12	12	12	12	12	KFS, KWS and CFA	200,000
Conduct awareness creation meetings and public barazas on importance of wildlife	No.	14	Reports and records	2	2	2	4	4	NGAO, KFS, KWS and CFA and other partners	280,000

5.8 Human Resources Development Programme

5.8.1 Background

The successful implementation of all the proposed management programmes in this plan will depend on the staff who will oversee the management, protection, policing and security of the forest resources.

For the staff to effectively and efficiently deliver on their mandate, they must be adequate in numbers, have competent skills and be motivated. This explains why there is need to have a program that would address areas of inadequacy and where possible bring on board the CFA and other stakeholders in the management of the forest resource.

5.8.2 Management challenges

- ❖ Inadequate staff to deal with the current Administrative and Security issues
- ❖ Inadequate number of trained community scouts
- ❖ Lack of continuous on job training of the existing staff

5.8.3 Programme objective

- ❖ KFS to deploy adequate staff at all cadres and hire required additional labor on need basis
- ❖ To recruit and train additional number community scouts and post to Septonok, Kiptangus, Mwein and Teresia beats
- ❖ To conduct on continuous job training and motivate the staff

Table 5.9: Human Resources Development Programme management actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
Objective 1: To ensure the Forest Station has adequate staff levels at all cadres										
Recruit, deploy or transfer Forest Rangers	No	11	KFS HR records	4	5	2	0	0	KFS	200,000
Recruit community scouts	No	14	CFA staff records	7	7	0	0	0	CFA & KFS	100,000
Recruit a Record Management Assistant	No	1	KFS staff records	0	1	0	0	0	KFS	1.2 M
Recruit Office messenger/cleaner	No	1	KFS staff records	1	0	0	0	0	KFS	1.0 M
Recruit Tree Nursery Headman	No.	1	KFS staff records	1	0	0	0	0	KFS	1.2 M
Recruit Tree Nursery attendants	No.	10	KFS staff records	5	0	0	5	0	KFS	10 M
Objective 2: Recruit and train community scouts										
Recruit 2 scouts for each of the 6 beats that are lacking	No.	12	CFA records	6	6	0	0	0	KFS & CFA	50,000

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
Train newly recruited scouts on forest protection and policing	No	2	KFS and CFA training records	1	1	0	0	0	KFS & CFA	250,000	
Conduct joint patrols	No.	60	KFS & CFA records	12	12	12	12	12	KFS, KWS & CFA	600,000	
Purchase uniform and boots for the new scouts	No	8 pairs of uniforms, 8 pair of boots	CFA procurement records	6	6	0	0	0	KFS & CFA	750,000	
Objective 3: To conduct continuous on job training and motivate KFS staff											
Conduct on job training for staff especially on PFM, conflict resolution etc	No	5	KFS records	1	1	1	1	1	KFS and Partners	500,000	
Give staff that have performed well in the year merit certificates and gifts after performance appraisal	No	20	KFS	4	4	4	4	4	CFA, KFS and KWS	200,000	

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
Hold end of the year staff parties	No	5	KFS records	1	1	1	1	1	CFA, KFS and KWS	250,000

5.9 Education and Research Development Programme

5.9.1 Background

For proper and sustainable management of forest resources regular data collection and analysis would help in assessing progress, identifying changes and challenges. This helps in planning and decision making. Research programme will involve regular data collection, development of appropriate technologies/products and strategies that would improve the management of the forest.

Although substantial data for North Nandi forest exist on vegetation, land cover and socio-economic status, additional data may be required on a regular basis in the course of the five years plan implementation period. Research should be done on forest resource extraction and its impact to the biodiversity and the dynamics of the resource users (user groups), which will enable KFS and CFA to generate information. Some of the proposed research areas for North Nandi forest include;

- To conduct a study on number of livestock (cattle and sheep) grazing in the forest and their impact
- To conduct a study on Water demand and discharge from the various water sources in the forest,
- To conduct a study on how the yields per unit area of various crops grown in the farms adjacent can be increased
- To conduct a study on how post-harvest losses of various farm produce can be reduced
- To conduct a study on commercial viability of the various extraction of NWFPs and associated technologies for value addition.

5.9.2 Management Issues/Challenges

- Lack of identification of research needs
- Non-existence of partnership with institutions that conduct research
- Inadequate finances to conduct the proposed research
- Lack of information on appropriate agroforestry tree species to be grown and agroforestry practices to be promoted in the area adjacent to the forest
- Inadequate knowledge on crops/fodder suitable for growing on the farms adjacent to the forest
- Inadequate information on optimum number of wildlife and livestock units per unit area as pressure on forest forage leads wild animals to invade the farms
- Lack of information on sustainable and affordable, alternative sources of energy eg; solar, wind, biogas
- Over reliance on wood fuel as a source of energy which poses a threat to forest resources
- Inadequate information on existing research findings on improved farming practices and forest management

5.9.3 Management Objectives

- To conduct research with relevant Institutions on biodiversity, cultural and social use of the forest
- To establish an education facility at the CFA resource centre

- Integrate indigenous knowledge in natural resources management and conservation
- To develop farmer/community research capacity

Table 5.10: Education and Research Development Programme management actions

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
Objective 1: Conduct research on biodiversity, cultural and social use of the forest											
Partner with education and research institutions	No	5	Correspondences, agreements, MOUs	1	1	2	1	0	CFA, KFS, Moi University, University of East Africa-Baraton, KEFRI, and NMK	500,000	
Conduct research on forest flora and their economic importance	No	1	Report on Research findings	0	0	1	0	0	CFA, KFS, NMK, Moi University, KEFRI	500,000	
Conduct research on forest fauna and their economic importance	No	1	Report on Research findings	0	0	0	1	0	CFA, KFS, Nature Kenya KWS, NMK,	500,000	
Conduct research on cultural and social use of the forest	No	1	Report on Research findings	0	0	0	1	0	CFA, NMK, NGOs,	250,000	
Conduct Research on appropriate tree species for woodlots and agroforestry	No	1	Report on Research findings	0	1	0	1	0	CFA, KFS KEFRI, ICRAF	250,000	
Conduct Research on	No	1	Report on Research findings	1	1	1	1	1	CFA, KARLO &	500,000	

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
farm yields of key crops grown in the area									MoALF	
Conduct research on Appropriate forest rehabilitation methods and species	No	1	Report on Research findings	0	1	0	0	0	CFA, KFS, KEFRI, Moi University	250,000
Conduct research on water volume available, demands and recommended volume that can be abstracted	No	1	Research findings and papers	1	0	0	0	0	CFA, WRUA, KFS and WRA	500,000
Conduct research on Value addition on forest products	No	1	Report on Research findings	0	0	0	0	1	CFA, KFS, KEFRI, ICRAF. Moi University	250,000
Conduct research study on livestock carrying capacity	No	1	Report on Research findings	1	0	0	0	0	CFA, KFS, KEFRI & MoALF	500,000
Disseminate research findings	No	6	No of Meetings, No of copies of reports distributed	0	1	1	1	1	CFA, KFS, NMK KEFRI, Moi University	600,000
Objective 2: To establish an education facility at the CFA resource centre										

