



**Ministry of
Environment and
Forestry**



INTEGRATED MASTER PLAN FOR REHABILITATION AND RESTORATION OF THE CHERANGANY-ELGEYO HILLS ECOSYSTEM

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FOREWORD

The primary motivation for the development of *the Integrated Masterplan for Rehabilitation and Restoration of Cherangany-Elgeyo Hills Ecosystem* is to seek a lasting and inclusive solution to the perennial, interconnected environmental challenges in Embobut and the entire Cherangany-Elgeyo Hills landscape. It also answers to the 2019 directive by the National Development Implementation Communication and Coordination Committee (NDICCC) of the Cabinet for a comprehensive remedial and anticipatory solutions to environmental hazards in the ecosystem. Some of the perennial challenges to the ecosystem include conflicts over land ownership and tenure as well as the perennial landslides and claims of abuse of the indigenous community. In addition, there continues to be cases of encroachment into the gazetted areas along with the attendant wanton degradation of the landscape. Previous disciplinary interventions to these challenges have not resulted in tangible and lasting solutions, thus lending credence to a change in strategy for a more integrated, robust, trans-disciplinary and multi-agency approaches that this Masterplan strives for.

The recommended interventions shall contribute to Kenya's global and national commitments. Globally, the country commits, under the Nationally Determined Contribution, to abate Green House Gas (GHG) emissions by 32 percent by 2030 relative to the business-as-usual scenario of 143MtCo_{2e}. Towards fulfilling the obligations under the UN Convention to Combat Desertification (UNCCD), Kenya has committed to attain a balance between anticipated land degradation and positive land restoration actions by 2030, as part of the Land Degradation Neutrality targets. Further, Kenya commits to fully restore an additional 9 percent of degraded land. Under the Bonn Challenge, the commitment is to restore and afforest 5.1M Ha of degraded land; improve productivity of 16 percent of forest land and increase soil organic carbon in crop land by 319,626 tons by 2030. Under the Basel, Rotterdam and Stockholm Conventions, the commitment is to phase out ozone-depleting substances and manage other hazardous wastes for better human health. Nationally, the landscape approach contributes to the Ministry of Environment and Forestry's mandate to promote and facilitate good governance in the protection, restoration, conservation, development and management of environment and forestry resources. Further, it helps achieve Kenya's *Vision 2030* developmental objectives; the Third Medium Term Plan (2018 – 2022) aspirations as well as the Big Four Agenda. Efforts have also been made to link the Masterplan to the Medium Term Expenditure Framework (MTEF) in line with relevant approvals.

It is our resolve as a ministry to ensure that this Masterplan becomes a test case for successful transdisciplinary and integrated landscape restoration approaches for enhanced global and local environmental benefits. Lessons drawn will be of benefit to other landscapes that are faced with and experiencing more or less similar circumstances.

KERIAKO TOBIKO, CBS, SC
CABINET SECRETARY

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The Development of the *Integrated Master plan for Rehabilitation and Restoration of Cherangany-Elgeyo Hills Ecosystem* is timely and necessary in order to alleviate the environmental challenges in the landscape. The goodwill and kind gesture provided by the Cabinet Secretary in this process is greatly appreciated.

The baseline data and content development provided by the Semi-Autonomous Government Agencies in the Ministry including the Kenya Water Towers Agency (KWTa), Kenya Forestry Research Institute (KEFRI) and National Environment Trust Fund (NETFUND) is equally greatly appreciated. The leadership along with professionals from the Counties of Elgeyo-Marakwet, Uasin Gishu, Trans-Nzoia and West Pokot made important observations and proposals that have been captured in the document. These collaborative efforts are gratefully recognized.

The National Government Administrative Offices (NGAO) in the host counties provided baseline conditions and anticipated solutions to some of the conflicts and their input is acknowledged. Various institutions had different other roles that were necessary in refining the document and without specific mention of all the many individuals, their contribution is appreciated.

We thank the Multi-agency team members drawn from the Ministry of Environment and Forestry, Kenya Water Towers Agency (KWTa), National Environmental Management Authority (NEMA), Kenya Forestry Research Institute (KEFRI), Kenya Forest Service (KFS), National Environment Complaints Committee (NECC), National Environment Trust Fund (NETFUND), Kenya Metrological Department (KMD) and World Wide Fund for Nature-Kenya (WWF-Kenya) who put together the initial draft of the Plan. We also thank other contributors from the County Governments of Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu.

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PRINCIPAL SECRETARY

LIST OF ACRONYMS AND ABBREVIATIONS

BAK	<i>Boda Boda</i> Association of Kenya
BAU	Business-as-usual
CBD	Convention on Biodiversity
CBNRM	Community-Based Natural Resource Management
CBOs	Community Based Organisations
CCA	Climate Change Act
CCAP	Climate Change Action Plan
CCD	Climate Change Directorate
CEAPs	County Environmental Action Plans
CEC	County Executive Committee
CFAs	Community Forest Associations
CIDP	County Integrated Development Plan
CITES	Convention on International Trade on Endangered Species
CMS	Convention on Migratory Species
CPIUs	County Programme Implementation Units
EIA	Environmental Impact Assessment
ELDOWAS	Eldoret Water and Sanitation Company
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESPs	Extension Service Providers
FBOs	Faith-Based Organisations
FPIC	Free, Prior and Informed Consent
GESIP	Green Economy Strategy and Implementation Plan
GHG	Greenhouse Gases
HEP	Hydroelectric Power
IWM	Integrated Watershed Management
JPIU	Joint Programme Implementation Unit
KALRO	Kenya Agricultural and Livestock and Research Organisation
KEFRI	Kenya Forestry Research Institute
KEPHIS	Kenya Plant Health Inspectorate Service
KFS	Kenya Forest Service
KMD	Kenya Metrological Department
KNCHR	Kenya National Commission on Human Rights
KWS	Kenya Wildlife Service
KWTA	Kenya Water Towers Agency
KVDA	Kerio valley Development Authority
LCLU	Land Cover and Land Use
MEAs	Multilateral Environmental Agreements
MEF	Ministry of Environment and Forestry

MTEF	Medium Term Expenditure Framework
MTP 3	Medium Term Plan 3
NAAP	National Adaptation Action Plan
NCCAP	National Climate Change Action Plan
NCCS	National Climate Change Strategy
NCEP	National and County Environmental Planning
NDC	Nationally Determined Contribution
NDICCC	National Development Implementation Communication and Coordination Committee
NEAPs	National Environmental Action Plans
NECC	National Environment Complaints Committee
NEMA	National Environmental Management Authority
NETFUND	National Environment Trust Fund
NGAO	National Government Administrative Offices
NGOs	Non-Governmental Organisations
NIB	National Irrigation Board
PELIS	Plantation Establishment and Livelihood Improvement Scheme
PES	Payment for Ecosystem Services
PIC	Prior Informed Consent
PLUP	Participatory Land Use Planning
POPS	Persistent Organic Pollutants
REDD	Reduced Emissions from Deforestation and Degradation
SAGAs	Semi-Autonomous Government Agencies
SDGs	Sustainable Development Goals
TEV	Total Economic Value
TOT	Training of Trainers
TVETs	Technical and Vocational Education and Training
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WRA	Water Resource Authority
WRUAs	Water Resource Users Associations
WSPs	Water Service Providers
WWF-K	World Wide Fund for Nature Kenya

EXECUTIVE SUMMARY

1. Ministry's Mandate

The Ministry of Environment and Forestry is mandated with promoting and facilitating good governance in the protection, restoration, conservation, development and management of environment and forestry resources for equitable and sustainable development. The expected contribution of such efforts is captured in various environmental policy documents such as the Kenya Vision 2030, the Medium Term Plan 3 (MTP 3), Medium Term Expenditure Frameworks (MTEF), and the Big Four Agenda.

2. Problem of Increased Land Degradation

Development and harnessing of the productive sectors such as agriculture, tourism, industry and forestry is dependent on the abundance of natural resources. Unfortunately, these resources have over the years suffered the negative effects of climate change, including increased intensity of droughts and floods. Further, and specifically in the Cherangany-Elgeyo Hills landscape, there have been increased cases of deforestation leading to loss of vegetation, overgrazing on grasslands, gully erosion and invasive species. These factors often contribute to land degradation.

3. Case for a Master Plan

This Integrated Master Plan offers a detailed description of actions for restoration and rehabilitation of the Cherangany-Elgeyo Hills ecosystem. It provides an overview of the importance of this ecosystem, the challenges it faces, and the need for its restoration. It also provides a legal framework for supporting the Plan, with a focus on the five conservation zones in this ecosystem: Gazetted Forests Zone (2,489-3,514 m), Uplands Zone excluding the gazetted forests (2,489-3,514 m), Escarpments Zone (1,710-2,489 m), Lowlands Zone (897-1,710m) and Riparian Areas. This zonation ensures that targeted conservation efforts are undertaken in the water tower that is strategic for each zone. For each zone, the following are provided: threats and challenges, implementation measures to curb these threats, and financing options.

4. The Cherangany-Elgeyo Location and Threats Facing it

Cherangany-Elgeyo Hills ecosystem traverses Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu Counties. It covers an area of 414,928 ha and consists of two water towers and 22 gazetted forest blocks. The ecosystem lies within the Lake Victoria and Rift Valley drainage basins, draining its waters to Lake Victoria and Lake Turkana. This ecosystem is an important source of water for use in domestic, irrigation, industrial, and hydro-power generation purposes. In the Cherangany-Elgeyo Hills ecosystem, the forest cover and grassland area have been declining while cropland has been increasing. This is an indication of rising levels of degradation.

The increase in population pressure and over-dependency on the Cherangany-Elgeyo Hills Water Tower has intensified its threats and challenges. A major threat is the poor management of Plantation Establishment and Livelihood Improvement Scheme (PELIS) which has led to encroachment on land for agriculture and settlement, illegal and over-abstraction of water, illegal logging and unsustainable harvesting of exotic trees. Other threats include planting of Eucalyptus

trees in water catchment areas, overgrazing, forest fires, charcoal burning, rampant firewood collection and landslides. These threats have contributed to adverse impacts on the ecosystem as evidenced by reduced forest cover, drying up of rivers and springs, unpredictable rainfall, increased landslides and declining land productivity. Climate change vulnerability also continues to present the ecosystem with extreme effects of floods and droughts that impact on the landscape and livelihoods.

5. Budget and Resource Requirements

To avert these negative impacts and to ensure sustainable management of the Cherangany-Elgeyo Hills Ecosystem, an estimated budget of **KES 7.485 billion** is required over a ten-year period. The main interventions for which this budget will be used include community sensitization, complete gazettement of Elgeyo Hills Water Tower, conversion of plantation forests to indigenous/bamboo forests, rehabilitation of springs and rivers, capacity building, adoption of alternative of income generating activities and sources of energy, replacement of Eucalyptus trees with indigenous ones (bamboo) and continuous monitoring of the Cherangany-Elgeyo ecosystem.

6. Proposed Recommendations

Based on preliminary assessment of the threats and challenges that this ecosystem faces, this Master Plan proposes the following recommendations for successful restoration and rehabilitation of the Cherangany-Elgeyo Hills ecosystem:

- i. Establishment of a multi-agency team to develop an integrated conservation and management plan for the established five zones.
- ii. Development of a resource mobilization framework to implement the proposed Plan as well as to carry out environmental and social safeguards.
- iii. Undertaking of a detailed feasibility study for re-classification of plantation forests to indigenous/bamboo forests based on expert advice. This study should be subjected to an Environmental Impact Assessment as required by EMCA, 1999.
- iv. Signing of MoUs/MoAs with Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu counties on collaborative implementation of various initiatives in the Plan.
- v. Ensuring public and stakeholder participation on activities to be undertaken for successful implementation of recommended restoration efforts.
- vi. Development of by-laws by the County Governments of Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu to govern grazing in the forests, manage natural and riverine forests, and oversee replacement of Eucalyptus trees in this zone.

- vii.** Development of an innovative management system for the escarpments and hanging valleys.
- viii.** Implementation of recommendations of the joint report by the County Commissioners and County Government of Elgeyo-Marakwet on *Status Review and Rehabilitation of Fragile Ecosystems in Elgeyo-Marakwet*.

CHAPTER 1 : INTRODUCTION AND CHARACTERISATION OF DEGRADATION IN THE CHERANGANY-ELGEYO LANDSCAPE

1.1 Introduction

This chapter highlights the mandate of the Ministry of Environment and Forestry as the lead actor in matters of conservation and restoration. It also provides the criteria for demarcation of boundaries in the Cherangany-Elgeyo Hills ecosystem, with specific characterization of each zonation. It further specifies the goal, basis and urgency of making restorative actions in the landscape based on analyses of climate, biodiversity, socio-economic and demographic variables. All these considerations lead to characterisation of degradation in the landscape with reference to the baseline Total Economic Valuation (TEV)

1.2 Background Information

The Ministry of Environment and Forestry is mandated with undertaking, among others, National Environment Policy and Management, Forestry Development Policy and Management, Development of Re-afforestation and Agro-forestry, Restoration of Strategic Water Towers, Protection and Conservation of Natural Environment, Pollution Control, Conservation and Protection of Wetlands and Climate Change affairs. These tasks contribute to the achievement of national policy aspirations including Vision 2030, MTP 3 and the Big Four Agenda. Development of this Masterplan is aligned to these policy aspirations and the associated Medium Term Expenditure Framework.

Cherangany-Elgeyo Hills ecosystem is located along the edge of the Great Rift Valley. The Hills are made of an old fault-block formation of non-volcanic origin forming an undulating upland plateau on the western edge of the Rift Valley. It encompasses two water towers, Elgeyo and Cherangany; and 22 forest blocks. The ecosystem is a critical water catchment area for Nzoia and Kerio rivers which flow to Lakes Victoria and Turkana respectively. The Cherangany-Elgeyo Hills ecosystem is also an important habitat for a wide range of biodiversity and harbours several regionally threatened animal and plant species.

Increase in population pressure and over-dependence on the Cherangany-Elgeyo Hills ecosystem has intensified threats and challenges to it. The drivers include unsustainable agricultural practices, landslides, illegal logging, poor management of PELIS, overgrazing, historical land use conflicts, encroachment on forests, forest fires, planting of Eucalyptus trees, charcoal production, and destruction of the riparian areas and wetlands. Hard-felt impacts include the drying of rivers, loss of biodiversity, reduction in crop production, and destruction of property and loss of lives due to landslides.

In this regard, the Ministry of Environment and Forestry set up a multi-agency team whose main objective was to develop an Integrated Master Plan for the rehabilitation and restoration of the Cherangany-Elgeyo Hills Ecosystem. The terms of reference for this task force is annexed to this report.

1.3 Scope of the Master Plan

The scope of the Plan covers Elgeyo and Cherangany Hills ecosystem which traverses four counties: Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu, as shown in Figure 1. The ecosystem targeted for rehabilitation and restoration covers an estimated 507,267 ha, majority of which falls within the Elgeyo-Marakwet County. This is due to the higher level of land degradation in this region. The criteria used to delineate the boundary was based on both the administrative boundaries (Sub-locations within the area of interest) and the expanse of the ecosystem (gazetted forests¹ and major rivers and their tributaries).

¹ These are forests that are officially recognized as government forests.

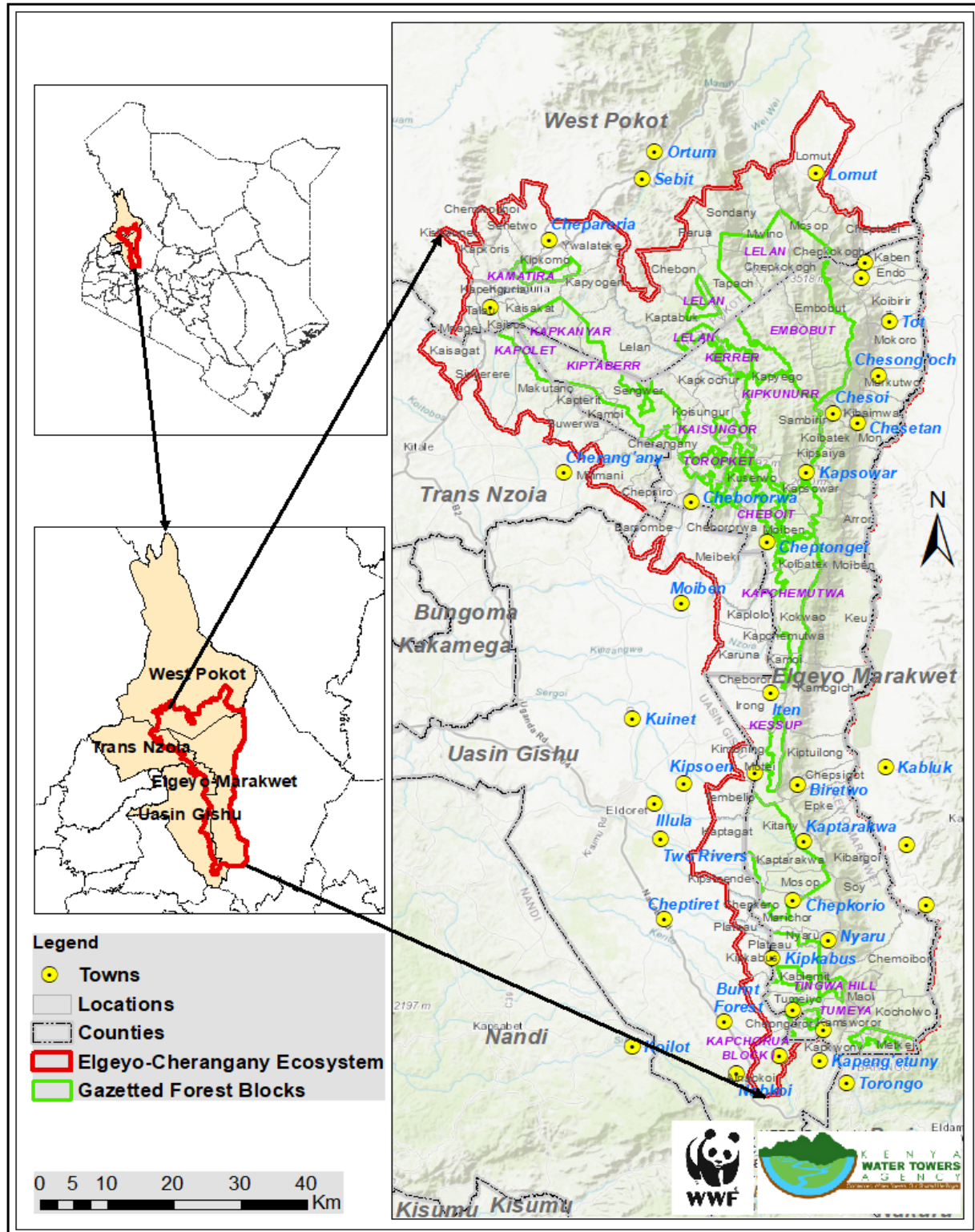


Figure 1: The location of Cherangany-Elgeyo Hills Ecosystem (Source: Kenya Water Towers Agency, 2021)

1.4 Goal and Objectives of the Master Plan

The overall goal of the Plan is to provide an integrated framework for the rehabilitation and restoration of the Cherangany-Elgeyo Hills ecosystem.