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget
				1	2	3	4	5		
Establish a library at the CFA resource center	No	1	Library records	0	0	1	0	0	CFA, KFS, NMK, KALRO, KEFRI, ICRAF. Moi University	1 M
Equip the library with relevant books, publication and research findings.	No	1000	Library inventory records	0	0	500	500	0	CFA, NMK, KEFRI, KALRO, ICRAF. Moi University	100,000
Promote inter- generation knowledge transfer	No	4	No of meetings held between elders and the youth and documentation		1	1	1	1	CFA, NMK , Moi University	200,000
Promote education and ecological studies of the forest by schools and learning institutions	No	8	Promotion materials and records of visiting schools	0	2	2	2	2	CFA, KFS, NMK KEFRI	100,000
Objective 3: Integrate indigenous knowledge in natural resources management										
Document Indigenous knowledge	No	1	Records and documentation	0	0	1	0	0	CFA, NMK, NGOs	200,000
Integrate findings in implementation of the management programs	No	1	Report on findings	0	0	0	0	1	CFA, NMK, CFA, NGOs	100,000

Action	Unit	5 yr targets	Means of verification	Annual targets (yrs)					Lead Agency	Budget	
				1	2	3	4	5			
Objective 4: To enhance community research capacity											
Recruit and train community research assistants	No	4	KFS and CFA records	0	0	4	0	0	CFA, NMK, NGOs, KALRO & KEFRI	300,000	

CHAPTER SIX

PLAN IMPLEMENTATION FINANCING AND STRUCTURE

6.1 Financial management

Currently, there are a few conservation and management activities going on in North Nandi forest and areas adjacent to the forest. These activities are funded by the government either through agencies like KFS and development partners such as GBM. To guide the implementation of this management plan, a financial management mechanism and a Plan Implementation Committee will be required to be in place. Financial management will include appropriate regulations provided by a Donor or a stakeholder that have provided funds for implementation of a project or activities within a programme on how finances allocated to both recurrent and development budgets will be spent. Revenue collection based on forest resources will be in accordance with the Kenya Forest Service regulations and procedures while funds due to the CFA will adhere to their constitution and by-laws governing management of various user groups. The CFA & WRUA are advised to raise funds by writing proposals that can attract funding from Donors. This will enable KFS, CFA & WRUA to have enough funds that will be required to support conservation efforts as guided by the Participatory Forest Management Plan. Budget reviews will be done annually by all those that will be involved in the implementation of the projects/activities in order to prioritize the operations in accordance with available funds and prevailing inflation rates at the time of review.

6.2 Environmental Impact Assessment

An Environment Impact Assessment (EIA) is a formal process for identifying the likely effects of particular activities or projects on the environment, human health and welfare. This will be carried out on all planned development activities before they are undertaken as stipulated in EMCA act. Essentially, EIA is designed to ensure that negative impacts are recognized and mitigation measures included in the plan. Several activities that require environmental impact assessment before being undertaken have been identified and described in Second Schedule (S.58 (1), (4)) of EMCA Act of 2015. The activities relevant to North Nandi include:

Establishment and expansion of recreational areas

- Construction of ecotourism facilities and associated structures
- Commercial exploitation of fauna and flora in indigenous forests and other conservation areas
- Quarry mining of stones and other minerals identified in the planning process and those identified after baseline survey.

Table 6.1: Summary of Negative Impacts and Mitigation Measures of Planned Activities

Development Activity	Negative Impacts	Mitigation Measures
Construction of roads, buildings, water supply lines etc	<ul style="list-style-type: none"> Environmental pristine alteration Vegetation destruction 	<ul style="list-style-type: none"> Should match with environment Proper waste disposal and cut off drains. Restrict housing to designated area Ensure minimum disturbance to natural vegetation
Establishment of recreational / camp sites and nature trails	<ul style="list-style-type: none"> Vegetation destruction Wildlife disturbance and displacement Uncontrolled waste disposal 	<ul style="list-style-type: none"> Access to picnic sites inside forested areas should be via nature trails No off-road drives to such sites No tree cutting along trails except clearing of undergrowth along them Picnic sites to have litter bins or bags to be carried away by picnickers for disposal at litter disposal sites Campsites to have eco-toilets
Commercial exploitation of Non-wood forest products	Wildlife disturbance and destruction of vegetation	Exploitation should only be allowed under strict supervision of KFS and other stakeholders
Quarry mining	Vegetation destruction	Restricting activity to where it will cause minimum damage

At the very outset, it is recognized that the following planned activities may cause negative impacts, and they need to be taken into account and mitigation measures planned for in advance:

- Wildlife and other micro-organisms habitat destruction and displacement during prescribed operations.
- Soil erosion during construction and grading of roads
- Sewerage, garbage and litter disposal from ecotourism facilities
- Quarry mining of stones and other minerals identified in the planning process and those identified after baseline survey
- Development of nature trails
- Construction of ecotourism facilities and associated structures.

6.3 Revenue generation

There are various activities that could attract some levies and fees that are charged by KFS from forest users. These include sale of timber logs and through other activities such as firewood collection, grazing, bee keeping and collection of construction materials. Other potential products extracted that can raise revenue include water abstraction, herbal medicine, hiking and soil collection. This plan recommends increase of activities that could bring revenue for the support KFS, CFA and community activities in enhancing forest restoration and conservation activities.

The current major source of revenue is grazing and shamba rent as the moratorium is still in force. Once this forest management plan is implemented additional revenue is expected to come from the following areas if properly managed and coordinated activities; gate fee collection, Nature walks, marathon events, Bandas, Camp sites and Eco-lodges among others. In addition, North Nandi forest has various products which cannot be commercially exploited but are very useful in meeting increased local demand. The potential for non-wood products are largely inadequately exploited and if value addition is promoted, this can generate income for local community for the improvement of their livelihood and for enhancing forest conservation and management.

- **Revenue generated for the last five years**

Table 6.2: Revenue collection from North Nandi forest station for the last five years

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	318,850	161,300	21,750	9,250	7,600	6,200	11,000	26,250	17,667	17,520	17,530	16,700
2019	95,630	82,970	32,453	22,795	11,061	14,750	18,000	14,280	16,153	12,900	10,500	49,400
2020	48,050	75,515	34,833	19,350	21,530	24,950	27,030	13,780	12,110	4,898	16,513	16,512
2021	23,814	37,212	36,568	19,274	41,024	78,219	63,167	21,596	15,226	28,410	59,305	31,669
2022	27,755	22,988	30,156	33,014	46,634	24,354	20,421	3,992	28,934	8,922	18,765	11,473

- **Revenue projections**

Based on revenues generated from North Nandi forest for the last five years, the projected revenue for the next 5-year period is as shown in the table below.

Table 6.3: North Nandi forest revenue projections, 2022-2026

Year	Forest products	Total (Kshs)	Remarks
2023	Plantations, Fuel wood, fodder and other NWFP.	1,000,000.00	This will largely come from sale of timber and ground rent. The strengthening of CFA will also enhance collection
2024	Plantations, Fuel wood, fodder and other NWFP.	1,200,000.00	
2025	Plantations, Fuel wood, fodder and other NWFP.	1,300,000.00	
2026	Plantations, Fuel wood, fodder and other NWFP.	1,500,000.00	
2027	Plantations, Fuel wood, fodder and other NWFP.	1,800,000.00	

6.4 Gender equity

Addressing gender roles and needs in forestry is central to sustainable conservation, management of forests, and enhancing rural livelihoods. Equitable representation of women, men, youths and vulnerable groups will be ensured in every stage of implementing the PFMP. Capacity building and training of women and youth will be conducted to ensure that they take leadership positions North Nandi Escarpment Community Forest Association (NNECFA). The main objective of this strategy is to nurture and develop skills for women, men and youth's in forestry Conservation and Management at local and community levels. This will ensure that all project participants have the required knowledge and an opportunity to work as a team with improved efficiency. Trainings on entrepreneurship and economic empowerment of all interested groups will be a point to advance. This will be steered through encouraging women and youth to participate in income generating activities such as fish farming and basketry that will be carried out within the forest and areas adjacent to it for maximum benefit not only financial gain but also for sustainable forest conservation. This will equally fulfil the Article 43 of the Kenyan Constitution (2010) on Economic and Social Rights of the people.

The governance of the Nandi North Escarpment Community Forest Association(NNECFA) and North Nandi PFM management committee will be improved through inclusion of additional number of youth, women and vulnerable groups. The current position is that we have 1628 active members of CFA (853 men, 657 women, 113 youth and 5 people with disability). Some activities that have been identified in the plan will be implementation by a specific groups while others will be implemented by all members of the CFA. As stipulated in the Kenyan constitution a third of each representation should be from a different gender.

6.5 Monitoring and Evaluation

6.5.1 Monitoring and Evaluation Plan

After signing of Forest Management, the CFA and other stakeholders will hold a meeting to discuss and agree on how the planned activities will be implemented. Whatever will be discussed and agreed will be developed into a plan that will guide the implementation plan for the next five years as indicated in appendix 6. The same will also be used as a tool for Monitoring and evaluating the activities that are being carried out during the plan period and progress reports on each activity made.

6.5.2 Monitoring and Evaluation Methodology

Monitoring will be done by implementing agencies namely; KFS, CFA and other stakeholders through preparations and submission monthly, quarterly, half year and yearly progress report on projects and activities being implemented by implementing agencies during the plan period. However, a five-year monitoring and evaluation plan will be formulated by KFS, CFA and other stakeholders and reviewed annually based on any changes taking place during the implementation of the plan. Mid-term and final evaluation will be done to determine progress of the set activities, achievements of objectives, analyze

and address challenges faced in the implementation process. Information gathered and lessons learnt will be used to revise or review the management plan

6.5.3 Responsibilities

The key implementing agencies namely; KFS, CFA and other stakeholders, will undertake continuous monitoring of all field activities and make monthly, quarterly, mid-year and annual reports to the Forest Level Management Committee (FLMC). The Forest Level Management Committee (FLMC) comprised of all key stakeholders will hold periodic meetings to discuss and make decisions on the progress of plan implementation. It is also expected that the FLMC will conduct periodical physical monitoring on the ground to verify and counter check on the reports submitted by their field officers/ representatives. Also an independent consultant will be engaged to undertake a midterm and end of plan period evaluation.

6.5.4 Indicators for Monitoring and Evaluation

Each program has set indicators to show success of the implementation of its activities. The set indicators will be used by the monitoring team and the FLMC to ensure successful implementation of set activities. The monitoring framework is in Appendix 6.

6.6 Institutional Arrangements for Plan Implementation

The PFMP will require a proper organization structure and institutional arrangement for efficient implementation as show in Figure 6.1; this will build synergies, avoid duplication, double funding and conflicts. The relevant stakeholders will form the FLMC. The committee will be responsible for the implementation of this plan. The FLMC will then form sub committees such as; Plan implementation, Fund raising, Procurement and M&E which will be tasked with the responsibility of undertaking all activities in each of the management programme. Table 6.6 below shows the proposed composition of the FLMC

Table 6.4: Institutions involved in the implementation of the PFMP at forest level (FLMC)

No.	Institution	Representative	Number	Remarks
1	Kenya Forest Service	Forest Station Manager	1	Management/Secretary
		Officer in charge of enforcement at the station	1	On need basis
2	CFA	3 CFA officials	3	Chairman, Secretary & Treasurer
3	KWS	Officer in charge Kenya Wildlife Services	1	Handle issues related to wildlife
4	NGAO	Chiefs Sang'alo and Teresia Locations.	2	Law enforcement and articulation of Government agenda
5	Nandi County Government	Sub-county Environmental Officer/ Forester	1	Handle devolved functions mentioned in the plan

		Ward Administrator for Sang'alo	1	Articulate County Government development agenda
6	State Department Agriculture and Livestock development	National Government	1	Handle issues related to Agriculture and livestock development
6	WRUA		1	Chairman
7	Co-opted member	NGOs etc	2	On need basis. No voting rights
	Total		13	