The specific objectives of the masterplan are:

- i. To provide an overview of the current status of the Cherangany-Elgeyo Hills ecosystem, to identify threats facing it, and to propose intervention measures to curb these threats
- ii. To develop zonation for rehabilitation and restoration within Cherangany-Elgeyo Hills ecosystem
- iii. To outline the efforts made in addressing identified threats and challenges
- iv. To develop an implementation and monitoring plan to guide the rehabilitation and restoration of Cherangany-Elgeyo Hills ecosystem
- v. To develop an Integrated Master Plan for rehabilitation and restoration of Cherangany-Elgeyo Hills ecosystem.

1.5 Justification for the Master Plan

The Cherangany-Elgeyo Hills ecosystem is an important natural resource cutting across four counties as listed above. The ecosystem serves more than 3 million people across these counties². The ecosystem provides these people with water for domestic and industrial use, wood fuel, grazing area, timber for construction, medicinal herbs and sites of cultural importance. Also, the micro-climatic influence of the ecosystem provides a suitable environment for crop and animal production, guaranteeing local communities of food security. In addition, the ecosystem supports recharge of aquifers, reduces soil erosion, maintains river flow, controls landslides, protects biodiversity and facilitates carbon sequestration thereby mitigating the impacts of climate change. Further, the ecosystem supports the achievement of national agenda such as Vision 2030, Sustainable Development Goals and the Big Four Agenda through provision of water for irrigated agriculture in the lowland areas of Cherangany-Elgeyo-Hills ecosystem, thereby contributing directly to food security, and indirectly to affordable housing, manufacturing, and affordable healthcare. The Master plan will specifically contribute to the Ministry's mandate to facilitate good governance in the protection, restoration, conservation, development and management of the environment and natural resources for equitable and sustainable development.

² KNBS 2019.

However, there are several threats and challenges that actively undermine the ability of the Cherangany-Elgeyo Hills ecosystem to perform its functions. The major challenge is increased human population which has exerted pressure on the ecosystem, leading to over exploitation of its resources. Specifically, it has led to loss of biodiversity, drying of rivers, decline in agricultural production, encroachment into ecologically sensitive areas and increased climate change-related impacts such as drought and landslides.

Efforts to protect this ecosystem have been hampered by limited human capacity and resources to manage the expansive ecosystem. Therefore, the multi-stakeholder approach adopted in developing this Master Plan seeks to come up with a framework for sustainable conservation and management of the Cherangany-Elgeyo Hills ecosystem, the success of which will see the ecosystem sustainably serve those who depend on it.

1.6 Situational Analysis

1.6.1 Climate

(a) Temperature

The Cherangany-Elgeyo Hills ecosystem largely experiences cool and humid weather conditions with temperatures ranging from 14.8^o-28^o Celsius. The dry season is from January to March.

(b) Rainfall

In Cherangany Hills, rainfall ranges between 400-1400 mm per annum with high peaks experienced between May and August and lower peaks from December to February. The Northern parts of the Cherangany Hills including Kapkanyar, Kiptaberr, Kapolet, and the excision area receives an average annual rainfall of between 1,219-1,424 mm while the Southern area receives an average annual rainfall of between 1,129-1,276 mm.

In Elgeyo Hills, the annual average rainfall ranges between 1,200-1,700 mm. Long rains are experienced from May to July and short rains from October to December. The two rainy seasons are well distributed throughout the year. However, erratic climatic patterns possibly caused by climate change have been experienced in recent times.

1.6.2 Hydrology

The Cherangany-Elgeyo Hills ecosystem lies within the Lake Victoria and Rift Valley drainage basins with the escarpment acting as a water divide. Rivers originating from the western side of the ecosystem drains into River Nzoia that flows into the Lake Victoria in the Lake Victoria basin, whereas those from the eastern section drain into Kerio River that discharges into Lake Turkana in the Rift Valley basin (Figure 2). Rivers from the northern side of Cherangany Hills flow into

Turkwel (Suam) River draining into Lake Turkana. The Turkwel River is also the source of water for the Turkwel Dam which is a key source of hydro-power.

There are **286 springs** in the Elgeyo Hills Water Tower, out of which **229** recharge into Kerio River that drains into Lake Turkana while the remaining **57** springs drain into Sosiani River, a tributary of Nzoia River which drains to Lake Victoria³.

1.6.3 Total Economic Value of Cherangany Hills

The annual Total Economic Value (TEV) of Cherangany Hills is estimated at KES 47 billion (US\$470 million)⁴. Timber and non-timber forest products such as firewood and herbal medicine make up 16.7 percent of the ecosystem and are valued at KES 7.9 billion (\$79 million) while the value from hydro-electric power generation is 13.5 percent of the TEV representing KES 6.3 billion (\$63 million). Carbon sequestration is valued at KES.18.3 billion (\$183 million) while oxygen generation is valued at KES.11.5 billion (\$115 million).

³ KWTa. (2020) Elgeyo Hills Water Tower Status Report.

⁴ KWTa (2019). Status Report for Cherangany Hills Water Tower.

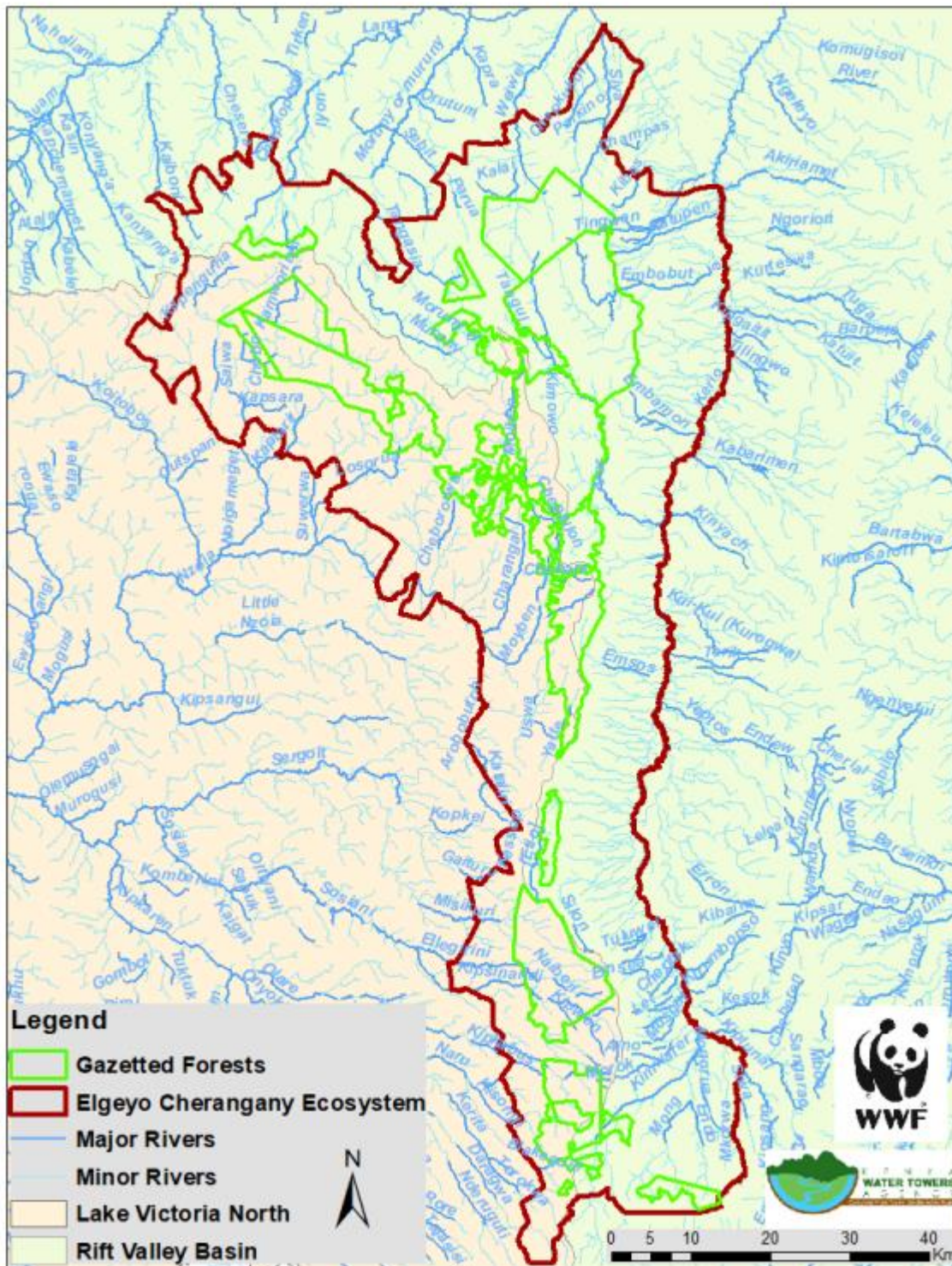


Figure 2: River Networks in Cherangany-Elgeyo Hills Ecosystem. (Source: Kenya Water Towers Agency, 2021).

1.6.4 Biodiversity

(a) Flora

The lower western parts of Kiptaber-Kapkanyar in Cherangany Hills are dominated by *Aningeria strombosia* forest, with a large area of mixed *Podocarpus latifolius* forest on the higher slopes. The Southern slopes have forests of *Juniperus nuxia* and *Podocarpus falcatus*. Valleys in the upper peaks shelter sizeable remnants of *Juniperus - Maytenus undata-Rapanea- Hagenia*⁵. Tree ferns comprising *Cyathea manniana* occur in the valleys where there are also patches of bamboo species of *Arundinaria alpina*. *Acacia abyssinica* species dominates scrubby grasslands with a diversity of lower plants. At higher altitudes, the forest is interspersed with a mixture of flourishing vegetation and swamps dominated with *Lobelia aberdarica* and *Senecio johnstonii*. The Eastern region has a mosaic of vegetation with little altitudinal zonation as a result of varied topography, changing land use practices, bush fires among other factors.

In Elgeyo Hills, the vegetation consists of indigenous forests, exotic plantation forests, Bamboo, grassland and shrubs. Plantation forests are found in the gazetted forest and at the lower fringes adjacent to farmlands while dense indigenous forests are concentrated in the higher altitudes. The main plantation stands are of Cypress Pine, *Eucalyptus* and *Grevillea robusta*.⁶ The dominant indigenous trees are Wild Olive (*Olea africana*), *Podocarpus spp*, *Albizia lebbeck*, *Dombeya goetzenii*, *Rhus natalensis*, *Juniperus procera*, *Acokanthera schimperi*, *Syzyguim guineense*, *Nuxia congesta*, *Ficus natalensis* and *Yushania alpina*. The grassland mainly consists of open glades and Bamboo.

(b) Fauna

The cherangany-Elgeyo Hills ecosystem is an important biodiversity hotspot, home to several regionally threatened animal species such as the Lammergeyer, African Crown Eagle, Red Chested Owlet, Sitatunga, Thick Billed Honey Guide and the rare De Brazzas monkey. Other wildlife found within the ecosystem are elephants, buffaloes, leopards, black and white Colobus monkeys, Oters, Genet, Mongooses and Bushbucks. It also harbours diverse insects including the endemic *Capys juliae* species. Threatened species found in the ecosystem include *Campephaga quiscalina*, *Stephanoaetus coronatus*, *Gypaetus barbatus* and *Glaucidium tephronotum* (recently recorded in Kapkanyar), and *Indicator conirostris* ⁷.

⁵ KWTa. (2020). Status Report for Cherangany Hills Water Tower.

⁶ Kenya Forest Service. (2015). Kaptagat Forest Management Plan.

⁷ GoK (2015). Cherangani Hills Forest Strategic Ecosystem Management Plan 2015-2040. Kenya Forest Service, Nairobi, Kenya

1.6.5 Socio-Economic Activities

Mixed farming is the commonest activity in this ecosystem, with farmers practicing livestock keeping, crop production, poultry farming and bee keeping. The type of agriculture practiced in this ecosystem is influenced by altitude. Seventy-two (72) percent of the population depend on farming as source of livelihood. Food crops grown in this ecosystem include: maize, tea, pyrethrum, potatoes, vegetables, wheat, bananas, green grams, cowpeas, millet and beans; while fruit trees grown include: avocado, mangoes, passion, pawpaw, citrus, tamarind and tree tomatoes; and cash crops grown include: wheat, tea, onions, sunflower, pyrethrum, oats, tobacco and carrots. On the other hand, livestock rearing and bee keeping is mainly done in the lowlands, along Kerio Valley. Livestock kept include goats, cattle, sheep and donkeys.

The average land size in the highlands is approximately 0.4 ha per household while at the escarpments it decreases to about 0.2 ha per household. In the Kerio Valley, land holding increases to about 2.0 ha per household due to sparse population and unfavourable climatic condition for farming. The local communities in this area also participate in Plantation Establishment and Livelihood Improvement Scheme (PELIS) as well as free range grazing where most livestock graze and live inside the forest.

1.6.6 Human Population

By 2009, the total human population of Cherangany-Elgeyo Hills Ecosystem was 673,183 (333,967 males and 339,216 females). The population density in the area was 171 persons per square kilometre. Kapenguria and Mnagei locations in West Pokot had the highest population density while Keu and Lomut in Elgeyo-Marakwet and West Pokot counties respectively had the lowest population density (Figure 3). Dense human population in the ecosystem is clustered along the major towns such as Iten, Kapenguria and Chesoi. Areas in the higher altitudes have a high population density when compared to areas in the lower altitudes, mainly due to favourable agroecology in areas in the higher altitude.

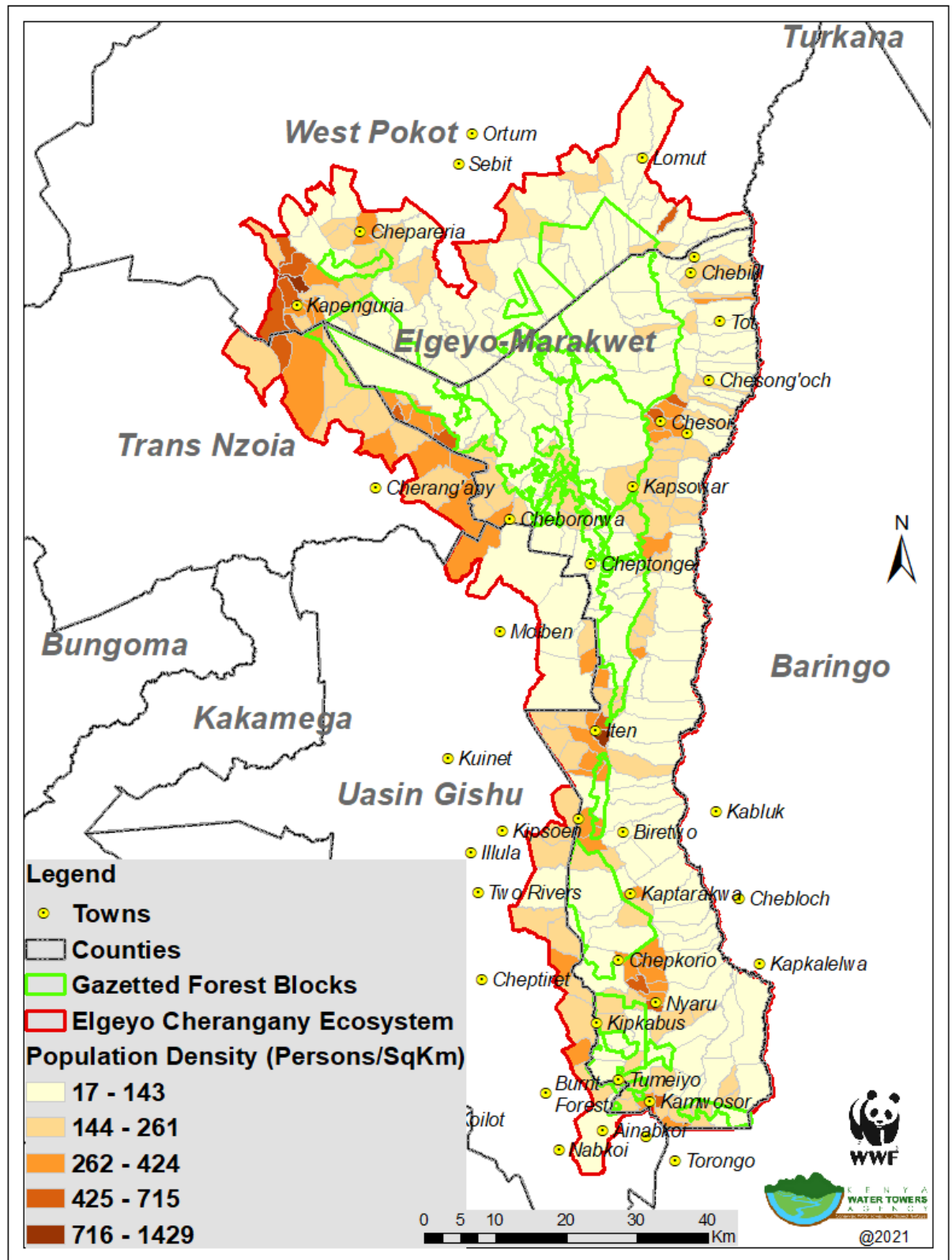


Figure 3: Population Density in Cherangany-Elgeyo Hills Water Tower (Census data 2009, Kenya Water Towers Agency, 2021).

1.6.7 The Status of Land Cover and Land Use

Satellite images and aerial photographs were used to assess land cover and land use (LCLU) changes in the Cherangany-Elgeyo Hills ecosystem between 1990 and 2019. The purpose was to determine the drivers and socio-economic impacts of LCLU changes.

As of 2019, grassland was the dominant zone in the Cherangany-Elgeyo ecosystem, covering an area of 193,525 ha (46 percent), followed by cropland at 137,304 ha (33 percent) and forestland at 81,124 ha (37 percent), as shown in Figure 4. The largest proportion of the forestland is inside the gazetted forest while that of grassland and cropland is within the buffer zone (**Error! Reference source not found.**).