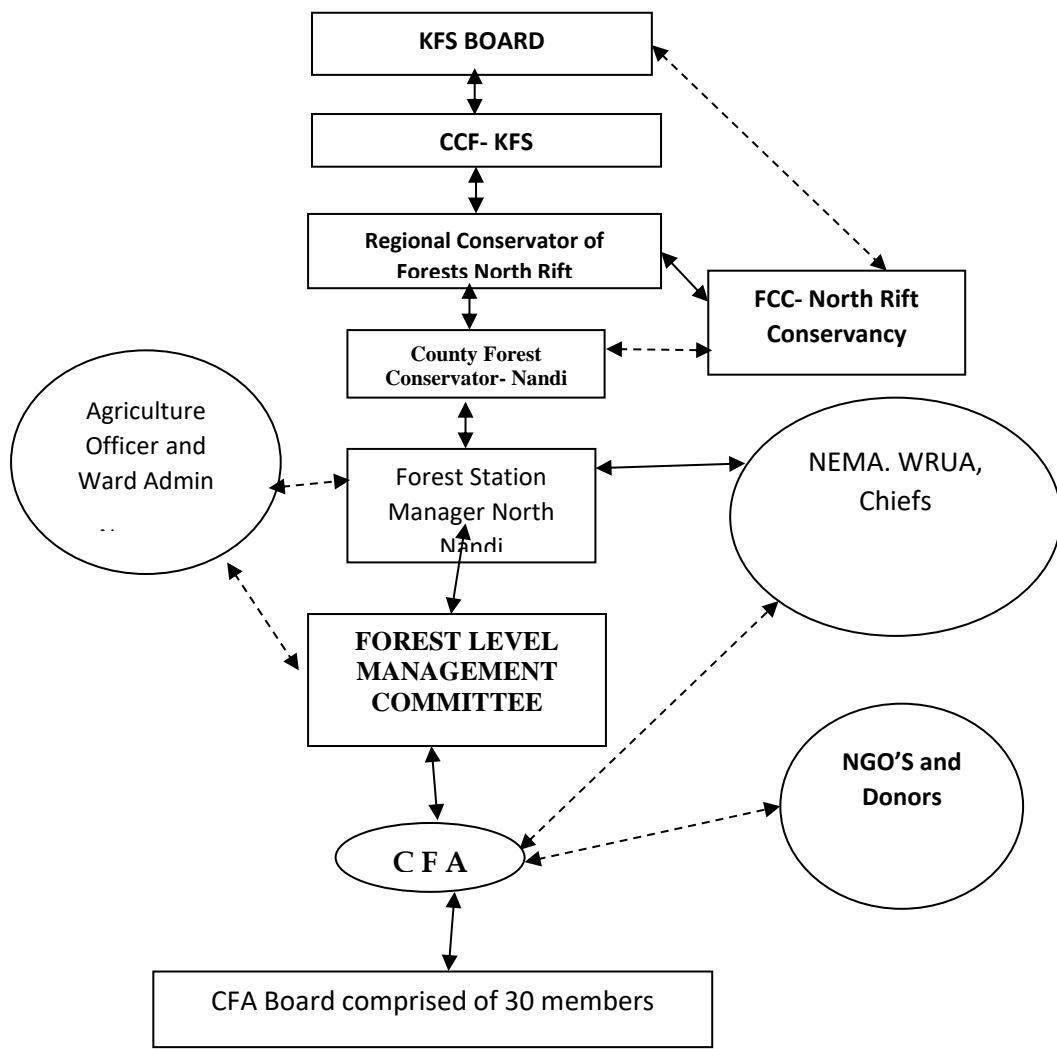


Figure 6.1: Structure for implementation of North Nandi PFM plan

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APPENDICES

Appendix 1: List of Participants

No.	List of participants	Organization	Phone no.	Launch of North Nandi PFMP review	Review of elapsed plan, training on resource mapping and social survey	visioning and programmes development meeting held on 14 th December 2021 at Forest Station Office	PFMP validation meeting on
1	Gideon K Boit Sang	North Nandi CFA	0723960633	X	X	X	
2	Philip Biwott	CFA	0727511940	X	X	X	
3	David Kiptoo	CFA	0727615290	X			
4	William Kibor Sugut	NGAO	0721166729	X	X	X	
5	Josephat Terer	NGAO	0702310084	X			
6	Philip Koskei Tarus	NGAO	0726086611	X			
7	Daniel Rutto	NGAO	0724329980	X			
8	Paul K Boit	CFA	0727057031	X	X	X	
9	Harrison Rotich	CFA	0704308646	X			
10	David Kipkorir	CFA	0713933371	X			
11	Margaret Korir	CFA	0726108988	X			
12	Dorcus K Keino	CFA	0714582397	X			
13	Simon K Rutto	CFA	0715621675	X			
14	Samwel K Masie	CFA	0711896609	X			
15	Esther Buluny	CFA	0721636508	X			
16	Clara Jepkirui	CFA	0725155786	X	X	X	
17	Keneth K	WRUA	0724143393	X			

No.	List of participants	Organization	Phone no.	Launch of North Nandi PFMP review	Review of elapsed plan, training on resource mapping and social survey	visioning and programmes development meeting held on 14 th December 2021 at Forest Station Office	PFMP validation meeting on
	Kirwa						
18	Benjamin K Tirop	CFA	0723907782	X	X	X	
19	Cleophas Chepsiror	MOA	0723148088	X	X	X	
20	Mercy C Langat	KFS	0725282133	X	X	X	
21	Ishmael S Kiplagat	NPA	0718154822	X			
22	Bernard K Mutai	NGOA	0726555401	X			
23	Samson Kosgei	Manager Kingwal Conservancy	0726486828	X			
24	Francis Kemei	Ranger Kingwal Conservancy	0717237648	X			
25	Stanley K Ngetich	CFA	0713190358	X			
26	John K Rono	KFS	0705509310	X			
27	Jonathan K Yego	CFA	0718879688	X	X	X	
28	Shadrack Too	CFA	0723522602	X			
29	Julius K Lagat	Church leader	0728136771	X			
30	Nehemiah K Malakwen	CFA	0701386038	X			
31	Gideon K Boit Sang	CFA	0723960633	X	X	X	
32	Mathew B Sawe	CFA	0716353444	X			
33	John Ngeny	CFA	0727389327	X	X	X	
34	Richard	CFA	0715785279	X			

No.	List of participants	Organization	Phone no.	Launch of North Nandi PFMP review	Review of elapsed plan, training on resource mapping and social survey	visioning and programmes development meeting held on 14 th December 2021 at Forest Station Office	PFMP validation meeting on
	Tarus						
35	Dominic Tanui	KWS Community scout	0708019647	X			
36	Nicodemus Kipchirchir	CFA	0715436427	X			
37	John Akewcha	CFA	0722209332	X			
38	Anne Sang	CFA	0702516749	X			
39	Philip K Kenduiyo	CFA	0720264744	X			
40	Wycliffe Matika	GBM	0720669154	X			
41	Kenneth Muskiton	CFC Nandi -	0725886117	X			
42	James Thairu	Forest Station Manager	0720901847	X	X	X	
43	James K. Meli	County Director Environment	0729838380	X			
44	Isaac Koech	County Environment community Rep	0722518074	X			
45	Andrew K Mutua	DCC-Nandi North	0704180039	X			
46	Gledy Kosgey	ACFC Nandi	0723965131	X			
47	Kalabata Samuel	E.O. NEMA Nandi County	0752440296	X			
48	David K Mutai	KFS enforcement commander	0722994041	X			

No.	List of participants	Organization	Phone no.	Launch of North Nandi PFMP review	Review of elapsed plan, training on resource mapping and social survey	visioning and programmes development meeting held on 14 th December 2021 at Forest Station Office	PFMP validation meeting on
49	Jonah K Lelei	CBO Murgwuy wet	0720626827	X			
50	Elizabeth Koech	CBO Murgwuy wet	0712205468	X			
51	Grace Wendot	KWS	0725308558	X			
52	Philip W. Wamahiu	IFCMS (K) LTD	0723504363	X	X	X	
53	Simon K. Kage	IFCMS (K) LTD	0721258432	X			
54	Joseph Kuto	KFS	0712837421	X			
55	Edwin Kiprano	NEMA	0724935920	X			
56	Lilian Jerono Lagat	Ward Admin.	0714732123	X			
57	Vincent Maiyo	DCC's Office	0725792080	X			
58	Harriet Maiyo	GBM	0723422239	X	X	X	
59	Edwin Ngunjiri	GBM	0720913114	X	X	X	
60	Daniel K. Tum	KWS Scout	0716394855	X	X	X	