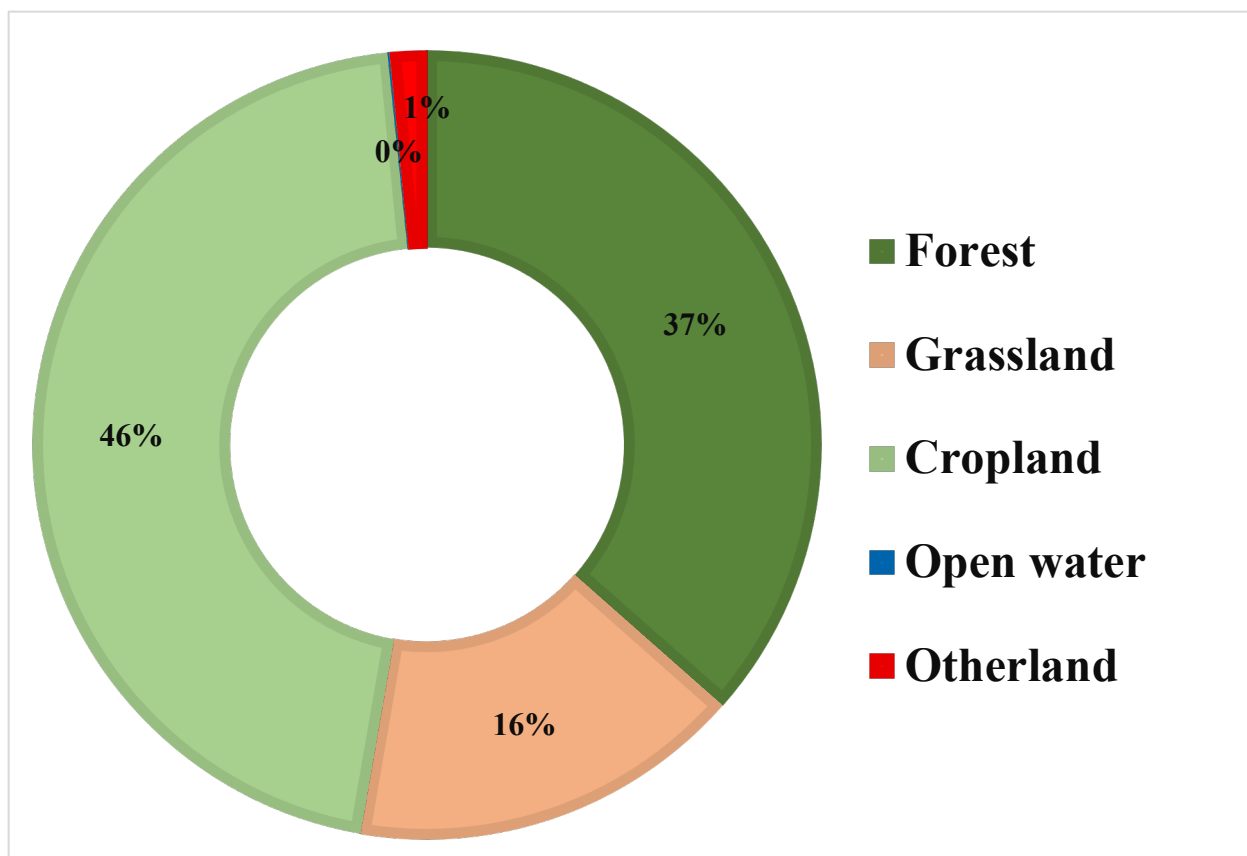


Figure 4: Land cover and land use in Cherangany-Elgeyo Hills ecosystem as of 2019

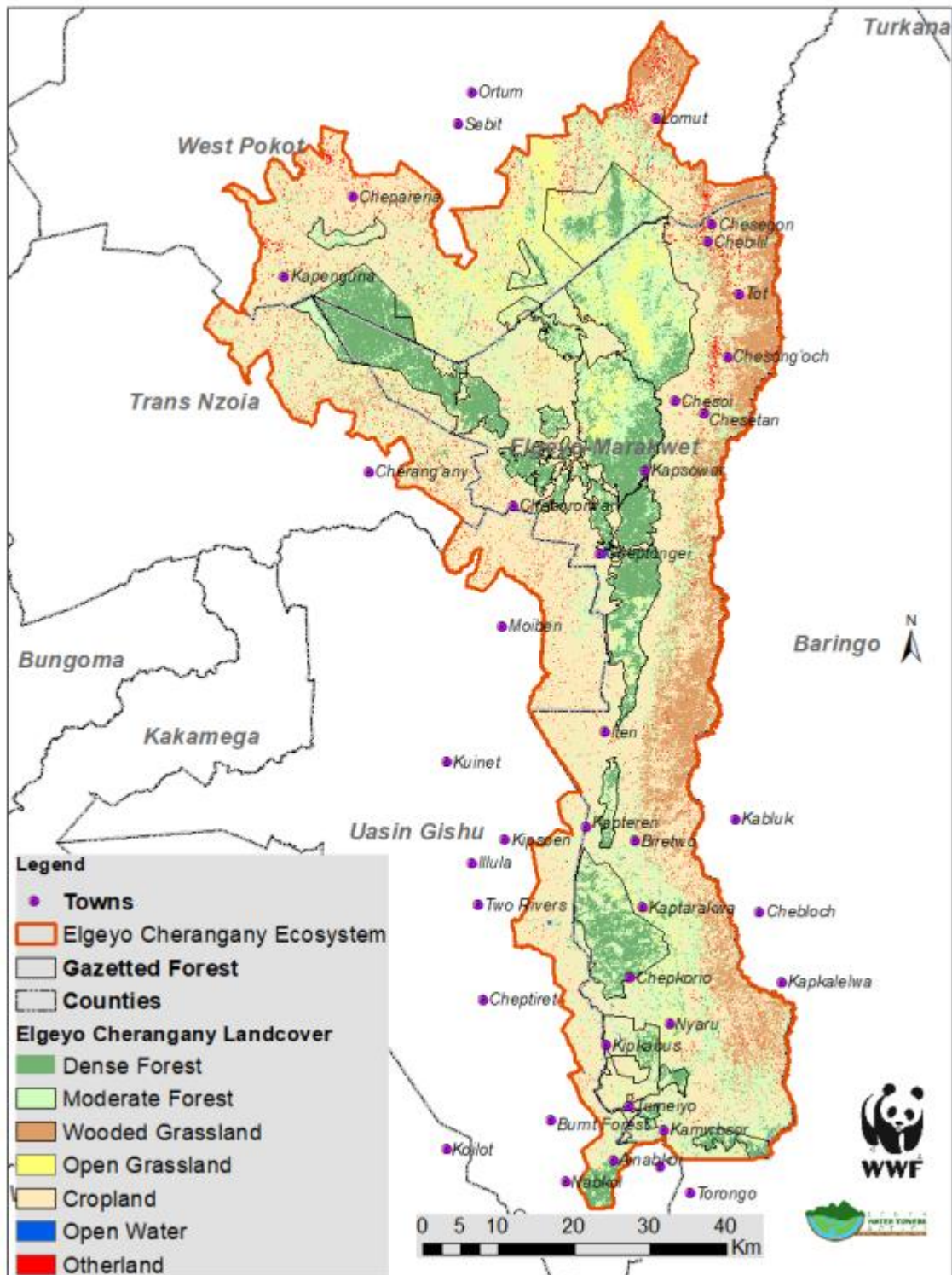


Figure 5: Spatial presentation of land cover and land use in Cherangany--Elgeyo Hills Ecosystem as of 2019

On LCLU trend analysis, a total of 41,547 ha of forest cover was lost between 1990 and 2019. During the same period, grassland area declined by 76,757 ha while cropland increased by 115,307 ha (Figure 6). This is due to increased demand for land for agriculture and settlement which has led to encroachment, increased area under PELIS and illegal logging and overgrazing.

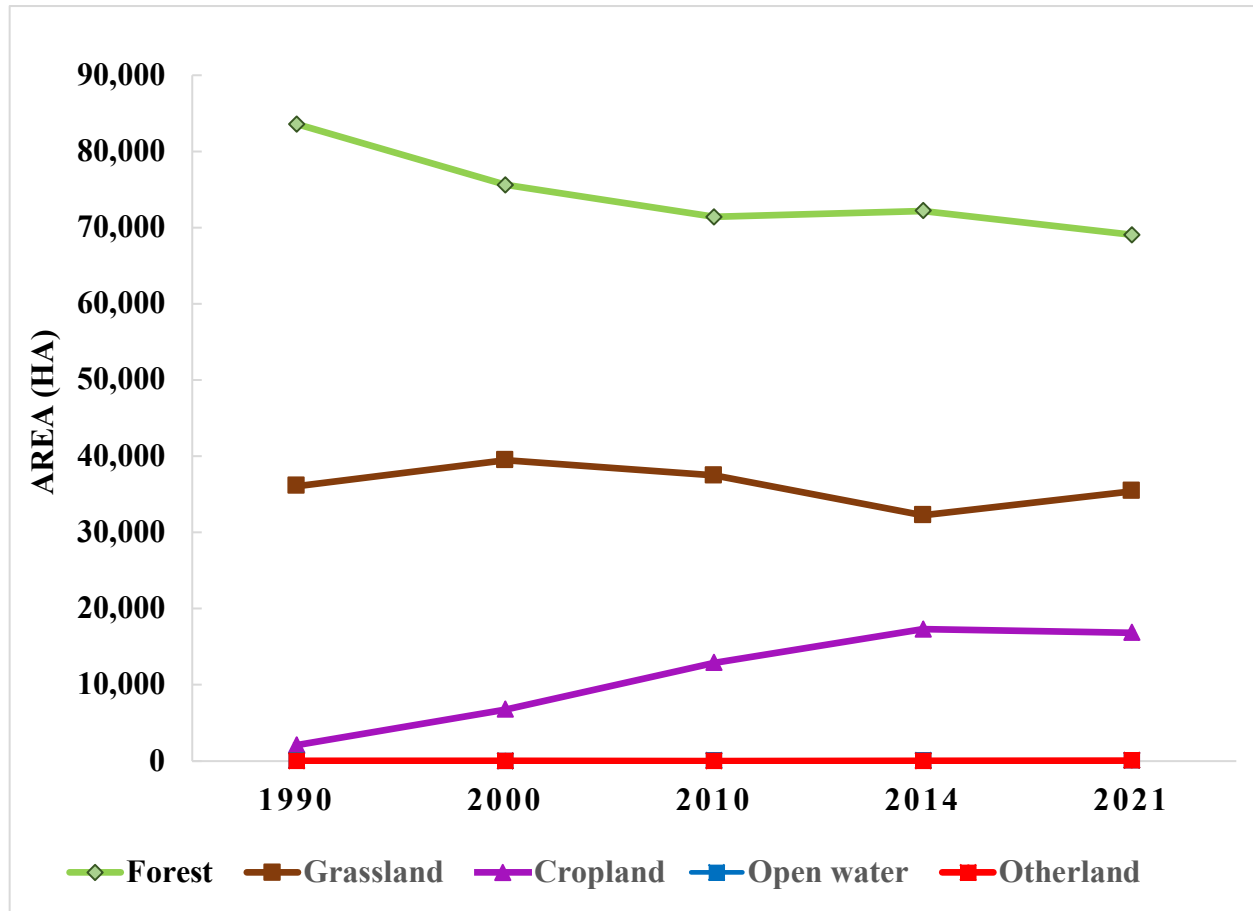


Figure 6: Land cover and land use trends in Cherangany-Elgeyo Hills ecosystem between 1990 and 2019



Plate 1: Tea plantation buffer belt around Sabor forest sub-block



Plate 2: Bamboo plantation along rivers

1.6.8 Degradation levels

Land cover and land use maps were overlaid on slopes with a ratio of 60:40 respectively to determine the degradation status in the Cherangany-Elgeyo Hills ecosystem. The degradation level was established by ArcGIS software by computing land cover and slope variables at different segments in the landscape. Variables on land cover were captured on a Likert scale of 1-3 where 1 represented low cover and 3 high cover.

Further, variables on the slope were categorized as follows: 0-30 percent to represent a slight slope, 31-60 percent to represent a medium slope and 60-100 % to represent a steep slope. The resulting scores were subjected to 60:40 ratio to represent land cover and slope respectively. This gave the final composite degradation levels on a scale of 1-3 where 1 is the lowest and 3 the highest.

Results indicated that the degradation level in the Cherangany-Elgeyo ecosystem is mainly medium, covering an area of 278,825 ha (67 percent) as shown in Figure 7; whereas the area under highest levels of degradation is 62,038 ha (15 percent) occasioned by steep slopes, low vegetation cover and farming activities that were mainly observed along the escarpment (Figure 8); and the area under low degradation is 73,691 ha (18 percent) and is mainly located within the gazetted forest blocks.

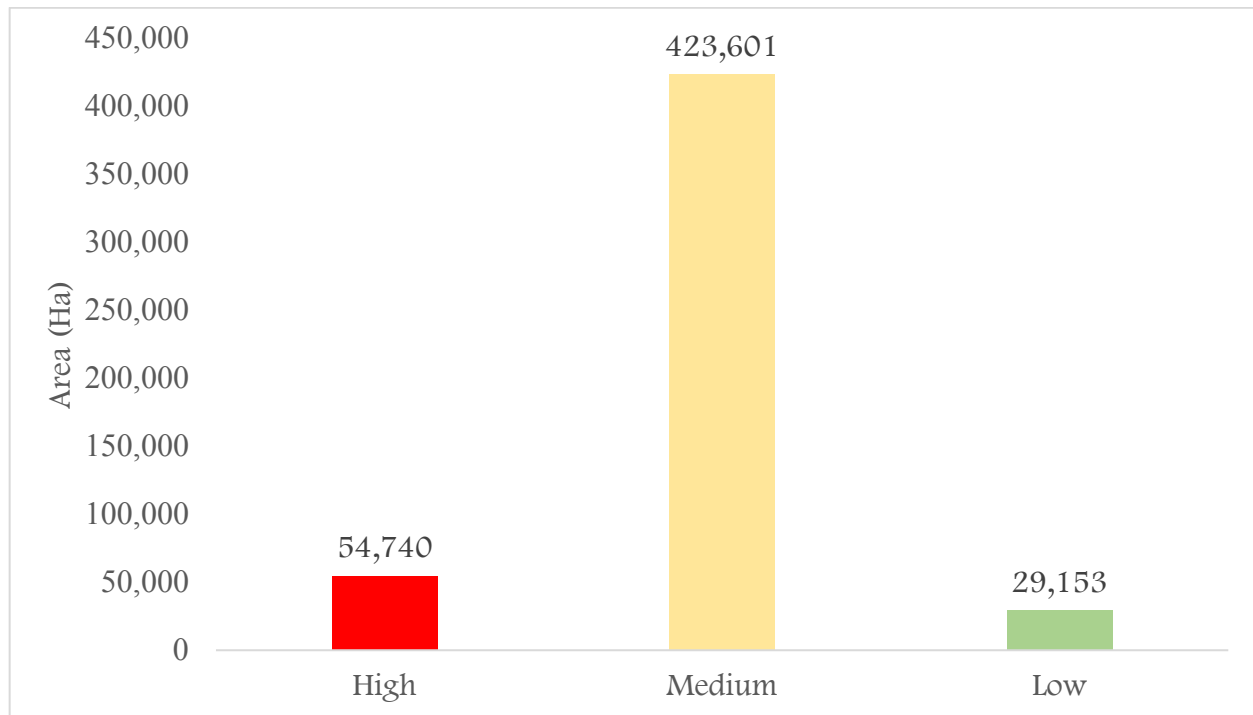


Figure 7: Levels of degradation in the Cherangany-Elgeyo Hills ecosystem

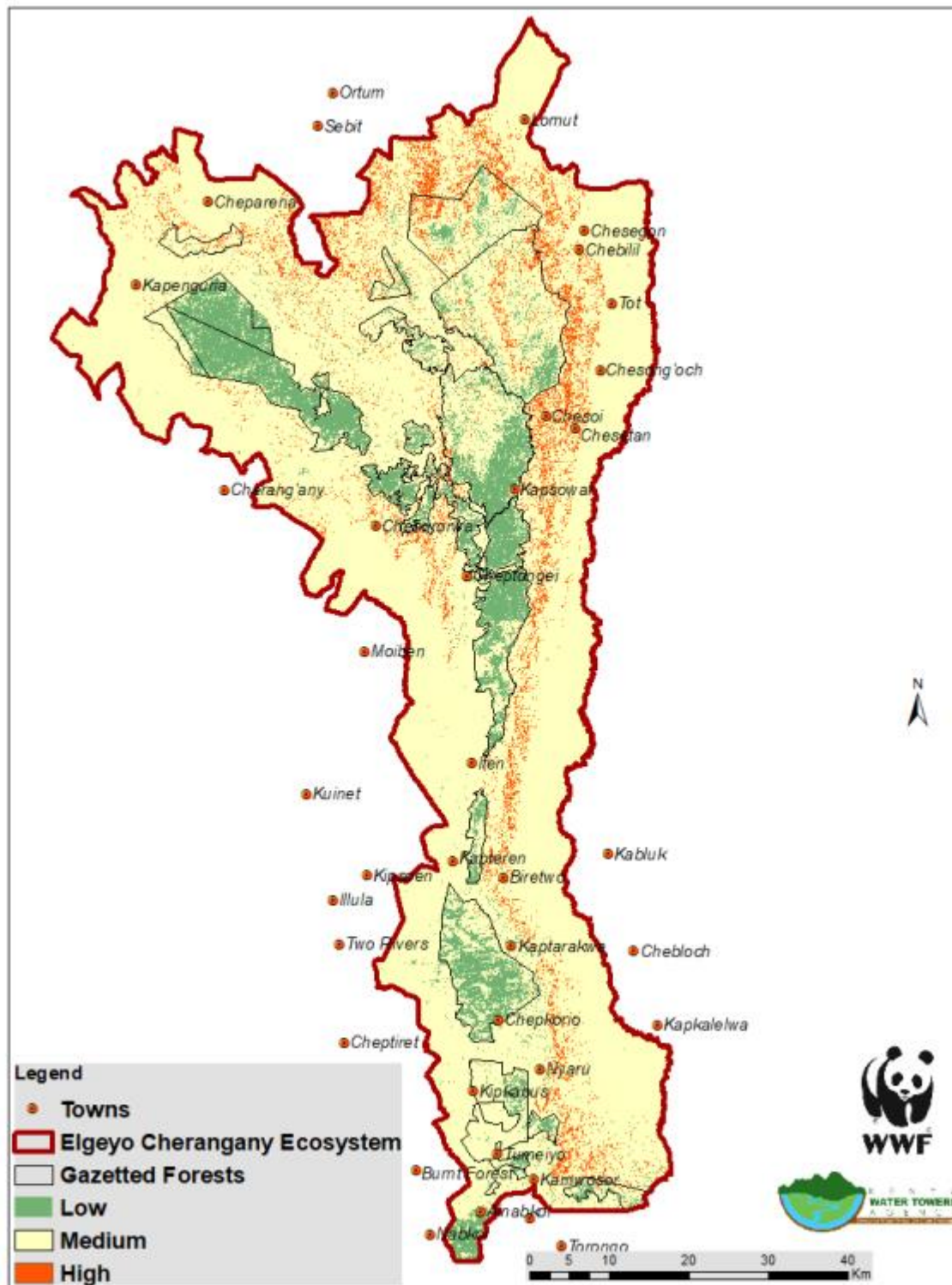


Figure 8: Map showing degradation levels in the Cherangany-Elgeyo Hills ecosystem

CHAPTER 2 : THE IMPORTANCE OF CHERANGANY-ELGEYO HILLS ECOSYSTEM

2.1 Assessing the Total Economic Valuation

The chapter captures the usefulness of the ecosystem, highlighting how it helps in, among other uses, rain-fed and irrigated agriculture, tourism, providing context for cultural activities, and hydroelectric power generation. Consequently, this chapter provides the ‘Total Economic Valuation’ of the Cherangany Hills ecosystem, excluding the Elgeyo Hills which has not been subjected to similar valuation. Further, it identifies the potential of the ecosystem for research related activities.

2.2 Boosting Agricultural Production

The Cherangany-Elgeyo Hills ecosystem provides the micro-climatic conditions favourable for agriculture which is a key source of livelihood for the community. The highlands have rich volcanic soils that support crop farming while the hot climatic conditions in the lowlands are conducive for goat rearing, bee farming and growing of fruits trees.

Equally important is the role this ecosystem plays in providing water for irrigation, further boosting agricultural produce. An example is the Aror Irrigation scheme established along Aror River and where the growing of crops such as green grams, pawpaw, water melon, tomatoes, Mangoes and Oranges is thriving. Another example is the Turkwel dam which supports irrigation on 5,000ha of land in West Pokot.

2.3 Provision of Water for Domestic and Commercial Purposes

Cherangany-Elgeyo Hills ecosystem is a source of rivers and water springs which are used for domestic, irrigation and industrial purposes. Water sourced from this ecosystem recharges the Chebara, Moiben, Two Rivers, Ellegirini, Kerita and Kesses dams that supply 90 percent of domestic as well as commercial water to Eldoret town while Sabor supplies water for domestic and commercial uses residents of Iten and its environs.

2.4 Provision of Water for Hydro-electric Power Generation

The Turkwel dam constructed along the Turkwel River is mainly used for hydro-power generation. The dam is the third largest hydro-electric power plant in the country, with a generation capacity of 106 megawatts per day. The dam also provides water for irrigation, and supports tourism and fisheries. On the other hand, River Sosiani that drains into the Nzoia River provides water for electricity generation at Koromosho water fall.

2.5 Provision of Timber, Non timber and Quarry Materials

The gazetted and farm forests within the ecosystem are important sources of timber, wood fuel, quarrying materials, as well non timber forest products like honey.

2.6 Provision of herbal medicine

Elgeyo Hills Water Tower is an important habitat for plants with cultural and medicinal value, which include *Periploca linearifolia*, *Vernonia auriculifera* and *Rhus natalensis*.

2.7 Regulatory and Cultural Services of the Critical Water Catchment Areas

This ecosystem is a key source of water for the trans-boundary Lake Victoria and Lake Turkana. Lake Victoria is the source of one of the longest rivers in Africa, River Nile, whose water goes to Egypt before draining into the Mediterranean Sea. On the other hand, Lake Turkana, which gets 98 percent of its water from Rivers Kerio and Turkwel, is the world's largest permanent desert and alkaline lake and has been earmarked as a World Heritage Site. The ecosystem also supports the existence of the Lake Kamnarok, an ox-bow lake.

2.8 Support Services for Tourism, Recreation and Cultural Activities

The Cherangany Hills supports important conservation areas such as Saiwa Swamp National Park, South Turkana National Reserve, Rimoi Game Reserve and Kerio Valley National Reserve that are key for tourism in the region. On the other hand, Elgeyo Hills is famous as a high-altitude training ground for athletes who flock to this region due to its ideal altitude, landscape and climatic conditions. In addition, the ecosystem provides beautiful sceneries especially along the Rift Valley escarpment, hence promoting recreational activities such as paragliding.

The ecosystem also has caves, shrines, nature trails, and film making sites such as Chepkemetet view point, Chepkogel campsite and Flax recreational sites which are key to ecotourism. Parts of the ecosystem are also used for religious and cultural practices such as circumcision. The main cultural sites found there include; Masorta, Kabarkeon, Kipsaos and Chepkemetet.

2.9 Support Services to Research and Training

The Cherangany-Elgeyo Hills ecosystem is of great importance to research and education. It provides training opportunities for students undertaking forestry courses from local universities as well as the Kenya Forestry College Londiani through practical experience at various Kenya Forest Service stations. The Kenya Forestry Research Institute (KEFRI) has also established technologies to demonstrate establishment and management of tree species and bamboo in this ecosystem.

CHAPTER 3 : ZONATION OF CHERANGANY-ELGEYO HILLS ECOSYSTEM

3.1 Characterizing the Ecosystem

This chapter provides distinctive characteristics of the ecosystem and how these have been used to establish unique zones to guide in the profiling of threats and challenges and to design appropriate interventions.

3.2 Characteristics of the Landscape

The Cherangany-Elgeyo Hills ecosystem encompass the gazetted forest blocks and the water towers and adjacent buffer areas. This ecosystem has an elevation ranging between 1,053-2,755 m asl. Based on the elevation, expanse (land area), level of degradation and land cover, the landscape has been divided into five sub-systems as shown in Table 1 below.

Table 1: Zonation criteria of the Cherangany-Elgeyo Hills Ecosystem

Zone	Elevation (m)	Area (ha)	Highly degraded (ha)	Land cover (ha)	
1. Gazetted Forests	2,489-3,514	119,198	633 (0.5%)	Forestland	67,608 (57%)
				Cropland	16,594 (14%)
2. Upland areas (excluding gazetted forests)	2,489-3,514	124,007	3,604 (2.9%)	Forestland	8,174 (7%)
				Cropland	63,515 (51%)
3. Escarpments	1,710-2,489	76,259	34,160(45%)	Forestland	2160 (3%)
				Cropland	33789 (47%)
4. Lowlands	897-1,710	85,478	22,070 (26%)	Forestland	1251 (1%)
				Cropland	20,848 (24%)
5. Riparian areas	N/A	9,986	1,568 (15%)	Forestland	1,933 (19%)

Zone	Elevation (m)	Area (ha)	Highly degraded (ha)	Land cover (ha)	
				Cropland	552 (26%)
Total		414,928	62,037		

3.3 Zonation of the Ecosystem

Topographical features captured in the table above have been used to zone the landscape for ease of targeted interventions. These features are unique to the highland areas, escarpment, lowland zones along the Kerio Valley and the riparian areas. Based on these categories and for the purpose of conservation, the Cherangany-Elgeyo Hills ecosystem has been divided into five zones as shown in the table above, also listed below:

- Zone 1: Gazetted forests
- Zone 2: Upland areas (excluding gazetted forests)
- Zone 3: Escarpments
- Zone 4: Lowland areas
- Zone 5: Riparian areas

These zonation makes it easy to describe the threats and challenges faced by the ecosystem, propose intervention measures, and monitor and evaluate efforts to restore and rehabilitate the ecosystem.

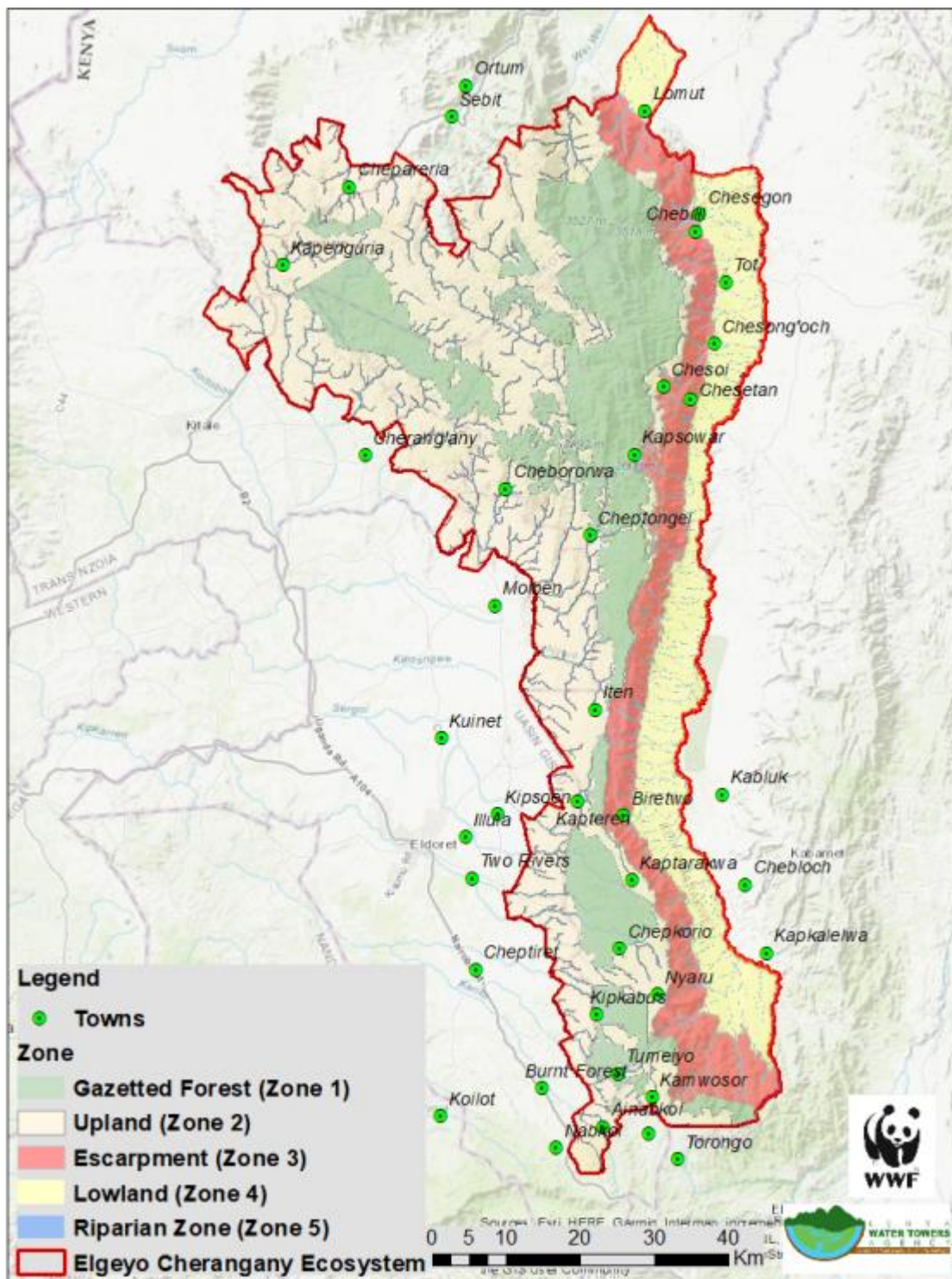


Figure 9: Spatial Presentation of the Zonation of Cherangany -Elgeyo Hills ecosystem

CHAPTER 4 : POLICY AND LEGAL FRAMEWORK

4.1 Legal and Policy Backing

This chapter focuses on the guidance provided by the Constitution for landscape restoration as well as the available national and county level legislative, policy, strategic and planning frameworks. It also reviews relevant global and regional policy documents as a basis for the Integrated Master Plan.

4.2 The Legislative Framework

4.2.1 The Constitution of Kenya, 2010

Part II of Chapter 5 of the Constitution of Kenya, 2010 has the following provisions on Environment and Natural Resources: Article 69 – Obligations in respect of the environment; Article 70 – Enforcement of environmental rights; and Article 72 – Legislation relating to the environment.

Further, Article 42 of Chapter 4, Part II states that, “Every person has a right to a clean and healthy environment, which includes the right: to have the environment protected for the benefit of the present and future generations through legislative and other measures, particularly those contemplated in Article 69; and to have the obligations relating to the environment fulfilled under Article 70.” The Master Plan will align itself to these provisions in the constitution.

4.2.2 The Environmental Management and Coordination Act No. 8 of 1999 (Read together with the 2015 Amendment Act)

The Environmental Management and Coordination Act, 1999 (EMCA, 1999) is referred to as the ‘Principal Act’ in Environmental Management and Coordination (Amendment) Act, 2015. The Act provides the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. The object and purpose of the Act is to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

Together with its subsidiary legislation, the Act provides for both the national and county governments to prepare Environmental Action Plans as part of mainstreaming of environmental concerns into the development planning process. In an effort to fully operationalize EMCA 1999, NEMA has developed a number of subsidiary regulations which have a bearing on wetlands management. They include: Biodiversity Regulations, 2007; Waste Management Regulations, 2006; Water Quality Regulations, 2006; EIA/EA Regulations, 2003, Wetlands Regulations, 2009; and Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit

Sharing Regulations, 2006. Implementation of the Master Plan will be guided by the provisions in the above regulations.

4.2.3 Kenya Water Towers Agency Order, 2012

Kenya Water Tower Agency (KWTa) established through the Legal Notice No. 27 of 2012 provides a legal framework for execution of its functions. The Agency is mandated with coordinating and overseeing the protection, rehabilitation, conservation, and sustainable management of Water Towers in the Country. It is also obligated to coordinate and oversee the recovery and restoration of forestlands, wetlands and biodiversity hotspots. The above mandate is provided and anchored in the proposed Water Tower Conservation and Management Bill, 2019.

4.2.4 The Environmental and Land Court Act, 2011

Article 162(2)(b) of the Constitution of Kenya, 2010 establishes a superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to, land, and to make provision for its jurisdiction functions and powers, and for connected purposes. Lack of adherence to mitigation measures recommended in the EIA report may invite dispute against the proponent as provided for in this Act. The Master Plan will comply with guidelines provided in the EIAs.

4.2.5 The Occupational Safety and Healthy Act, 2007

The Act provides for the safety, health and welfare of workers and all persons lawfully present at workplaces. It also provides for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The rights of workers on farmlands need to adhere to the provisions of the Act. Any interventions that require employment of workers will adhere to the law.

4.2.6 Wildlife Conservation and Management Act, 2013

This is an Act of Parliament that provides for the protection, conservation, sustainable use and management of wildlife in Kenya and for connected purposes. The Act applies to all wildlife resources on public, community & private land and in Kenyan territorial waters.

4.2.7 Land Act, 2012 – Read with the Subsequent Land Laws Amendment Act, 2016

The Act applies to all land declared as public land under Article 62 of the Constitution, private land under Article 64 of the Constitution, community land under Article 63 of the Constitution and any other written law relating to community land. The Act stipulates that ecologically sensitive

public land ought to be conserved – appropriate action will be taken to maintain public land that has endangered or endemic species of flora and fauna, critical habitats or protected areas.

4.2.8 Forest Conservation and Management Act, 2016

The Act provides for guidelines and opportunities for participatory forest management and conservation. The Act anchors itself on principles of good governance, public participation, protection of indigenous knowledge and intellectual property rights particularly on forestry and international best practices in accordance with Article 10 of the Constitution.

Section 22 of the Act mandates the Kenya Forestry Research Institute, established under the Science, Technology and Innovation Act, 2013, to develop research and development programmes aimed at providing information and technologies for sustainable development of forestry and allied natural resources.

4.2.9 County Government Act, 2012

The County Government Act and its subsequent amendments provides for implementation of specific government policies on environment and natural resources conservation as well as development and implementation of County Integrated Development Plan (CIDP). The Act also has provisions for cooperation between the National and County Governments in conservation of the environment.

4.2.10 Agricultural Act, 2012

The Agriculture Act (Cap 318) prohibits cultivation on slopes between 12-35% percent unless the soil is protected from erosion. This is intended to prevent the destruction and loss of vegetation cover on lands with slopes exceeding 35 percent.

In addition, the Agriculture (Farm Forestry) Rules, 2009 aim to protect riverbanks, shorelines, riparian and wetland areas. The rules further prohibit growing or maintaining any Eucalyptus species in wetlands and riparian areas.

4.2.11 Water Act, 2016

According to this Act, “‘Water Resource’ means any lake, pond, swamp, marsh, stream, watercourse, estuary, aquifer, artesian basin or other body of flowing or standing water, whether above or below the ground.” The Act establishes Water Resource Authority (WRA) as the Agent of the National Government responsible for regulating the use of water resources.

4.3 Guiding Policy Documents

4.3.1 National Environment Policy, 2013

The goal of this Policy is to have a better quality of life for present and future generations through sustainable management and use of the environment and natural resources. It provides guidelines required for legislation and a framework for planning and implementation of environmental undertakings. This forms the basis for the Master Plan to intervene on the degraded ecosystem.

4.3.2 National Land Policy, 2007

The objective of this policy is to develop a framework of policies and laws designed to ensure the maintenance of a system of land administration and management that will provide: (i) all citizens, particularly the poor, with the opportunity to access and beneficially occupy and use land; (ii) an economically, socially equitable and environmentally sustainable allocation and use of land; and (iii) the efficient, effective and economical operation of the land market. In addition, the policy accords greater equity of access to land resources.

4.4 Relevant Strategies and Plans

4.4.1 The Kenya Vision 2030

The Kenya Vision 2030 is a development blueprint for the period 2008-2030. It focuses on three pillars – economic, social and political. The sector on the environment falls under the social pillar. In it, the vision for the environmental sector is “a people living in a clean, secure and sustainable environment.” Therefore, it requires the need for equity in access to the benefits of a clean environment. It stipulates how the Country will intensify conservation of strategic natural resources like forests, water towers, wildlife sanctuaries and marine ecosystems sustainably and without compromising economic growth. The country intends to have achieved ten percent (10 percent) forest cover by 2030 and the Plan will demonstrate its contribution to this vision.

4.4.2 The Sustainable Development Goals, 2016-2030

The global Sustainable Development Goals (SDGs) aim to transform the world socially and economically. The achievement of this goal dependent on sustainable management and utilization of natural resources which form the basis of wealth and health.