Appendix 2: List of common tree species in North Nandi forest

No.	Local Name	Common name	Scientific Name	Common local uses
1	Tendwet	Red stinkwood	<i>Prunus africana</i>	Medicine, construction timber, charcoal and firewood
2	Tebesuet	Broad leaved croton	<i>Croton macrostachyus</i>	Firewood, charcoal, timber, poles and medicine
3	Noiywet	Fagara	<i>Fagaropsis angolensis</i>	Medicine, construction timber, charcoal and firewood
4	Sebetet	Macaranga	<i>Macaranga kilimandscharica</i>	Medicine, construction timber, poles, charcoal and firewood
5	Murguiwet	East Africa Olive	<i>Olea capensis</i>	timber, charcoal, panelling, flooring, tools handles, medicine and firewood
6	Kugerwet	Snuff-box tree	<i>Oncoba spinosa</i>	Timber (furniture), medicine, charcoal and firewood
7	Soiyet	Parasol tree	<i>Polyscias fulva</i>	timber, beehives, veneer, plywood, mole traps, medicine, forage, mulch
8	Momoniat	Blackberry	<i>Rubus apetalus</i>	Edible fruit. Medicine (Roots), live fence and ornamental
9	Sebetaiyet	Nandi flame	<i>Spathodea canpanulata</i>	Firewood, charcoal, carving, bee forage, ornamental, mulch and medicine
10	Mobondet	East indian Rosebay	<i>Tabernaemontana stapfiana</i>	Soil and water conservation

No.	Local Name	Common name	Scientific Name	Common local uses
11	Reberwet/Lemeyet	Water berry	<i>Syzygium cordatum</i>	Timber (construction), medicine, charcoal, edible fruits, beams, rafters and firewood
12	Museset	Jumping seed tree	<i>Sapium ellipticum</i>	Fruit, medicine
13	Seretuet	Flat top acacia	<i>Acacia abyssinica</i>	Firewood, charcoal, poles, posts, medicine, fodder, shade, ornamental, nitrogen fixing
14	Chebitet	Red thorn	<i>Acacia lahai</i>	Firewood, charcoal, timber, edible gum, posts, medicine, bee forage, shade, nitrogen fixing
15	Kibumetiet	Winged bersama	<i>Bersama abyssinica</i>	Firewood, timber, Furniture, bee hives, posts, medicine, bee forage, ornamental, shade, Soil conservation, mulch
16	Chepkoibet	Africa star apple	<i>Chrysophyllum albidum</i>	.
17	Samutet	East Africa cordia (Large leaved cordia)	<i>Cordia africana</i>	Firewood, charcoal, timber, carving, bee hives, posts, medicine, bee forage, ornamental, shade, mulch
18	Cheptewet		<i>Craibia brownii</i>	Timber, arrows, trays, basket, edible seed, medicine
19	Cheptuiyet	Abyssinian diopyros	<i>Diospyros abyssinica</i>	Firewood, charcoal, timber, furniture, poles, tool handles, walking sticks. Farm implement, shade
	Sagawaitiet	African Satinwood	<i>Zanthoxylum gilletii</i>	Building, axe handles and walking sticks
20	Lamaiy wet	Woodland waterberry	<i>Syzygium guineense</i>	Timber for construction and furniture, medicine, tool handles, charcoal poles and posts

No.	Local Name	Common name	Scientific Name	Common local uses
21	Mogoiwet	Sycomore fruit	<i>Ficus sycomorus</i>	Wild fruits
22	Kuryot	Teclea	<i>Teclea nobilis</i>	Hoe and axe handles, walking stick and firewood
23	Seet	Peacock flower	<i>Albizia gummifera</i>	Firewood, Timber, posts. Boat building, medicine, bee forage, ornamental, mulch and conservation
24	Choruet	Brittle wood	<i>Nuxia congesta</i>	Charcoal, firewood, medicine, poles, bee forage, live fence, ornamental and conservation
25	Kosisitiet	Leaf buckthorn	<i>Rhamnus prinoides</i>	Firewood, tool handles, flavouring, medicine

Appendix 3: List of common animal species in North Nandi forest

No.	Local name	Common name	Scientific name	Economic importance
1	Kenyelet	Dikdik	<i>Madoqua kirkii</i>	
2	Boinet	Gazelle	<i>Gazella thomsonii</i>	
3	Chepkosiret	Grey squirrel	<i>Sciurus carolinensis</i>	
4	Lelwot	Jackal	<i>Canis aureus</i>	
5	Cheswererit	Porcupine	<i>Atherusus africanus</i>	
6	Tisiet	Baboon	<i>Papio anubis</i>	
7	Mindet	Bongo	<i>Tragelaphus eurycerus</i>	
	Rukutiet	Sitatunga	<i>Tragelaphus spekii</i>	
8	Kimagotiet	Anteater	<i>Myrmecophaga tridactyla</i>	
9	Mooset	Monkey		
10	Cheset	Velvet monkey Vervet monkey	<i>Chlorocebus pygerythrus</i>	
11	Toret	Wild pig		
12	Cheptuinet	Serval cat	<i>Leptailurus serval</i>	

Appendix 4: List of common birds in North Nandi forest

No.	Local name	Common name	Scientific name	Economic importance
1	Kong'onyot	Africa crane	<i>Balearica regulorum</i>	
2	Cheptorurik	Black bellied bastard	<i>Lissotis melanagaster</i>	
3	Kiminjiriet	African green pigeon	<i>Treron calvus</i>	
4	Chepkongongiet	Yellow crested woodpecker	<i>Dendropicos xantholophus</i>	
5	Bang'a ng'iet	Green chested Hornbill	<i>Bycanistes subcylindriensis</i>	
6	Chepsireret	Hawk	<i>Buteo jamaicensis</i>	
7	Ririat	Ox-pecker	<i>Buphagus africanus</i>	
8	Sugurut	Owl	<i>Strix aluco</i>	
9	Cheptuget	Pigeon	<i>Columba palumbus</i>	
10	Kibichat	Weaverbird	<i>Ploceus cucullatus</i>	
11	Chibakwakwa	African ibis	<i>Threskiornis aethiopicus</i>	
12	Chepsotit	Mouse bird	<i>Colius striatus</i>	
13	Kolyasiet	Great egret Little egret	<i>Egretta alba</i> <i>Egretta garzetta</i>	
14	Terkekyat	Guinea fowl	<i>Numida meleagris</i>	
15	Merewet	Peacock	<i>Pavo cristatus</i>	
16	Kabiswet	Sparrow	<i>Passer domesticus</i>	
17	Kipschit	Eagle	<i>Aquila spilogaster</i>	
18	Chelokomiet	Black headed heron	<i>Ardea melanocephala</i>	
19	Chepkisimiet	Sunbird	<i>Cinnyris asiaticus</i>	
20	Chepkorobitiet	Black Drago	<i>Indiacanthus fasciola</i>	
21	Chepkelembut	Qual	<i>Coturnix coturnix</i>	
22	Kamandogo	Booter eagle	<i>Aquila pannetus</i>	
22	Chemarmariet	Botteris sparrow	<i>Peucaea botterii</i>	
23	Tuyus	Brown creeper	<i>Certhia americana</i>	
24	Kapkekee	Chinsport puffback	<i>Dryoscopus cubla</i>	