4.4.3 National Environment Action Plan (NEAP)

NEAP was first established in Kenya in 1994 in fulfilment of Agenda 21 of the Rio summit of 1992 (Rio Declaration on Environment and Development). It provides for National and County Environmental Planning (NEAPs) and (CEAPs) and Strategies. The identified irrigation works will adhere to strategies in these plans.

4.4.4 Ministry of Environment and Forestry Strategic Plan 2018-2022

The Strategic Plan identifies four areas of interest: environmental conservation; management and conservation of forest and biodiversity; climate change and its impact; and governance, research and institutional framework. The Master Plan is designed to conform to these provisions.

4.4.5 National Climate Change Action Plan 2018-2022

National Climate Change Action Plan (NCCAP), 2018-2022 is the second action plan that supports the Country's development goals. It builds on the first Action Plan (2013-2017). The NCCAP 2018-2022 outlines mechanisms and measures to achieve low carbon climate resilient development in a manner that prioritizes adaptation. It also provides a framework for Kenya to deliver on its Nationally Determined Contribution (NDC) under the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC). In addition, the Action Plan guides on the climate actions to be undertaken by the National Government, County Governments, Private sector, Civil society and other actors as Kenya transitions to a low carbon climate resilient development pathway. NCCAP has three volumes of which Volume II entail Adaptation Technical Analysis Report, while Volume III Mitigation Technical Analysis Report.

4.4.6 County Integrated Development Plans 2018-2022

Article 108 of the County Government Act requires County Governments to develop a five-year County Integrated Development Plan (CIDP). The Plan guides development over a five-year period and integrates all the sector frameworks. It also provides for integration of the environment and natural resource conservation into county frameworks. The Kenya's Public Finance Management Act provides for guidance in appropriation of resources in line with the county's planning framework. In this regard, there exist CIDP for 2018-2022 for the County Governments of Elgeyo-Marakwet, Trans-Nzoia, Uasin Gishu and West Pokot. These documents will be key in the involvement of the four County Government.

4.4.7 Nationally Determined Contributions

At 0.1 percent of the total global emissions, Kenya's emission contribution is low, with the per capita emissions standing at less than 1.26 MtCO₂eq compared to the global average of 7.58 MtCO₂eq. Nevertheless, Kenya places a high priority on response to climate change. In order to meet the below 2°C objective, there are a number of key initiatives including but not limited to the National Climate Change Strategy, National Climate Change Action Plan, National Adaptation Action Plan and the Climate Change Act.

Kenya's Nationally Determined Contribution (NDC) includes both mitigation and adaptation components based on the national circumstances and in line with UNFCCC decisions. Kenya seeks to undertake mitigation contribution towards the 2015 Agreement and seeks to abate its GHG emissions by 32 percent by 2030 relative to the BAU scenario of 143 MtCO₂eq, and in line with its sustainable development agenda. This is also subject to international support in the form of finance, investment, technology development and transfer, and capacity building. The Country implements its Climate Change Action Plan through various sectors including energy sector, Innovations, public sector reforms, climate proofing key sectors, enabling conditions for private sector, devolved functions, financial sector.

4.4.8 Green Economy Strategy and Implementation Plan 2018-2030

The Green Economy Strategy and Implementation Plan (GESIP) is a guiding tool for Kenya's transition to a low carbon, resource efficient equitable and inclusive socio-economic transformation as well as attainment of Vision 2030. It supports development efforts towards addressing key challenges such as poverty, unemployment, inequality, environmental degradation, climate change and variability, infrastructure gaps and food insecurity.

4.4.9 National Strategy for Achieving and Maintaining over 10 percent Tree Cover by 2022

The main goal of this Strategy is to accelerate actions towards the achievement of Constitution requirement, Vision 2030 and Presidential Directive of 10 percent National tree cover for environmental integrity and social economic development. The Strategy focuses on production of 1.8 Billion quality seedlings by 2022; enhancing conservation and protection of natural forests on public, community and private lands and rehabilitation of degraded areas; enhanced national tree planting campaigns through national and county tree planting events, public education, awareness and sensitization; adoption of alternative and efficient energy sources; and innovative restoration programs such as Greening Kenya Initiative, Adopt a Forest Concept as well as Environmental Soldier Program. The implementation of this Plan will contribute to achievement of the 10 percent tree cover target.

4.5 Multilateral Environmental Agreements

Kenya is a signatory to several Multilateral Environmental Agreements (MEAs) that address several sectors of the environment. These include:

- Convention on Biodiversity (CBD) 1994 and Nagoya Protocol
- United Nations Convention to Combat Desertification (UNCCD) 1997
- The United Nations Framework Convention on Climate Change (UNFCCC) 1992
- The Convention on Wetlands of International Importance 1975, also referred as the Ramsar Convention
- The Montreal Protocol on Substances that Deplete the Ozone Layer 1990
- Convention on International Trade on Endangered Species (CITES) 1978
- Rotterdam Convention on Prior Informed Consent (PIC) 2005
- Stockholm Convention on Persistent Organic Pollutants (POPS) 2004
- Convention on Migratory Species (CMS) / the Bonn Convention.

Through these conventions, Kenya has made a commitment to take up practical measures to protect and conserve the environment as a global partner of civilized nations. Some environmental issues are cross national boundaries and international cooperation is required to address them. MEAs compel countries to promote and establish management frameworks through which to structure practical international activity with respect to environmental protection and conservation.

CHAPTER 5: THREATS AND CHALLENGES FACING THE CHERANGANY-ELGEYO HILLS ECOSYSTEM

5.1 Some Key Threats

This chapter highlights the key threats and challenges facing the Cherangany-Elgeyo Hills ecosystem. Notably, each distinctive zone faces different threats, including those facing the gazetted forests, issues of management, illegal logging, boundary issues and many others as further outlined in this chapter.

5.2 Zone 1: Challenges Facing Gazetted Forests

This zone covers an area of 119,198 ha with an altitude of 2,489-3,514m asl. Some of the challenges facing this zone are as follows:

i. **Poor management of the Plantation Establishment and Livelihood Improvement Scheme (PELIS)**

The poor management of PELIS coupled with increased population and demand for land for crop production has contributed to ballooning of the area under PELIS. This has resulted in forest fragmentation and degradation, consequently contributing to the increase in area under cropland in the gazetted forests. Kapchemutwa, Kipkabus Kaptagat, Sabor, Penon, and Cherangany have the largest proportion of forest plantation established through PELIS. In some cases, farmers have extended their tenure beyond the given 3 years, which has affected quality of plantation due to low survival rates. In addition, some of the areas from which harvests have been made are yet to be planted, increasing current unstocked areas.

ii. **Illegal logging**

Increased demand for fuelwood, timber and construction materials has led to illegal logging of both exotic and indigenous tree species. A socio-economic study conducted in 2019 established that about 68 percent of the houses in the area are semi-permanent with wooden walls⁸. It was noted that most such households acquire the construction materials from the nearby state forest blocks.

In addition, increased charcoal production and firewood collection has exacerbated this threat affecting tree species distribution and density. Trees such as red cedar (*Juniperus procera*), Real yellowwood (*Podocarpus latifolius*), Elgon teak, *Olea africana*, *Prunus africana*, *Polyscias*

⁸ KWTa. (2019). The Community Resource Assessment for Elgeyo Hills Water Tower

kikuyuensis and *Dendrosenecio cheranganiensis* have reduced in numbers due to their over-exploitation.

iii. Unclear forest boundaries

Unclear forest block boundaries in Cherangany-Elgeyo hills have contributed to encroachment on forest land. Most of the forest blocks do not have visible boundaries or beacons delineating the boundary between the gazetted forest and community land. This has encouraged encroachment as people claim not to know where forests begin and end. In addition, efforts to re-align the boundaries of these forests have been unsuccessful as neighbouring communities have resisted such a move.

iv. Encroachment

Population increase and continuous land sub-division have resulted in rising demand for land for agriculture and settlement, leading to encroachment. Also, fragmentation of land into smaller sizes has rendered some parcels inadequate to meet the economic needs of the households leading to farming in critical, fragile ecosystems and the forest. The result has been reduction in forest cover, loss of several species, landslides, and flooding and drying of rivers and springs. The most affected areas in this regard are Kipkabus, Lelan, Embobut, Cherangany, and Cheptongei.

v. Unsustainable commercial harvesting of timber

There are over fifty registered saw millers in this ecosystem with about ten in Keiyo South Sub-county alone. The major companies involved in this business include Raiply, Savanna, Flax, Merist, Nyaru, and Topsy Preservatives Company. Although most of these companies depend on plantation forest, harvesting is done on large scales leaving huge backlogs hence causing a reduction in forest cover.

vi. Forest fires

Most forest fires within the Cherangany-Elgeyo ecosystem are mainly human induced and deliberate. Most local communities along the escarpment practice slash-and-burn to prepare land for planting season, and use fire during honey harvesting and to spur up grass growth. These fires often end up spread into forested areas. Arsonists also use fires to divert attention from the illegal activities being carried out in the forest. Forest fires have led to destruction of vegetation and biodiversity. In 1986, forest fire in Cherangany destroyed hundreds of hectares in Kapkanyar forest. Fortunately, forest fires have gradually reduced due to enhanced collaboration between different actors to protect forests.

vii. Planting of Eucalyptus trees in water catchment areas

Eucalyptus is one of the dominant species in the plantation forests in Kaptagat. Some of these trees were planted in critical water catchment areas to serve the railway services in the colonial era. Despite their quick growth and financial returns, these trees have high water uptake thus reducing

water capacity in the area. This has also led to drying up of some springs, swamps and streams in the water tower.

viii. Overgrazing

Free ranging is the major form of grazing practiced in areas around this ecosystem, especially in Kessup, Kaptagat, Embobut, Lelan and Kamatira forest blocks. Normally, high number of livestock are moved to graze and live inside the forest. When these large herds of animals graze in gazetted forests, they trample and browse on young saplings, hampering natural re-generation and rehabilitation efforts. For instance, in Elgeyo Water Tower, about 2,400 heads of cattle and a substantial number of goats graze inside the forest daily⁹. This trend has been exacerbated by limited enforcement of grazing plans including the lack of grazing fee.

ix. Weak law enforcement and governance structures

There is weak enforcement of laws resulting from overlapping mandates and sometimes, integrity issues. In addition, institutions charged with enforcement have limited capacity in terms of staffing, equipment and resources.

5.3 Zone 2: Challenges in Upland Areas (Excluding the Gazetted Forests)

This zone covers an area of 124,007 ha with an altitude of 2,489-3,514m asl. Most of the challenges in this zone are similar to those witnessed in Zone 1. These and other challenges are illuminated below:

i. Unsustainable agricultural practices

Farming which is a major source of livelihood in the area utilizes agrochemicals such as fertilizers which lead to pollution of water sources. In addition, poor farming practices has led to increased soil erosion thus impacting on the state of rivers and springs in the area.

ii. Planting of exotic trees

Increased demand for timber, exacerbated by the current moratorium on harvesting of gazetted forest plantations, has led to widespread growing of exotic trees such as Eucalyptus, Pines and Cypress on farmlands. Although, these trees increase the vegetation cover in the area, once they are harvested the land remains bare leading to massive soil erosion that results in landslides.

⁹ KWTa (2019). Community Resource Assessment for Elgeyo Hills Water Tower.



Plate 3: Pine and Cypress trees



Plate 4: Eucalyptus trees planted within farmlands in the Ecosystem

iii. Fire outbreaks

The local community uses slash-and-burn method for bush clearance in preparation for planting season, leading to fires sometimes spreading beyond the farms into the forest. This mainly occurs during dry seasons of January, March, June and September.

iv. Overgrazing

Livestock keeping is one of the main economic activities in these areas. Places like Kapkanyar, Kapteren, Kapkoi, and Kibonge in Cherangany Hills border areas occupied by the pastoralist communities from West Pokot. As the population outside the forest increases, the available land for pasture diminishes, subsequently causing increased pressure on available land.

v. Poor domestication of national policies at the county level

Most counties including the ones under focus have limited capacity to domesticate national policies such as EMCA and to provide for establishment of County Environmental Committees. Enforcement of regulations including charcoal rules and sand harvesting is dismal. This has led to over exploitation of resources.

vi. Limited agricultural extension services

There is limited awareness and enforcement of agricultural laws thus increasing cases of farming on steep slopes beyond 55 degrees. In addition, training on conservation agricultural practices such as crop rotation and terracing may not have achieved the desired results. This may be due to limited number of staff to carry out extension services, lack of vehicles and insufficient budgetary allocation to facilitate training programs.

5.4 Zone 3: Challenges in Escarpments

This zone covers an area of 76,259 ha with an altitude of 1,710-2,489m asl. The following are the main challenges facing this zone:

i. Farming and settlement on steep slopes

The largest part of escarpments in the Cherangany-Elgeyo ecosystem falls under private and/or community lands. Local communities are farming and have settled at the steep slopes, highly contributing to land degradation. This has also led to deforestation, soil erosion, gullies and landslides. This situation is exacerbated by the fact that sustainable land management practices such as terracing is rarely done along this area.



Plate 5: Settlement located on steep slopes

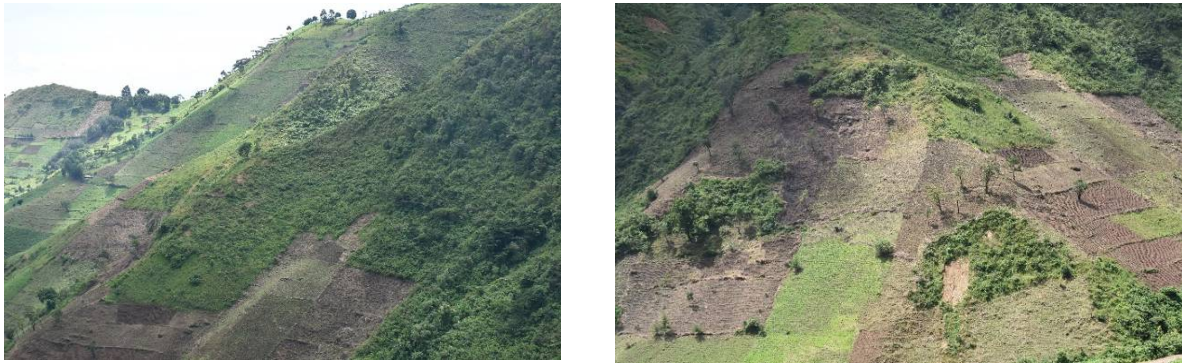


Plate 6: Farming activities on steep slopes

ii. Slash-and-burn farming method

Most of the local communities in the area prepare land for cultivation using the slash-and-burn method. This leads to fire outbreaks in the area and also leaves the land bare causing massive soil erosion.



Plate 7: Slash-and-burn on steep slopes

iii. Landslides

Unsustainable land management practices such as farming on steep slopes, increased planting of Eucalyptus trees, and minimal practice of conservation agriculture like terracing and intensive conventional tillage has caused landslides at the escarpment and erosion in the lowland areas. This has led to increased surface flow due to limited vegetation cover and reduced infiltration of rain water. Some of the areas in which these challenges were mainly observed are Chesegeon, Kamogich, Kocholwo, Soy, Kibargoi and Turesia. In Chesegeon area in Elgeyo-Marakwet County, for example, mudslides caused by heavy rains have led to destruction of life and property in Liter Secondary School and its environs. In Kapchelal and Anin areas still in Elgeyo-Marakwet County, cracks have emerged on the earth surface. The impact of this has been reduced agricultural

productivity, disruption of transportation network such as roads, and formation of deep gullies in the lowland areas.



Plate 8: Landslides along the escarpment in Kimogich area



Plate 9: Landslides area in Kamogich and Kocholwo location



Plate 10: Landslides from the escarpment along Kabokbok River



Plate 11: Beehives carried downstream by landslides in Soy location

iv. Charcoal production and rampant firewood collection

Overdependence on wood fuel has led to increased charcoal production and rampant firewood collection in the Cherangany-Elgeyo Hills ecosystem, thereby contributing to degradation. Ready market for these products especially in urban towns such as Eldoret, Kitale and Iten has aggravated the situation.

v. Limited agricultural extension services

There is limited awareness of agricultural laws that prohibit farming on steep slopes of more than 55 degrees, and there is lack of training on conservation agricultural practices such as crop rotation and terracing. This is mainly due to limited number of staff to carry out extension services, lack of vehicles and insufficient budgetary allocation to facilitate training programmes.

vi. Land tenure system and adjudication of ecologically sensitive areas

Most lowland areas are under communal (clan) land tenure system. As a result, communities view the escarpment as part of their land, and freely encroach on it. It has also been reported that there are areas where land was adjudicated to ecologically sensitive zones such as the riparian areas, steep hills and swamps, hence a threat to the ecosystem.

vii. Poor domestication of national policies at the county level

Most Counties including those under focus have limited capacity to domesticate national policies such as EMCA that provide for establishment of County Environmental Committees, enforcement of charcoal rules and regulation on sand harvesting. This has led to overexploitation of natural resources.

5.5 Zone 4: Challenges in Lowland areas

This area has an elevation of 897-1,710 m asl and covers an area of 85,478 ha. Key challenges facing this ecosystem are as follows:

i. Overgrazing

This zone is mainly suitable for rearing of livestock such as goats and sheep. As a result, the local communities keep large herds of livestock that leads to overstocking thus overgrazing. This contributes to ecosystem degradation through soil erosion, cutting of tree branches to provide fodder for livestock, loss of biodiversity and degradation of critical water catchments.

ii. Unregulated, illegal charcoal production and rampant firewood collection

Increased charcoal production and rampant firewood collection caused by overdependence on wood fuel has contributed to degradation of the Elgeyo-Cheragany Hills ecosystem. The ready market for these products especially in urban towns such as Eldoret, Kitale and Iten has aggravated the situation. Some of the areas where charcoal production and firewood collection take place illegally and excessively include Kamogen, Kiptingo, Kapkoi and Kamogich.



Plate 12: Charcoal burning within the buffer zone

iii. Gulley erosion

Deforestation and unsustainable agricultural practices cause loss of vegetation cover upstream. This in turn causes high levels of soil erosion which leads to formation of deep gullies. Gullies interfere with wildlife corridors. For instance, they hamper the movement of Elephants between Nasolot, Lake Turkana National Park and Rimoi National Reserve. There have also been cases of deaths and injuries from falling debris as well as displacement of communities.