Appendix 4: Common snakes in North Nandi forest

No.	Local name	Common name	Scientific name	Economic importance
1	Chechikuit	Python	<i>Python bivittatus</i>	
2	Kipchuseit	Puff adder	<i>Bitis arietans</i>	
3	Kimuret	Night adder	<i>Causus defilippii</i>	

Appendix 5: Eco- sites (Sites of importance)

	Location/Beat	Name of the site	Proposed utilization
1	Septonok	Tabolwa Rock Site	View point and tourist attraction site
		Kurangurich camping site	Recreation purposes
		Station tree nursery	Seedlings production
		Boinet CBO tree nursery	Seedlings production
		Station office block	Office for KFS staff
		Powerline (Ketraco)	Cultivation under the power lines
		Chebinyiny stream	Water for Domestic use
2	Teresia beat	Cultural site	Cultural/traditional practices
		Grazing site	Livestock grazing site
		Firewood collection site	Domestic use
		Existing tree nursery	Seedlings production
		Spring water	Domestic use
		Tilalwo stream	Domestic water and livestock watering point
3	Kiptangus	Cultural site	Cultural/Traditional practices
		Tea zone	Plantation for tea production
		Forest Rangers Outpost forest	Forest Rangers camp
		PELIS	Plantation establishment and crop production

	Location/Beat	Name of the site	Proposed utilization
		Grazing area	Livestock grazing
		Camping site	Recreation (Bird watching)
		Cherungus stream	Water for Domestic use
		Proposed cultural site extension	cultural /Traditional practices
		Tentwet Rupet self-help group tree nursery	Seedlings production
		Rock site	Ecotourism site/view point
4	Kipsamoite	Cultural site Kipsagat	Cultural/Traditional practices
		Wetland/swamp Kipsagat	Bird watching
		Kamwega outpost	Forest Rangers camp
		Murguiwet tree nursery	Seedlings production
		Kipsagat river	Water for livestock/Domestic use
		Kimelit view point	Tourist attraction
5	Kapchepkok	Sing'oro waterpoint	Water for Domestic use
		Nyayo Tea zone	Plantation for tea production
		Chebren stream	Water for livestock/Domestic use
		Grazing area Kibosok	Grazing areas for livestock
6	Mwein	Proposed camping site	Ecotourism site/Recreation
		Kaptendon water project	Water for Domestic use
		Kiptuiya view point	Ecotourism/Recreation
		Chepkaigat View point	Ecotourism/Recreation

Appendix 6: Status of forest plantations in North Nandi forest

BLOCK	SUB COMPT	SPECIES	YEAR OF PLANTING	AGE	DENSITY	M DBH	MHT	AREA (HA)	REMARKS			
North Nandi	Kiptangus 1A	Pinus patula	2008	13	792			6	needs pruning			
	Kiptangus 1B	Pinus patula	2008	13	762			17.2	"			
	Kiptangus 1C	Pinus patula	2009	12	720			11.3	"			
	Kiptangus 1D	Euc. Saligna	2014	7	699			6	1st crop			
	Kiptangus 1E	Cup. Lusitanica	2014	7	754			13.1	fairly stocked, needs pruning			
	Kiptangus 1K	Cup. Lusitanica	2019	3	608			16	needs 1st pruning			
	Kiptangus 1L							14.4	open area, backlog			
	Kiptangus 1M	Cup. Lusitanica	2015	6	960			15.4	2nd pruning			
	Kiptangus 1N	Euc. Saligna	2015	6	541			18.8	3.2 planted			
	Kiptangus 1O							14.8	failed pine Plantation, replanting needed			
	Kiptangus 1Q	Cup. Lusitanica	2019	3	1360			6.2	well stocked			
	Kiptangus 1S							8.8	part of 1M remained unplanted			
	Kiptangus 1P	Cup. Lusitanica	2017	5	1126			3.8	second pruning			
	Kiptangus 1T	Pinus patula	2019	3	840			5.8				
	Kiptangus 2A	Euc. Saligna	2006	15	673			33.1	ready for harvesting			
	Kiptangus 2B	Euc. Saligna	2010	11	692			3.9	ready for harvesting			
	Kiptangus 2D	Cup. Lusitanica	2018	3	832			19.4	second pruning needed			
	Kiptangus 2E	Cup. Lusitanica	2013	8	950			19.7	thinning required			
	Kiptangus 2F	Euc. Saligna	2010	11	652			1.1				
	Kiptangus 2G	Cup. Lusitanica	2013	8	862			23.7	thinning required			
	Kiptangus 3A	Pinus patula	2021					19.9	Newly planted			
	Kiptangus 3B							9.6	open area schduled for planting			
	Kiptangus 4A							9.5	open area schduled for planting			
	Kiptangus 5A	Pinus patula	2019	3	532			72	low survival			

	Kiptangus 7A	Euc. Saligna	2018	4	653			35.4	only 2 Ha is stocked				
	Kiptangus 7B							6.8	potential plantation area				
	Kiptangus 7C	Cup. Lusitanica	2019	3	917			4	1st pruning				
	Septonok 1A	Cup. Lusitanica	2018	4	1376			11.4	2nd pruning needed				
	Septonok 1B	Cup. Lusitanica	1996	25	153			14	affected by 2007 PEV and prescribed for clear fell in 2017				
	Septonok 1C	Cup. Lusitanica	2021					6.9	Newly planted				
	Septonok 1D	Pinus patula	2020	1	801			3					
	Septonok 1E	Cup. Lusitanica	2020	1	1104			10.3	Young plantation				
	Septonok 1F							11	open area schduled for planting				
	Septonok 1H	Cup. Lusitanica	2009	13	1020			7.7	thinning required				
	Septonok 1J	Euc. Saligna	1996					15					
	Septonok 1P	A. melanoxylon	2017	4	548			2.8					
	Septonok 2A	Euc. Saligna	2016	5	480			7.8	new crop				
	Septonok 2B	Cup. Lusitanica	2004	17	860			0.91	thinning required				
	Septonok 2C	Cup. Lusitanica	2014	7	900			6.7	pruning and thinning required				
	Septonok 4A	Euc. Saligna	2013	8	400			8.5	2 Ha planted				
	Septonok 5A	Euc. Saligna	2016	5	300			17.9	mapped potential plantation area				
	Septonok 6A							2	mapped potential plantation area				
	Septonok7A							12	mapped potential plantation area				
	Septonok 8A							8.7	potential plantation area				
	Septonok 8B							13.03	potential plantation area				
	Kipsamoite 1A	Cup. Lusitanica	2014	7	940			5.4	2nd pruning required				
	Kipsamoite 1B	Cup. Lusitanica	2014	7	920			5.4	2nd pruning required				
	Kipsamoite 1C	Euc. Saligna	2017	5	1200			3.2	Coppice reduction required				
	Kipsamoite 1D	Cup. Lusitanica	2004	17	940			6.9	pruning and thinning required				
	Kipsamoite 1E	Euc. Saligna	2014	7	850			6.7	1st crop				
	Kipsamoite 1F	Cup. Lusitanica	2014	7	970			5	2nd pruning				

								required				
Kipsamoite 1G								21.5	Backlog area			
Kipsamoite 2C								10	Backlog area			
Kipsamoite 2E								5.5	Backlog area			
Kipsamoite 2G		2017						3.8	surveyed area for plantation			
Kipsamoite 3A		2107						5	surveyed area for plantation			
Kipsamoite 4A								6.9	surveyed area for plantation			
Kipsamoite 5A		2017						3.2	surveyed area for plantation			
Kipsamoite 6A	mixed indigenous species	2018	3	281				32.7	needs replanting			
Kipsamoite 7A								5.7	surveyed area for plantation			
Kipsamoite 7B								3.3	surveyed area for plantation			
Kipsamoite 7C								7.7	surveyed area for plantation			
Kipsamoite 8C								10.7	surveyed area for plantation			
Kipsamoite 8D								10.8	surveyed area for plantation			
Kipsamoite 8E								2.7	surveyed area for plantation			
Kipsamoite 10C								6.2	surveyed area for plantation			
Kipsamoite 11A	Cup. Lusitanica	2017	5	1040				35.1	17.99 Ha planted			
Kipsamoite 12A	Cup. Lusitanica	2019	2	1088				15.9	2.5 Ha planted			
Kipsamoite 13A	Pinus patula	2017/2018	3	1008				29.4	4.9 Ha planted			
Kipsamoite 14C								5.6	surveyed open area for plantation			
Kipsamoite 14D								1.2	surveyed open area for plantation			
Kipsamoite 15B	Euc. Saligna	2018	3	560				18	low survival			
Kipsamoite15A	Euc. Saligna	2019						1.82	low survival			
								850.66				

Appendix 7: Monitoring and Evaluation framework

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
I	Natural Forest Conservation & Management	I: Awareness creation on need to conserve the forest	Hold meetings in beats to sensitize communities on need to conserve the forest	30	No.	Photos, minutes and reports									
			Build capacity on species selection and planting methods	5	No.	Photos, Register and reports									
		2. Natural forest rehabilitation	Seedlings production	80,000	No	Seedlings									
			Planting	100	Ha	Area planted									
			Weeding	100	Ha	Area weeded									
			Protection for natural regeneration (fencing, mandays)	20	Ha	Area protected									
		3. Promote conservation of plant species of	Identification of endemic, rare, threatened and	5	No.	Species conserved									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
		special concern	endangered species												
		4. Step up patrols	Control illegal activities in the forest	60	No	Records									
		5. Control illegal & over grazing	Determine carrying capacity & develop a grazing plan	1	No	Report & plan									
		6. Removal of squatters	Determine the number & take action	1	No.	Register									
2	Plantation Development	1. Establishment of plantations through PELIS ('000)	Seedling production	100	No.	Seedlings produced									
			Land preparation	100	Ha	Area cultivated									
			Planting	100	Ha	Area planted									
			Weeding	100	Ha	Area weeded									
		2. Maintenance of plantations	Pruning	261	Ha	Area pruned									
			Thinning	92	Ha	Area thinned									
		3. Livelihood improvement	Plots allocation	1	No.	PELIS register & maps									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			PELIS beneficiaries	200	No.	PELIS register									
			Duration of cultivation in the forest	3	No.	Years cultivated									
			Grazing	1	No	Register & plan									
			Grazing (cattle)	100	No.	Cattle grazed									
			Sheep Grazing	100	No.	Sheep grazed									
			Payment of grazing fee (cattle)	250,000	Kshs.	Fee paid									
		Opening up and maintenance of plantation management roads and firebreaks	Payment of grazing fee (sheep)	20,000	Kshs.	Fee paid									
			Opening and maintenance of roads	14	Km	Roads unit and Station records									
			Opening and maintenance of firebreaks	4	Km	Station records									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
		Lifting of the ban on logging	Allocation of mature plantations to sawmillers & other licencees	126	Ha	Station register and felling of trees									
3	Water Resources Management	I. Create awareness on importance to conserve water catchment and proper water utilization	Hold meetings to sensitize communities on water conservation and utilization	6	No.	Photos, register									
			Capacity building for water scouts	1	No.	Photos, register, Training program									
			Patrols to control over illegal abstractions	20	No.	Reports on quarterly basis									
		3. Protection and conservation of riparian areas	Seedlings production	30,000	No	Nursery record on Seedlings production									
			Planting of water friendly tree species	5	Km	Record on trees planted, Photos on planting & areas planted									
			Fencing of river lines	10	Km	Records on purchase of materials, photos during and after									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
3								fence construction							
								Construction of water points	6	No.	Photos				
								Promote rain water harvesting	30 (50,000l)	No,	Records on & purchase photos				
								3. Livelihood improvement	6	No.	Register and reports				
4	Wildlife Ecotourism management	1.To create awareness on the importance of wildlife and benefits of eco-tourism	Hold a Capacity building workshop CFA management committee on eco- tourism	1	No.	Attendance list, Training manual, reports, photos									
								Conduct Exchange visits	4	No.	Photos & reports				
		2. Development of ecotourism infrastructure	Development and improvement of roads to tourist sites	14	Km	Reports, Records & Photos									
								Open Nature trials	10	Km	Reports, Records & Photos				
		3. Establish facilities at proposed Eco-	Develop an Eco- lodge, and related facilities in partnership	2	No.	Photos of fully operational eco-lodge									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
		sites	with investors												
			Develop Bandas near the Eco-lodge	2	No.	Photos of fully operational bandas									
			Develop Camping sites in three spectacular sites	4	No.	Photos of fully operational camp sites									
			Purchase binoculars	4	No.	Store records, inventory									
			Purchase mountain bikes for hiring out	8	No.	Store records, inventory									
			Establish a visitor security/monitoring system	1	No.	Visitors									
		4: To market the potential of eco-tourism as an economic venture	Conduct community marketing through institutions and churches talks	10	No.	Photos, records									
			Produce and make local radio adverts on potential of eco-tourism	20	No.	Adverts									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			Conduct social media advertisement	20	No.	Trending									
			Develop and run a website to market eco-tourism	1	No.	Interactive website									
			Develop, print and distribute eco-tourism marketing pamphlets and brochures	5,000	No.	Records and photos									
			Promotion of home stays	20	No.	Registers, Records & photos									
5	Community development programme	1. creation on importance of on farm tree growing and other Soil and Water conservation methods	Hold public meetings and Barazas in the intervention zone	7	No.	Records & photos									
			Conduct trainings on CBNR, PFM and relevant sections fo Forest & water Acts 2016	1	No.	Attendance list, photos & program									
		2. Promotion of on farm tree	Seedlings production	50	No.	Nursery records on seedlings									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			Conduct elections	1	No.	Report on the outcome of Elections									
			Filing of returns to the registrar	5	No.	Records/ reports									
			Maintenance of group records	5	No.	Records									
			Adherence to statutory requirements	5	No.	Records									
			Continuous capacity building trainings	4	No.	Reports									
			Develop proposals for funding IGAs	5	No.	Proposals submitted to potential Donors									
		5. Livelihood improvement	Development of wood and non-wood based industries	3	No	Records on Industries developed & photos									
		6. Objective Livelihood improvement through provision of clean and safe water	Construction of common intakes in the intervention for each beat	6	No										
			Construction of common intakes in the	6	No										