5.6 Zone 5: Challenges in the Riparian areas

Riparian areas cover approximately 9,986 ha in the Cherangany-Elgeyo Hills ecosystem. The main challenges facing this zone are given below:

i. Farming along the riparian area

Extensive crop cultivation has led people to farm on river banks. As a result, pollution from agro-chemicals and siltation due to soil erosion have greatly affected riparian zones.



Plate 13: Cultivation along the streams and swamps

ii. Illegal abstraction and over-abstraction of water

Illegal abstraction and over-abstraction of water from springs, wetlands and rivers for domestic, industrial and irrigation purposes have reduced water supply downstream. In addition, most of the water pipes installed in rivers and springs have not been licensed and are not metered. In many cases, this allows those upstream to harvest large volumes of water, leaving very little water to run downstream. This often leads to conflicts between communities on either side.

iii. Eucalyptus trees plantation on riparian areas

Despite their fast-growing rate and quick return, Eucalyptus trees have high water uptake thus reducing the water yield capacity in the area. This has also led to drying up of some springs, swamps and streams within the water tower.



Plate 14: Eucalyptus trees planted within and around a swamp in Kitany Location

iv. Poor domestication of national policies at the county level

Most Counties including those under focus have limited capacity to domesticate national policies such as EMCA that provide for establishment of County Environmental Committees, enforcement of charcoal rules and regulation on sand harvesting. This has led to overexploitation of resources.

v. Cattle rustling and insecurity along the Kerio Valley

Around Elgeyo and Cherangany, cattle rustling was traditionally considered a cultural practice to restock cattle. In recent times, however, the practice has been hijacked by wealthy businessmen and bandits who use it as an opportunity to acquire large numbers of stocks which they then sell. This has heightened insecurity and has led to displacement of vulnerable members of the community.

vi. Siltation of dams down stream

There are a number of irrigation schemes downstream which depend on water from the catchment, but clogging of furrows and high sediment loads pose a challenge as they increase operation costs for the proper functioning of these dams.

CHAPTER 6 : EFFORTS TO ADDRESS THREATS AND CHALLENGES

6.1 Various Stakeholder Efforts

This chapter outlines the major efforts towards the rehabilitation and restoration of the Cherangany-Elgeyo Hills ecosystem, the achievements, and the organisations concerned. Instructively, various efforts have been undertaken by stakeholders including KWTa, KFS, ELDOWAS, NEMA, KEFRI, CFAs, and WRUAs to address threats to the sustainable management of the ecosystem. These efforts have aimed at rehabilitating and restoring the ecological integrity of Cherangany-Elgeyo Hills ecosystem. The various efforts so far undertaken are summarised in the table 2 herebelow:

Table 2: Stakeholders Interventions in Restoration of Cherangany-Elgeyo Hills Water Ecosystem

EFFORT	ACHIEVEMENTS	AGENCY/AGENCIES INVOLVED
Water Tower Resource Assessment	• Determined the status of Elgeyo and Cherangany Hills Water Towers • Mapped and prioritized critical catchment areas within the Elgeyo Hills Water Tower • Developed an Ecosystem Conservation Plan for the Elgeyo Hills Water Tower	KWTa, KEFRI, KFS, Nature Kenya
The EU Project on Water Towers Protection and Climate Change Mitigation and Adaptation	Supported the eradication of poverty through enhancing the productivity of ecosystem services in Mt Elgon and Cherangany and its ecosystems covering 11 counties. This was done through: • Establishment of demonstration plots for bamboo and other trees/plants in rehabilitating degraded sites • Mapping of degraded hot spots and recommended tree species for rehabilitating the sites • Identification and promotion of non-timber forest products for improvement of livelihoods • Demonstration of the use of bamboo and other indigenous species to rehabilitate riverine forests • Undertaking studies on management of invasive species • Demonstrating alternative sustainable sources of energy to reduce reliance on wood	Ministry of Environment and Forestry, KWTa, KWS, KEFRI, KFS, NCCS

EFFORT	ACHIEVEMENTS	AGENCY/AGENCIES INVOLVED
Ongoing gazettement of Elgeyo Hills Forests and Water Tower	Undertaking of public participation with stakeholders and communities	KWTA, KFS
Bamboo Investment and Commercialization Project	- Held Stakeholder consultative and engagement forums - Conducted bamboo stock assessment in Elgeyo Hills Water Towers - Mapped degraded catchments and Bamboo potential areas within the ecosystem - Conducted a feasibility study Model on Bamboo Investment and Commercialization project in Kaptagat (Elgeyo Hills) and developed a Bamboo business Model - Environmental and Socio-Economic Impact Assessment for fencing of project demo site - Establishment of 100 Hectares Bamboo demo-site in Kaptagat - Established community-based Bamboo Nursery - Launched the National Bamboo Demo Site	KWTA, KEFRI, KFS, KEFRI, BAK, County Governments of Elgeyo-Marakwet Trans-Nzoia and Uasin Gishu
Community sensitization and conservation of water catchment and riparian areas	- Promoted best farming practices in the catchment area - Indigenous trees and Bamboo were planted on the catchment areas and sewer treatment plants while exotic trees were planted down streams - Support and participation in the annual Kaptagat Conservation marathon and Uasin Gishu Conservation marathon	ELDOWAS, KWTA, County Governments of Elgeyo-Marakwet and Trans-Nzoia WRUAs, KEFRI, CFAs, KFS, KFS, NEMA
Adopt-a-forest block programme	- Partnerships with individuals and institutions in restoration of degraded forest blocks: Eliud Kipchoge Foundation adopted 50.8 ha while University of Eldoret adopted 1000 ha of sections of the degraded forest blocks that rehabilitation and conservation. - Uasin Gishu county, Kenya Meteorological Department and NEMA is planning to adopt a block in Kaptagat for rehabilitation and conservation. - KVDA have adopted part of Cherangany Hills, 259 ha in Lelan Forest where 20 ha has been planted, and also 13 ha in Kipkabus Forest	KFS, County Governments of Elgeyo-Marakwet and Uasin Gishu

EFFORT	ACHIEVEMENTS	AGENCY/AGENCIES INVOLVED
Promotion of tree and fruit tree nurseries	- CFAs promote tree nurseries establishment among their members - There are many (more than 100) tree nurseries with exotic and indigenous tree & fruits seedlings operated by KFS	KFS, CFAs, KEFRI, WRUAs, CBOs, NETFUND, KVDA, World Vision
Community Livelihood initiatives	Initiated livestock improvement programs and provision of milk cooling plants	County Governments of Elgeyo-Marakwet, Uasin Gishu and Trans-Nzoia, CBOs
	Planting 80,000 tree seedlings in individual farms and distributed improved cook stoves to the communities to curb on carbon emissions as well as to reduce the pressure on fuel wood	Trans-Nzoia County, CBOs
	Promotion of traditional irrigation systems and pasture establishment systems, KAPSLM	West Pokot County, Elgeyo-Marakwet county, KVDA, CBOs
	- Promotion of bamboo and mango tree seedling growing - Establishment of fruit tree nurseries in Tot, Arror, Kipsaos and Kimwarer - Setting up of irrigation schemes in Arror, Napuu, Tot and Weiwei for livelihood improvement - Establishment of a honey processing centre with a capacity of 100 tonnes in Kabarnet as well as a fully equipped wood workshop where modern beehives (Kenya Top Bar Hives and Langstroth) are produced for sale to farmers.	KVDA, NGOs, CBOs, KEFRI, County Governments of West Pokot, Elgeyo-Marakwet, Baringo
Promotion of programs towards wildlife conservation	- Partnered with 36 community-based groups by supporting them to make ornaments like beads and establishment of curio shops as an alternative income generating activities in Elgeyo-Marakwet to reduce grazing activities. There was also establishment of traditional beehives inside the wildlife reserve. - Drilled two boreholes to supplement water from River Kerio during dry season for wildlife	KWS, CBOs, Ministry of Water and Irrigation

EFFORT	ACHIEVEMENTS	AGENCY/AGENCIES INVOLVED
	• There is a plan in progress to fence the reserve in Kapnarok to control human-wildlife conflicts • Building of four classrooms, one dormitory and provision of water tanks in some schools • Supported 'trees for schools' programme	
Eldoret-Iten Water Fund	• The Nature conservancy is spearheading this initiative • Key focal areas are restoration of Moiben and Sosiani river catchment areas • Feasibility and design phase concluded	The Nature Conservancy, KWTa, KFS, County Government of Elgeyo-Marakwet, Uasin Gishu, WSPs, KVDA
Kaptagat Annual Tree Planting	• Rehabilitation efforts by buying tree seedling from community groups for rehabilitating forest blocks and tree planting initiatives in Kaptagat • Planting done in 210 ha since 2017 • Mobilized stakeholders, both local and national • Raised public awareness to inculcate tree growing in the region	WWF, KWTa, KFS, KEFRI, County Governments of Elgeyo-Marakwet, Trans-Nzoia, West Pokot

CHAPTER 7 : RECOMMENDED INTERVENTIONS

7.1 The Importance of Focus on Individual Zones

This chapter outlines expert and stakeholder recommendations for rehabilitating and restoring the Elgeyo-Cherangany Hills ecosystem. Since each of the five zones in this ecosystem faces some unique threats and challenges as outlined in chapter five, the intervention measures proposed here similarly focus on individual zones.

7.2 Zone 1: Recommendations for the Gazetted Forests

The following measures are recommended for the rehabilitation and restoration of degraded Gazetted Forest areas:

i. Rehabilitation and restoration of deforested and degraded areas

Based on existing plans, rehabilitation and restoration of deforested and degraded areas within the gazetted forest blocks should be carried out. It is recommended that as much as possible, indigenous trees or bamboo are introduced depending on where they thrive best. In addition, boundaries of forest blocks will be secured through realignment, beaconing and titling. Furthermore, previously encroached areas within gazetted forest areas should be rehabilitated in the same manner.

ii. Institutional strengthening

Local based conservation organizations such as CFAs and WRUAs should be strengthened to enhance implementation of restoration and conservation efforts in this zone. This will also ensure proper management and utilization of forest and forest products. In addition, relevant county level institutions will need capacity building to enable better coordination of rehabilitation and restoration practices.

iii. Afforestation and re-afforestation efforts

Landscape approach campaigns for afforestation and re-afforestation exercises will be rolled out in bare areas within the gazetted forest zone. This exercise will target areas with planting backlog and those that have been overgrazed. In addition, potential areas for natural regeneration will also be profiled and left to regenerate.

iv. Reclassification of plantation forest to indigenous/bamboo forest areas

There is need to consider re-classification of gazetted forest areas and certain plantation forests to indigenous forest. Before this can be done, however, there is need to conduct a detailed participatory feasibility study on conversion of plantation forest to indigenous forest and where necessary undertake the ESIA process as stipulated in the EMCA (Amended, 2015) and other

relevant laws. The reclassification process will be done using indigenous species well adapted to the selected sites in the ecosystem.

v. *Establishment of public-private partnerships*

Various private companies like saw millers, other wood-based industries, WSPs, HEP producers, tea factories, fruit processing companies and dairy cooling plants benefit from the ecosystem. In this regard, it is recommended that partnership with these private companies should be created to support conservation of the forest.

vi. *Addressing historical land tenure issues*

There is need to address historical land tenure issues in the area through participatory approaches, boundary re-alignment and implementation of a dedicated titling program. These historical land tenure cases in Cherangany-Elgeyo require robust approaches such as free, prior and informed consent (FPIC) involving community participation. The titling programme will target areas that have unfinalized forest exchanges, excisions and encroachments including Tingwa/Chesubet farm, 428 parcels enlisted (extensions); Tingwa/Kibonge farm, 164 parcels enlisted (extensions); Metkei, 50 ha; Tumeiyo, 40 ha; Tingwa Kimwogo farm, 60 parcels enlisted; Kapchorwa/Simotwo farm, 194 parcels enlisted; HZ Area, 30 ha designated as the Administration and Commercial Centre for Maoi and Kabiemit locations; Marichor farm curved from Kaptagat forest, 614 parcels enlisted; Kiptulos farm curved from Penon forest, 34 parcels enlisted; Chepkikwai/Kapolo farm, 76 parcels enlisted; Embobut; Lelan forest; Kapolet and other areas.

vii. *Establishment of individual, communal and institutional tree nurseries*

This initiative will ensure adequate provision of seedlings for continuous afforestation, re-afforestation and rehabilitation programmes in this zone, thereby increasing tree cover. The largest percentage of the nurseries will be composed of indigenous tree species and bamboo based on species-site matching guidelines developed by KEFRI. In addition, the uptake from these nurseries will ensure greening initiatives in schools, churches, market centers/municipalities and avenue planting along major roads.

7.3 Zone 2: Recommendations for Upland Areas (excluding gazetted forests)

The following measures are recommended for the rehabilitation and restoration of Upland Areas:

i. *Promotion of agroforestry*

Agroforestry provides alternatives to forest related products. The fast-growing trees on farms carry with them socio-economic and environmental benefits. Training on establishment of tree nurseries and maintenance of the trees will be done through the Community Forest Associations and Water Resource Users Associations. This will ensure sustainable use of soil and water resources; increase availability of wood products like wood fuel; and grant the community access to some non-wood forest products like fodder and food products. Agroforests will also provide habitats for certain

species thus alleviating pressure on natural forests. Establishing extensive agroforests will also help this region to achieve and maintain a minimum of 10 percent tree cover in private farms.

ii. Sustainable forest management

Embracing a holistic approach encompassing economic, social, legal, administrative, technical and environmental aspects of conservation and use of forests will promote sustainable use of the ecosystem. These approaches include integration of indigenous management methods of forest management and community forest management as well as establishment of commercial tree woodlots in farmlands to support the demand for timber and poles. It will therefore build on strategies to achieve and maintaining 10 percent tree cover in private land.

iii. Restoration and rehabilitation of critical catchment areas

The Cherangany-Elgeyo Hills is a source numerous springs, swamps and rivers which can be easily overexploited and degraded by human-related activities. Therefore, these sources of water and their catchments will be prioritized for protection and regular monitoring to ensure their sustainability.

iv. Promotion of alternative community livelihood programs

The community around this ecosystem primarily practices small-scale farming of such crops as potatoes, fruits, maize in addition to livestock farming. Therefore, suitable value chains will be developed to build the community's capacity and to embrace the rolled out alternative sources of income generation. This will focus on:

- Honey production
- Bamboo establishment and commercialization
- Commercialization of medicinal plants
- Establishment of aquacultures
- Promotion of improved livestock breeds
- Intensive dairy production
- Provision of livestock buyback programs
- Promotion of orphan crops suitable for this region

v. Promotion of programmes on alternative sources of energy

Wood fuel is the main source of energy used in most households. To ensure conservation of this ecosystem and to reduce pressure on the forest, the adoption of alternative sources of energy such as the use of energy-saving stoves and alternative, renewable sources of energy which include solar, biogas and micro hydro power units will be promoted in the ecosystem.

vi. Benefit-sharing schemes

Incentivizing conservation efforts through benefit-sharing schemes will encourage sustainable land practices and promote conservation of the ecosystem. Schemes to be exploited and adopted include:

- Water Fund programs – the Eldoret-Iten Water Fund has already been established
- Payment for Ecosystem Services (PES)
- Carbon markets
- Payments for Reduced Emissions from Deforestation and Degradation (REDD and REDD+)
- Clean development Mechanisms

These schemes will ensure improvement of water supply downstream to due to their contributions to upstream watershed management.

vii. *Establishment of tree nurseries*

This initiative will ensure continuous afforestation, re-afforestation and rehabilitation exercises in this zone hence increasing tree cover. Seedlings will be composed of indigenous, fruits and fodder trees as enlisted in the species matching of the area.

viii. *Establishment of public-private partnerships*

There are various saw millers and companies that depend on this ecosystem for timber and raw products respectively. This has contributed to growing of trees mainly of exotic species such as Cypress, Pine and Eucalyptus within farmlands. Public-private partnership can be initiated through the County Governments for these companies and millers to support conservation efforts in the area. This will be supported by the establishment of tree nurseries and provision of incentives to conservation champions.

ix. *Re-adjudication and mapping of ecologically sensitive areas*

All land parcels allotted in ecologically sensitive areas such as steep slopes, hilltops and along riparian areas and wetland should be re-adjudicated and mapped for conservation. There is also need for the concerned counties to implement the Community Land Act, 2016 for proper management of community lands.

7.4 Zone 3: Recommendations for Escarpments

The following measures are recommended for the rehabilitation and restoration of Escarpments:

i. *Promotion of agroforestry and farm forestry*

Planting of trees within farms and on bare land and overgrazed areas along the escarpment will reduce environmental degradation. This will also increase the forest cover in this zone.

ii. *Promotion of soil conservation measures such as terracing*

Soil and water conservation structures will reduce soil erosion on the escarpment. These practices include *fanya juu*/terraces, stone lines, reverse-slope bench terraces, *fanya chini*/retention ditches, vegetative barriers, grasses or trees that may eventually form bunds and terraces due to the down slope movement of soil during cultivation.

iii. Adoption of conservation agriculture

Adoption of conservation agriculture in the escarpments will aid in preserving the soil, maintaining the natural and biological status of the soil water and preventing damage to soil structure through minimum cultivation and direct planting by repetitive cultivation. It will also maintain vegetation cover to improve soil structure, infiltration, and reduce erosion by water and wind. Some of these practices include organic farming, crop rotations, fallowing and mulching.

iv. Addressing historical land issues along the escarpment

To manage the issue of settlement and farming along the escarpment, there is need to address historical land issues in the area. This will be done through participatory approach as well as re-alignment and establishment of the ‘Spencer’ line. Therefore, a committee will be established to look into these historical cases along the Cherangany-Elgeyo Hills Ecosystem.

v. Institutional capacity strengthening for improved participatory management of escarpments

Actions to strengthen institutions include:

- Supporting capacity building activities, for instance public awareness campaigns and sensitization programmes before roll out of any implementation plans in the escarpments
- Undertaking a participatory mapping of households settled in risk-prone areas such as within the perimeter of the ‘Spencer line’
- Developing and implementing a participatory relocation plan of all mapped households in risk-prone areas
- Establishing and implementing County Escarpment Management Plans in line with Community Land Act, 2016.

vi. Re-adjudication and mapping of ecologically sensitive areas

All parcels of land allotted in ecologically sensitive areas such as steep slopes, hilltops and along riparian areas and wetlands should be re-adjudicated and mapped for conservation. There is also need for the concerned counties to implement the Community Land Act, 2016 for proper management of community lands.