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			intervention for each beat												
			Extraction of herbal medicine	500	Kg										
			Livestock grazing	50	No										
			Fuelwood collection (Head loads)	12,000	No.										
			Value addition of forest produce	4	No										
6	Infrastructure and Equipment development	I. Develop and maintain infrastructure	Establish CFA offices and stores	3	No	Offices & store									
			Establish resource centre	1	No	Centre									
			Establish an Eco-lodge	1	No	Eco-lodge									
			Establish 2 Camp sites	2	No	Photos, records									
			Establish New Rangers posts at Kihari and	2	No.	Photos, records									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			Nyana												
			Upgrade and renovate forest office and staff houses	5	No.	Record and photos of repair and maintenance done									
			Grade and maintain existing roads	30.5	Km	Record and photos of repair and maintenance done									
		2:Purchase a vehicles for the Forest Station and 2 for CFA	Purchase of vehicles and Motor bikes for the station and CFA	3vehicles 5M/bikes	No.	Photos, Stores records									
		3. Provide equipment for various activities	Purchase and maintain equipment and tools	various	No	Stores records									
			Purchase and maintain bikes for excursions	4	No.	Stores records & photos									
		4: Visibility of existing facilities (sign posts indicating direction to the existing facilities and eco- sites)	Make sign boards indicating direction to the existing facilities and unique eco-sites	5	No.	Sign erected photos									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
Protection and Security Programme	I: Enhance forest protection and reduce illegal activities	Awareness creation	30	No.	No. of public barazas held										
		Recruit and train volunteer community scouts	14	No.	Station/CFA records										
		Undertake patrols	750	No.	Records on M/days										
		Maintenance of forest boundaries and fences	41	No.	Length protected and maintained										
		Control grazing	5	No.	Grazing register and plan										
	2: Regulate and control grazing in the forest	Determine carrying capacity of the forest	1	No.	Carrying capacity records										
		Develop a grazing plan	1	No.	Grazing plan										
		Develop a grazing register	1	No.	Grazing register										
		Conduct joint Patrols	60	No.	records										
	3: Regulate and control poaching of game	Meetings and public barazas held	6	No.	Records										

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
		4,Regulate and control water abstraction	Register and monitor licensees every year	12	No.	Register									
			Conduct joint Patrols and disconnect all illegal abstractions of water and minimize illegal activities	20	No.	records									
	Human Resource	Ensure forest has adequate number of staff in all levels	Recruit, deploy or transfer Forest Rangers	11	No.	KFS HR records									
			Assistant Record Management officer	1	No.	KFS HR records									
			Support staff	1	No.	KFS HR records									
			Typist	1	No.	KFS HR records									
			Store man	1	No.	KFS HR records									
			Subordinate staff –Tree Nursery	10	No.	Office register									
			Drivers for vehicle	1	No.	KFS HR records									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
		To Enhance staff performance	Conduct periodic refresher training for KFS staff on PFM, IGAs and conflict resolution	5	No.	Records of No. of training sessions held, reports and register									
		3: To maintain a motivated team of staff	Conduct scheduled staff evaluations and promotions	5	No.	HR Reports									
			Innovate a mechanism of staff rewards and motivation at local level	20	No	Commendation letters, staff parties									
			Enhance CFA capacity in IGAs eg cottage industries	1	No,	Trainings reports									
			Enhance capacity in forest conservation for KFS staff and CFA	1	No,	Trainings reports									
			Enhance PFM capacity for KFS and CFA	1	No.	Trainings reports									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			Enhance capacity in Conflict resolution for KFS and CFA	I	No,	Trainings reports									
9	Research and Education development	I: Conduct research on biodiversity, cultural and social use of the forest	Partner with education and research institutions	5	No	Correspondences, agreements, MOUs									
			Conduct research on forest flora and their economic importance	I	No	Report on Research findings									
			Conduct research on forest fauna and their economic importance	I	No	Report on Research findings									
			Conduct research on cultural and social use of the forest	I	No	Report on Research findings									
			Conduct Research on appropriate tree species for woodlots and agro forestry	I	No	Report on Research findings									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
			Conduct research on Appropriate rehabilitation methods and species	I	No	Report on Research findings									
			Conduct research on Value addition on forest products	I	No.	Report on Research findings									
			Conduct research on Livelihood improvement	I	No.	Report on Research findings									
			Disseminate research findings	6	No.	No of Meetings, No of copies of reports distributed									
			Promote inter-generation knowledge transfer	4	No.	No of meetings of elders and the youth and documentation									
		2: To establish an education facility at the CFA resource	Establish a library at the resource center	I	No.	Library records									

No	Management Programme	Objective	Activity	Plan target	Unit	Indicator	No. of beneficiaries	Annual targets (yrs)					Achievement	variance	remarks
								1	2	3	4	5			
3: Integrate indigenous knowledge in natural resources management and conservation	centre	Equip the library with relevant books, publication and research findings.	1000	No.	Library inventory records										
		Promote education and ecological use of the forest by schools and learning institutions	8	No.	Promotion materials and records of visiting schools										
	management and conservation	Document Indigenous knowledge	1	No.	Records and documentation										
		Integrate findings in implementation of the management programs	1	No.	Records										
	4: To enhance community research capacity	Recruit and train community research assistants	4	No.	KFS and CFA records										