7.5 Zone 4: Recommendation for Lowland areas

The following measures are recommended for the rehabilitation and restoration of Lowland Areas:

i. Gulley rehabilitation

This will be achieved through re-vegetation of degraded areas along with structural barriers by using species such as Vetiver grass.

ii. Sustainable grazing land management

This will be instrumental in reducing grazing intensity in the area. This can be achieved through rotational grazing, cut-and-carry of fodder among other measures.

iii. Sustainable land management practices

Sustainable Land Management practices in the area can be successfully achieved through the following approaches:

- Developing and implementing Integrated watershed / landscape management (IWM)
- Enhanced Agricultural extension services and capacity building
- Adoption of Participatory land use planning (PLUP)
- Implementing Community-based natural resource management (CBNRM)

iv. Development and implementation of flood management plans

There is need to establish flood management response in the area through development of flood management plans. This will encompass:

- a) **Non-structural flood mitigation measures** such as systematic and regular hazard assessments; early warning systems (weather forecasts); risk communication plans; inter-county and inter-governmental cooperation on floods and landslides; insurance; evacuation plans; and land-use planning and zoning.
- b) **Structural flood mitigation measures** such as relocation of buildings above flood level; establishment of water storage areas; establishment of flood barriers/walls; and establishment of flood proofing (spillways and floodways).
- c) **Natural systems against floods** such as restoration and rehabilitation of wetlands as well as harvesting of flood waters.

v. Strengthening capacities to manage landslides

Mapping and monitoring of potential landslide-prone areas will play a critical role in management of landslides in this zone. There is also need for extension services and programmes on mitigation measures such as soil and water conservations, afforestation of bare land along the escarpment, planting of indigenous trees, building of check dams and construction of retaining walls against the escarpment. Additionally, there should be regular monitoring of quarrying activities in the area.

vi. Promotion of alternative forms of livelihood

Identification and promotion of alternative income generating activities (IGAs) will improve the livelihood of the people. Support in form establishment and provision of value chains such as high yielding germplasm, dairy production, good breeds, feeds and feed additives, quality zero grazing

units, hay production, improved breeds and livestock buybacks will help to achieve this. The value chains activities already practiced in this area and which will require improvement are listed below:

County	Priority value chains
Elgeyo-Marakwet	Cow Milk, Irish Potato, Maize, honey
Uasin Gishu	Cow Milk, Passion Fruits, Indigenous Vegetables
West Pokot	Meat Goat, Honey, Indigenous chicken, passion fruits

In addition, there is need to establish a network of transporters of farm produce to tap into unemployed youth or *boda boda* riders; to support establishment and growth of cottage industries to add value to products before sale; and to provide advocacy to help communities access the best market prices for their produce.

vii. *Promotion of peace building efforts*

Incidences of cattle rustling and general insecurity in the lowland zone have caused communities to venture into gazetted forest for refuge. To address this, there is need to undertake peace meetings involving all the warring communities. For the offenders, there is need to establish prosecution mechanisms involving local elders and local administration to promote peace building. Peace building awareness campaigns can also be undertaken through holding of barazas, promoting peace programmes on local radio station, and supporting sporting activities such as the Tecla Lorupe Peace Race.

viii. *Protection of wildlife corridors and their habitats*

There is need to map, protect and rehabilitate wildlife corridors and habitats especially in the lowland zone. This will enable ease of movement of wildlife particularly the elephants. Such efforts can also include the filling the gullies which pose a risk to the wildlife, and control of irrigation projects to ensure that over-abstraction of water used by wildlife does not occur. There is also need to increase boreholes to supplement water for wildlife during dry seasons.

7.6 Zone 5: Recommendations for the Riparian areas

The following measures are recommended for rehabilitation and restoration of Riparian Areas:

i. *Restoration of Riverine and Riparian Areas*

Riverine and riparian areas within the ecosystem can be restored through vegetative and structural interventions with the purpose of protecting river banks from erosion. The Agriculture (Farm Forestry) Rules, 2009 aim to protect riverbanks, shorelines, riparian and wetland areas. As part of

building back better, restoration in this ecosystem should consider populating this zone with indigenous and bamboo trees.

ii. *Replacement of Eucalyptus tree species on Riparian Areas with Bamboo and indigenous trees*

The Agriculture (Farm Forestry) Rules, 2009 prohibits growing or maintaining of any Eucalyptus species in wetlands and riparian areas. Phasing out of Eucalyptus around riparian areas and replacing them with indigenous trees and bamboo will help to enhance water quantity and quality.

iii. *Institutional strengthening*

Strengthening and building the capacity of local-based conservation organizations such as the WRUAs will enhance restoration and conservation efforts in this zone. It will also ensure proper management and utilization of forest and forest products.

iv. *Securing and re-adjudication of the Riparian Areas*

Part IX, Section 116 (2) requires that riparian land on each side of a watercourse is demarcated at least six meters or up to a maximum of thirty meters away from the bank. Therefore, conservation of the riparian areas of wetlands, rivers and springs within this Ecosystem should be undertaken.

7.7 Recommendations for Cross-Cutting Issues

i. *Community sensitization and awareness creation*

There will be need to create awareness through sensitization and environmental education for the local communities to enhance conservation and protection of the ecosystem. This will be undertaken through collaborative efforts of various stakeholders while ensuring holistic approach to conservation efforts.

ii. *Enhanced law enforcement*

Enforcement of existing laws will be done through enhanced surveillance and patrols. This will be effective in curbing illegal activities such as illegal logging, charcoal production or cultivation in unsuitable areas. The Agriculture Act (Cap 318) prohibits cultivation in slopes between 12-35 percent unless the soil is protected from erosion. This is intended to prevent the destruction and loss of vegetation cover on lands with slopes exceeding 35 percent¹⁰.

iii. *Completion of the gazettelement of Elgeyo Hills Water Tower*

Kenya Water Towers Agency initiated the gazettelement process of the Elgeyo Hills Water Tower. The process is currently at the public participation stage. The subsequent process entails survey

¹⁰ Ministry of Environment and Natural Resources, 2016. *Report of the Land degradation assessment in Kenya*. Kenya Agricultural Productivity and Sustainable Land Management Project (KASLMP)

works. The Agency is in consultation with Kenya Forest Service (KFS) and Survey of Kenya for finalization of the process. This will entail:

- i) Control Survey to determine the precise boundary
- ii) Compilation of survey records which include GPS coordinates of the area to be gazetted
- iii) Beaconing or monumentation of the Water Tower and forest boundaries
- iv) Preparation of boundary plans
- v) Submission of boundary plans to Cabinet Secretary, Ministry of Environment and Forestry for forwarding to the Attorney General

After approval by Attorney General's office, a gazette notice will be placed on the Kenya Gazette.

iv. *Provision of additional extension services*

There already exists a number of Extension Service Providers (ESPs) in the targeted landscapes. They include private, public and models that integrate both ESPs. What is lacking is a dedicated programme to ensure that gaps in the delivery system are identified and sealed. Rapid assessment may serve to identify these gaps. However, some generic interventions would be necessary and include:

- Identification of relevant SPs or their networks serving in the landscape
- Development of Standard modules on various value chain related and other livelihood options
- Supporting development of proposals for SPs to access finances for interventions
- Supporting development of Training curricula and target SPs for TOT trainings
- Supporting development of knowledge management system that serves both the SPs and intended beneficiaries.

v. *Establishment of partnerships and linkages*

In consultation with the National Government, Ministries and host counties, it will be necessary to develop and facilitate, in a participatory way, implementation of a code of conduct to guide operation of stakeholders including development partners. This mechanism will serve to bring synergy and direct resources to areas where they derive the highest value proposition.

In the same breath, the partnerships will help establish an incentive system to reward good practice. The mechanism may also consider establishment and provision of competitive grants for SPs.

vi. *Mainstreaming of climate change adaptation actions in all interventions*

Interventions to mitigate climate change include:

- Identification of priorities for climate adaptation and mitigation in all sectors of intervention
- Domestication of national education and awareness creation programmes

- Streamlining adaptation measures to target specific sectors, vulnerable groups, communities and regions
- Conducting periodic assessment of threats and risks of climate change
- Identification of research and development needs to address climate change, and opportunities for technology development, absorption and diffusion
- Strengthening of the capacity to reduce disaster risk in order to minimize the effects of climate change-related disasters.

vii. *Promotion of research and innovation*

Research is a tool that contributes to decision making on conservation of the ecosystem. The Cherangany-Elgeyo Hills ecosystem houses endemic species of flora and fauna, and there is need to undertake research and to enhance innovation within the identified zones in the ecosystem. Research will also lead us to identify species that are threatened by anthropogenic activities and which therefore require protection. Community-based forest conservation is also suggested to ensure sustainable utilisation of the forests. Further research should also be done towards identifying and profiling important medicinal plants and also to identify where certain species thrive best, thereby reducing failures in afforestation and reforestation schemes.

viii. *Support to County Governments in domestication of national policies*

There is need to support County Governments in domesticating policies and regulations targeting conservation of the environment. Currently, there is a gap in implementing national policies such as sand harvesting, establishment of County Environmental Committees as provided in EMCA, enforcement of Charcoal rules and establishment of County policies and regulations to guide resource extraction from the ecosystem.

ix. *Address historical land tenure issues*

Issues of landownership and eviction were noted to have derailed conservation efforts. For example, during resettlement of communities in the escarpment, undeserving people were allotted land due to issues like political influence. There is need to ensure that due process is followed in these matters.

x. *Adopt a Multi-agency approach towards conservation*

Enforcement of laws and policies should be undertaken through a multi-stakeholder process involving Directorate of Criminal Investigation (DCI), National Police Service, local administration, County Governments and other National Government agencies as well as NGO's and CBO's. Furthermore, County Environmental Committees need to be constituted in Counties of West Pokot and Trans Nzoia for effective coordination of environmental matters. In counties like Uasin Gishu and Elgeyo-Marakwet where such committees already exist, there is need to strengthen them.

Considering the main challenge with environmental committee is lack of budget to facilitate their meetings, the County Government could allocate resource for running these committees. Other non-state actors who can be included in the Multi-Agency team are WWF, World Vision, UNDP Red Cross, AIC Cheptebo Rural Development Program and other development partners engaged in environmental matters.

CHAPTER 8: IMPLEMENTATION, MONITORING AND REPORTING

8.1 Linking and Coordinating Diverse Stakeholder Interests

This chapter is meant to create a link between the mandate of organisations, the institutional arrangements and capacities as well as the requisite guidelines for implementing suggested actions. It is noted that the task of restoration of the landscape under focus attracts interest from many stakeholders, including both national and county governments; Semi-Autonomous Government Agencies (SAGAs), Development Partners; international and local NGOs, Faith Based Organizations, Civil Society Organizations, and local municipalities and community members. The Master Plan therefore envisions a coordinated framework that allows for efforts of all interested partners to be harnessed for the rehabilitation and restoration agenda. The Coordination of such interests shall be guided by the factors outlined herebelow.

8.2 Mandate

The overall mandate to oversee development of Protected Areas vests in the National Government and respective SAGAs in collaboration with adjacent county governments. Policy shifts in the recent past have allowed for participatory management of these natural resources which also calls for inclusion of communities in the management arrangement. Community Forest Associations (CFAs) and Water Resource Users Associations (WRUAs) are some of the participatory organs who play a key role in sustainable forest and water management respectively.

In the case of the target landscape, the Ministry of Environment and Forestry will be the lead actor and will guide the whole process. This is strategic owing to the fact that the rehabilitation and restoration effort will require funding from the National Government and development partners whose coordination could easily be done at the national level.

8.3 Institutional Arrangements

The following are the proposed institutional arrangements for the implementation of this Master Plan:

i. Joint Policy Steering Committee for Rehabilitation and Restoration (JPSC-4R):

This joint committee will comprise the Principal Secretary MEF, Chairperson of the Environment Committee of the Council of Governors (CoG), Governors of the participating counties, select CEC representing other CECs in the region, and coordinator of the Joint Programme Implementation Unit (JPIU). The Committee will meet twice in a year and will consider board papers submitted by Joint Technical Steering Committee, provide their inputs and table their resolutions for further advice to the Cabinet Secretary responsible for Environment and Forestry (CS MEF). The high-level policy meeting will help unlock any bottlenecks that hinder the restoration efforts. The Committee may from time to time convene Thematic Working Groups

(TWGs) in specialties of Conservation, Water, and Agriculture and Land, and to guide its decisions before the main meetings.

ii. *Joint Technical Steering committee (JTSC)*

Meetings by this committee will be chaired by the Principal Secretary or delegated to the Director Programmes, Projects and Strategic Initiatives and Co-chaired by Chair of County Executive Committee Member (CECM) representing other Environment CECMs in the region. It shall also have respective CECMs, CEOs of relevant SAGAs, that is KWTa, NEMA, WRA, KFS, KEFRI, KWS, AFA and KEPHIS. It shall have representatives of International NGOs, Development partners and Civil Society Organizations in attendance as well as coordinators of the County Programme Implementation Units (CPIUs) in respective counties. The Committee will meet quarterly to receive and consider plans and technical reports from JPIU. Budgets and work plans will seek approval from the committee before roll out.

iii. *Joint Programme Implementation Unit (JPIU)*

This unit shall be situated in a location agreeable to all counties and shall consist of a Coordinator and technical specialists in areas of Natural Resource Management, Agriculture, Water and Irrigation, Land, Monitoring and Evaluation, and Resource Mobilization. The team will also have support specialists in Accounts and office administration. Regional representatives of the SAGAs and local NGOs will be co-opted into the JPIU for ease of mobilization of intended support. The role of the team will be to liaise with the JTSC and JPSC in preparation of the monthly meetings, to prepare board papers for presentation in the meetings, and to implement resolutions provided. It will also coordinate day-to-day implementation of work plans developed by the CPIUs. It shall meet monthly with the coordinators of CPIUs to review progress in implementation. The JPIU will develop guidelines on various thematic areas to guide the CPIUs. One important guideline will be the Programme Implementation Plan (PIP).

iv. *County Programme Implementation Units (CPIU)*

It is agreed that zonation shall take place to demarcate the scope of the intervention areas in each county. This implies that each county will plan, budget and roll out activities in these areas. It will be the responsibility of the CPIUs to undertake all these initiatives. The team will also comprise a coordinator and specialists in Natural Resource Management, Agriculture, Water and Irrigation, Land, Monitoring and Evaluation, and Resource Mobilization. It will undertake day-to-day activities of the Programme and report to the JPIU.

v. *Pooling of Service Providers*

Private service providers will be organized around various thematic areas based on their comparative strength and partnerships established with CPIUs or JPIU. These organizations will be ‘pooled’ together to encourage division of roles.

8.4 Development of Programme Guidelines

In order to harmonize the intended integrated interventions, attention will be placed on developing a series of guiding documents. It is expected that once established, the JPIU will convene its specialists and seek consultant opinions in drafting the following guidelines:

- **A guide to developing Programme Implementation Plans:** This document will help to unbundle the objectives and Project Areas into actionable areas for execution. It is important that guidelines are developed to enable implementing entities to generate realistic activities from the bottom. The guidelines will be developed by the JPIU in consultation with CPIUs.
- **A guide for using the Programme Monitoring and Evaluation System:** It is desirable that interventions of this scope have a Monitoring and Evaluation System. The system will spell out an institutional structure for capturing and reporting data; a result framework which outlines all the levels of results (outcomes, outputs and activities and their indicators) and a data framework that describes data to be captured. A guide for users is necessary to aid in the adoption of this system. The JPIU and CPIU will consult relevant thematic groups for additional guidance on the process.
- **Resource Mobilization Plan:** Many tools are required to mobilize resources. Hence, the development and rolling out of such tools will be a guided process. If for instance it is agreed that Service Providers will be accessing funds through Concept Notes, then the process of developing the concepts will be defined together with the funding regimes.
- **Communication Plan:** The level of interest in this work requires commensurate feedback mechanisms. A communication plan will be developed to ensure that information needs of the stakeholders are met.

8.5 Proposed Implementation Plan

An implementation plan for the rehabilitation and restoration of the Cherangany-Elgeyo Hills Water Tower has been developed. As shown in **Error! Reference source not found.** below, its budget is estimated at **KES 7.485 Billion**. To arrive at the budget, a number of factors were taken into account, notably the identified threats and challenges; the recommended intervention measures, and the profiles of key stakeholders.

Table 3. Implementation Matrix for Cherangany-Elgeyo Hills Ecosystem

ZONATION	PROPOSED INTERVENTIONS	PERIOD	INDICATIVE BUDGET IN KES	RESPONSIBILITY	MONITORING INDICATORS	EXPECTED OUTCOME
Zone 1: Gazetted Forest	Rehabilitation, reclamation and restoration of degraded areas with indigenous trees and bamboo	5 year	120,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, NEMA, KVDA, NIB, KWS, CFAs, WRUAs, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, Ministry of Interior and Coordination NGOs, CBOs, FBOs	- Size of area rehabilitated - No. of tree and bamboo seedlings planted - Size of area restored	- Degraded areas rehabilitated and restored - Increased forest cover
	Boundary survey and re-alignment	3 year	90,000,000	MEF and relevant Ministries, KFS, KWTa, Ministry of Interior and Coordination, Ministry of Lands, National Land Commission, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs	- Size of area surveyed - No. of beacons established - Map updated	- Boundary realigned - Beacon established
	Implementation of titling program for forest blocks	5 years	100	MEF and relevant Ministries, KFS, KWTa, Ministry of Lands, National Land Commission, Ministry of Interior and Coordination, County Governments of Elgeyo-Marakwet,	- No. of forest blocks titled - Map updated	- Boundary realigned - Beacon established

				Uasin Gishu, West Pokot & Trans-Nzoia Relevant NGOs, CBOs, and FBOs		
	Enhance enforcement of laws to curb illegal activities through patrols, surveillance and prosecution	10 years	80,000,000	MEF and relevant Ministries, KFS, KWS, Ministry of Interior and National Coordination, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTa, Ministry of Interior and Coordination	• Surveillance and patrol reports • No. of persons prosecuted	Effective monitoring of the Cherangany-Elgeyo ecosystem
	Conversion of plantation forests to indigenous / bamboo forests – Kaptagat forest	5 years	70,000,000	MEF and relevant Ministries, KFS, KEFRI, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTa, CFAs, WRUAs and MEF and relevant Ministries, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	• Size of area converted • No. of seedlings planted • Conversion reports	• Increased density of indigenous trees • Micro-climatic condition
	Development and implementation of fire management plan	10 years	60,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFA and Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	• Plan developed • Fire management response	Fire management plan developed and implemented
	Promotion and implementation of benefit sharing schemes such as PES	7 years	120,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia,	• No. of benefit sharing schemes implemented	• Benefit sharing implemented

				KVDA, NEMA, WRA Relevant NGOs, CBOs, and FBOs		
Strengthening local based conservation organizations such as the CFAs	5 years	50,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, County Government of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, NEMA, WRA Relevant NGOs, CBOs, and FBOs	No. of benefit sharing schemes implemented	Benefit sharing implemented	
Afforestation and re-afforestation efforts	5 years	60,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, NEMA, WRA Relevant NGOs, CBOs, and FBOs	- Size of area reforested - No. of tree seedlings planted	- Increased forest cover - Species regeneration	
Establishment of community tree nurseries with indigenous species	3 years	80,000,000	MEF and relevant Ministries, KFS, KEFRI, KALRO, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, NEMA, WRUAs, CFAs, Ministry of Gender and Social Services, Ministry of Agriculture, Livestock, Fisheries and Cooperatives Relevant NGOs, CBOs, and FBOs	No. of tree nurseries established	Tree nurseries established	
Addressing historical land issues	5 years	120,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, NEMA, CFAs, WRA	Reports on resolution made for the cases/issues raised	Historical land issues addressed	

	Establishment of public private partnerships	Continuous	90,000,000	MEF and relevant Ministries, KFS, KEFRI, KWTa, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, NEMA, CFAs, WRA Relevant NGOs, CBOs, and FBOs	- No. of public private partnership established - MoUs and MoA signed	Various partnership established Restoration efforts implemented
SUB TOTAL			KES 1.04 Billion			
Zone 2: Upland Zone (Excluding gazetted Forest)	Promotion of agro-forestry and farm forestry-indigenous, fodder, fruits, bamboo	6 years	130,000,000	MEF and relevant Ministries, KWTa, KFS, KEFRI, KALRO, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, NEMA, WRAs, KVDA, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	No. of tree seedlings planted	- Increased forest cover - Soil conservation
	Sustainable forest management	5 years	80,000,000	MEF and relevant Ministries, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KEFRI, KFS, NEMA, KVDA, CFA, WRUAs, Ministry of Interior and Coordination, Relevant NGOs, CBOs, and FBOs	- No. of trees planted by households - Forest management practices implemented	Increased forest cover
	Promotion and adoption of alternative energy sources such as solar, wind, hydro, geothermal, biomass, etc.	7 years	170	MEF and relevant Ministries, KWTa, KEFRI, KFS, KALRO, County Governments of Elgeyo-Marakwet,	No. of alternative energy programs implemented	Alternative sources of energy adopted

	solar, briquettes, biogas			Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs. Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	No. of persons benefited	
	Restoration and rehabilitation of critical water catchment areas through planting of bamboo and spring protection	5 years	140,000,000	MEF and relevant Ministries, KWTA, KFS, KEFRI KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia CFAs, CBOs, WRUAs, Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	- No. of springs and rivers protected and rehabilitated - Size of area rehabilitated	- Increased vegetation cover at the critical water catchment areas - Springs protected and developed
	Promotion and implementation of benefit sharing schemes such as PES, Water Fund program	10 years	190,000,000	Relevant NGOs, CBOs, and FBOs	No. of benefit sharing schemes implemented	Benefit sharing schemes implemented
	Promotion of bee keeping (Apiary of beehives and honey processing units)	5 years	150,000,000	MEF and relevant Ministries, KWTA, KEFRI, KFS, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KVDA, County Government of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs. Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	- No. of apiaries and beehives established - No. of honey processing units developed	Bee keeping initiative embraced
	Establishment of 50 assorted commercial tree nurseries	3 years	140,000,000	Relevant NGOs, CBOs, and FBOs	- No. of tree nurseries established - No. of seedlings in established tree nurseries	50 tree nurseries established

	Commercialization of bamboo as an alternative option for making furniture, tooth picks, incense sticks	7 years	110,000,000	MEF and relevant Ministries, KEFRI, KFS, BAK, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs Relevant NGOs, CBOs, and FBOs	Size of areas planted with bamboo for commercialization	Bamboo farms established and production of bamboo products
	Establishment of tree nurseries according to species matching for this zone	3 years	90,000,000	MEF and relevant Ministries, KEFRI, KWTa, KFS, University of Eldoret, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFA, WRUAs, Private firms Relevant NGOs, CBOs, and FBOs	No. of tree nurseries established	Tree nurseries established
	Enhance livestock buybacks schemes-encourage intensive livestock production (dairy) -improved breeds	5 years	150,000,000	Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KALRO, KWTa, KFS, County Government of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFA, WRUAs, Private firms Relevant NGOs, CBOs, and FBOs	- No. of buybacks schemes established - No. of improved breeds adopted at household level	- Buybacks schemes established and implemented - Livestock improved breeds adopted
	Re-adjudication and mapping out ecologically sensitive areas	3 years	100,000,000	MEF and relevant Ministries, KWTa, KFS, KEFRI, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFA, WRUAs	- Size of area re-adjudicated - Size of area mapped	Ecologically sensitive area re-adjudicated and mapped
SUB TOTAL			KES 1.450 Billion			
Zone 3: Escarpment	Promotion of agro-forestry and farm forestry	5 years	70,000,000	MEF and relevant Ministries, KFS, KEFRI, KALRO, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs. Ministry of Interior	- No. of seedlings planted on farmland - Acreage under agro-forestry/ farm forestry	Increased forest cover per household

				and Coordination, Ministry of Agriculture, Private firms Relevant NGOs, CBOs, and FBOs		
	Rehabilitation of degraded areas through tree growing	5 years	130,000,000	MEF and relevant Ministries, KEFRI, KFS, KWS, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs. Ministry of Interior and Coordination, Ministry of Agriculture, Livestock, Fisheries and Cooperatives Relevant NGOs, CBOs, and FBOs	• Acreage reclaimed and rehabilitated • No. of seedlings planted	• Encroached areas reclaimed • Degraded rehabilitated • Increased forest cover
	Promotion of soil conservation measures such as terracing	7 years	160,000,000	Ministry of Agriculture Livestock, Fisheries and Cooperatives, KFS, KEFRI, University of Eldoret, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	• Area under terracing • No. of farmers benefited	• Terracing adopted • Increased forest cover
	Promotion and adoption of conservation agriculture	6years	170,000,000	Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KALRO, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	• Area under conservation agriculture practices • No. of farmers benefited	• Sustainable agricultural practices adopted • Increased forest cover

Addressing of historical land uses along the escarpment	5 years	150,000,000	County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTA, KVDA, KNCHR, Ministry of Lands, National Lands Commission, Ministry of Interior and National Coordination.	- No. of historical land issues addressed - Report on resolution made	Historical land uses addressed
Re-demarcation of the “Spencer line” within the escarpment	3 years	60,000,000	County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTA, KVDA, CFAs, WRUAs. Ministry of Lands, National Lands Commission, Ministry of Interior and Coordination, Ministry of Agriculture	Area under “spencer line” demarcated	Spencer line demarcated
Water harvesting technologies such as earth dams, water pans	5 years	180,000,000	MEF and relevant Ministries i.e Ministry of Water and Irrigation, KFS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTA, KVDA, CFAs, WRUAs, Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	- No. of water harvesting technologies implemented - No. of households benefited	Water harvesting technologies implemented and adopted
Promotion and implementation of benefit sharing schemes such as PES	10 years	110,000,000	MEF, KEFRI, KFS, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KALRO, University of Eldoret, KWTA, KVDA, NEMA, CFAs, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, WRA Relevant NGOs, CBOs, and FBOs	- No. of benefit sharing schemes implemented - Amount of benefit derived from the scheme	Benefit sharing implemented

	Commercialization of bamboo as an alternative livelihood program (for making furniture, tooth picks, incense sticks)	5 years	90,000,000	MEF, KEFRI, KFS, BAK, Ministry of Trade and Industry, Ministry of Education (TVETs), KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs. Relevant NGOs, CBOs, and FBOs	Size of areas planted with bamboo for commercialization	Bamboo farms established and production of bamboo products
	Re-adjudication and mapping out ecologically sensitive areas	3 years	100,000,000	MEF, KEFRI, Ministry of Lands, KWTa, KFS, County Government of Elgeyo-Marakwet, West Pokot & Trans-Nzoia, CFA, WRUAs Relevant NGOs, CBOs, and FBOs	- Size of area re-adjudicated - Size of area mapped	Ecologically sensitive area re-adjudicated and mapped
SUB TOTAL			KES 1.220 Billion			
Zone 4: Lowland areas	Gully rehabilitation	7 years	220,000,000	MEF, KALRO, KFS, KEFRI, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	- No. of gullies mapped and rehabilitated - Size of area with gullies rehabilitated	Gullies rehabilitated
	Promotion and adoption of bee keeping (Apiary of beehives and honey processing units)	53 years	180,000,000	MEF, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KEFRI, KFS, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination	- No. of apiaries and beehives established - No. of honey processing units developed	Bee keeping initiative embraced

Development and implementation of sustainable land grazing management	5 years	75,000,000	MEF, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KALRO, CBOs, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	- Gazing plan developed - No. of animals per acre of land - Report on implantation of the Plan	Sustainable grazing plan implemented
Promotion of fruit farming such as Mangoes, Passion, Pawpaw, Avocadoes, Tamarind	7years	180,000,000	Ministry of Agriculture, MEF, Livestock, Fisheries and Cooperatives, KALRO, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	- No. of farmers planted fruit trees - Size of area with fruit trees - Returns from sale of fruits	- Plantation of fruit trees on farmlands as an alternative livelihood - Increased forest cover
Promotion and adoption of aquaculture through establishment of ponds	5 years	110,000,000	Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KALRO, University of Eldoret, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTa, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	- No. of ponds established; - Quantity of fingerlings farmed	Harvesting of 10,000kg per Harvest per pond
Promotion of sustainable land management practices	5 years	90,000,000	Ministry of Agriculture, MEF, Livestock, Fisheries and Cooperatives, KALRO, KEFRI, County Governments of Elgeyo-Marakwet, Uasin Gishu, West	- No. of SLM practices implemented - Households benefited	SLM implemented

				Pokot & Trans-Nzoia, KWTa, KVDA, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs		
	Development and implementation of Flood Management Plans	6 years	110,000,000	NDMA, KVDA, MEF, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTa, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	Plans developed and implemented	Flood management plan developed and implemented
	Strengthening capacities to manage landslides	5 years	60,000,000	MEF, NDMA, KEFRI, KFS, KALRO, KWTa, KVDA, County Government of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	- No. of local based organization benefited - Reports	Capacity of community-based organization strengthened
	Establishment of community tree nurseries according to species matching for this zone	4 years	80,000,000	MEF, Ministry of Gender and Social Services, KEFRI, University of Eldoret, KALRO, KFS, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFA, WRUAs, Private firms Relevant NGOs, CBOs, and FBOs	No. of tree nurseries established	Tree nurseries established
	Enhance livestock buybacks schemes Encourage intensive livestock	10 years	150,000,000	Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KALRO, KWTa, KVDA, County	No. of buybacks schemes established No. of improved breeds adopted	- Buybacks schemes implemented - Livestock improved

	production (dairy) – improved breeds			Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFA, WRUAs, Private firms		breeds adopted
	Promotion of renewable energy such as biogas, briquettes and energy saving <i>jikos</i>	5 years	175,000,000	MEF, KWTa, KFS, County Government of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	No. of alternative energy programs implemented	Adopted green energy technologies
	Promotion of peace building efforts	7 years	120,000,000	Ministry of Interior and Coordination, KNCHR, KWTa, KVDA, KWS, County Governments of Elgeyo-Marakwet, West Pokot & Trans-Nzoia, CFAs, WRUAs,	- No. of peace building programs - Reports and meetings	Peace building initiatives implemented
	Protection of wildlife corridors and their habitats	5 years	90,000,000	KWS, County Governments of Elgeyo-Marakwet, West Pokot & Trans-Nzoia Relevant NGOs, CBOs, and FBOs	Area for wildlife corridors protected	Wildlife corridors and habitats protected
SUB TOTAL			KES 1.640 Billion			
Zone 5: Riparian areas	Securing the riparian areas through marking, pegging and planting of bamboo/indigenous trees	5 years	90,000,000	MEF, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KEFRI, KWTa, KFS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, WRA, CFAs, WRUAs, Ministry of Interior and Coordination Relevant NGOs, CBOs, and FBOs	- No. of river riparian secures - Size of area pegged and demarcated	Riparian areas secured and demarcated
	Rehabilitation of riverine and riparian areas with bamboo	6 years	180,000,000	MEF, KFS, KEFRI, BAK, KWTa, KVDA, NEMA, CFAs, WRUAs, County Governments	Area of the riparian rehabilitated	- Riparian areas restored - Increased vegetation cover

				of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, WRA Relevant NGOs, CBOs, and FBOs	No. of rivers and springs restored	
	Replacement of Eucalyptus trees and area planted with indigenous trees and bamboo	4 years	70,000,000	MEF, KFS, KEFRI, KWTa, KVDA, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, NEMA, CFAs, WRA Relevant NGOs, CBOs, and FBOs	- Size of area reclaimed - No. of indigenous tree planted	- Eucalyptus trees phased out - Increase cover of indigenous and fruit trees
	Promotion and implementation of benefit sharing schemes	10 years	80,000,000	MEF, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KEFRI, KWTa, KVDA, KFS, NEMA, CFAs, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, WRA Relevant NGOs, CBOs, and FBOs	- No. of benefit sharing scheme implemented - Returns from the scheme	Benefit sharing implemented
	Spring protection of about 40 spring	5 years	220,000,000	MEF, Ministry of Water and Irrigation, KEFRI, KWTa, KFS, WRA, NEMA, CFAs, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia Relevant NGOs, CBOs, and FBOs	No. of springs protected	40 springs protected
SUB TOTAL			KES 640 m			
Cross-cutting interventions	Gazettement of Elgeyo Hills Water Tower	2 year	60,000,000	MEF, KFS, KEFRI, KWTa, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, Ministry of Interior and Coordination	- Report on gazettement status - Coordinates established	Water Tower gazetted
	10% tree cover of assorted tree species on all private farm lands with 30:30:20:20	5 years	270,000,000	MEF, Ministry of Agriculture, Livestock, Fisheries and Cooperatives, KEFRI, KWTa, KFS,	No. of tree seedlings planted	10% tree cover on private farms achieved

	for Bamboo: Indigenous: Commercial and Fruit species respectively			County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, CFAs, WRUAs, WRA, KEFRI, Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	The percentage of tree cover on farms	
	Enhance sensitization and community awareness on conservation	8 years	70,000,000	MEF, KWTa, KFS, NEMA, CFAs, County Government of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, WRA Relevant NGOs, CBOs, and FBOs	Sensitization meetings and minutes	Enhanced level of awareness of conservation of the Water Tower.
	Mainstreaming climate change and adaptation in all interventions	8 years	105,000,000	MEF (CCD), CPM, KEFRI, NEMA, KMD, KWTa, KFS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, CFAs, WRUAs, WRA, KEFRI Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	Climate change programs adopted	Mainstreamed climate change and adaptation programs
	Establishment of partnership and linkages	5 years	90,000,000	MEF, KWTa, KFS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, CFAs, WRUAs, WRA, KEFRI Ministry of Interior and Coordination, Ministry of Agriculture Relevant NGOs, CBOs, and FBOs	No. partnerships and linkages established	Partnerships and linkages established

	Promote research and innovation	7 years	120,000,000	KEFRI, KALRO, University of Eldoret, Moi University, KWTa, KFS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, KEFRI Ministry of Interior and Coordination, Ministry of Agriculture	No. of research and innovations undertaken	Research and innovation promoted
	Provision of additional extension services	6 years	110,000,000	Ministry of Agriculture Livestock, Fisheries and Cooperatives, KWTa, KFS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, Relevant NGOs, CBOs, and FBOs	No. additional extension services provided	Extension services added
	Monitoring and surveillance on status of the ecosystem	5 years	350,000,000	MoE&F, KWTa, KFS, KEFRI, NEMA, KMD, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KEFRI	Monitoring reports	Implementation of monitoring system and conservation
	Address historical land tenure issues	5 years	120,000,000	KNHRC, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KWTa, KFS, Ministry of Interior and Coordination, Local community	No. of cases addressed and resolution made	Historical land tenure issues addressed
	Multi-agency approach towards conservation	10 years	200,000,000	MoE&F, KWTa, KFS, KEFRI, NEMA, KWS, County Governments of Elgeyo-Marakwet, Uasin Gishu, West Pokot & Trans-Nzoia, KVDA, KEFRI Ministry of Interior and Coordination, Ministry of Agriculture, Private firms, NGOs	- Formation of multi-agency team - Conservation efforts undertaken	Various conservation efforts undertaken by multi-agency team

SUB TOTAL	KES 1.495 Billion			
TOTAL BUDGET	KES 7.485 Billion			

8.6 Monitoring and Evaluation Framework

This Master Plan for rehabilitation and restoration of Cherangany-Elgeyo Hills ecosystem will require the development of a framework to monitor and evaluate the implementation of proposed intervention measures. The framework will outline the steps required to seek information before and after interventions are made, and will be a source of lessons required for continuous improvement.

Specific objectives of the framework will be to:

- i. Undertake systematic collection of data
- ii. Strengthen capacity of stakeholders to collect and analyze the collected data
- iii. Develop standard processes and procedures for monitoring and evaluation to guide stakeholders during implementation of the Plan
- iv. Ensure timely and accurate reporting.

8.7 Principles to Guide the Monitoring and Evaluation Framework

The framework will be guided by the following principles:

- i. Its design will be participatory and result oriented
- ii. It will utilize and further develop stakeholder capacities
- iii. It will be flexible to allow for revisions.

8.8 Outline of the Monitoring and Evaluation Framework

The framework will provide details on the following sections:

- i. Performance measurement
- ii. Data collection and reporting
- iii. Institutional arrangements

(i) Under Performance Measurement Framework

Various policies guide the manner in which the restoration and rehabilitation activities that have been defined in this Master Plan should be carried out. Guidelines from these policies will be relied

upon to identify relevant indicators to measure performance. The Master Plan will also respond to indicators from global, continental, regional, national and local and individual programmes.

On the global scale, high level indicators will be derived from Sustainable Development Goals (SDGs), Aichi Biodiversity targets, Global Environmental Facility (GEF), Protocols core indicators and sub-targets among others. On the continental level, the African Union through the Forest Landscape Restoration will guide on identification of thematic specific indicators. Regionally, the East African Community Forest Policy and Protocol on Environment and Natural Resources Management have specified regional efforts aimed at restoration efforts to which the Master Plan will be aligned. At the national level, National Forest Policy and the National Strategy for Achievement and Maintenance of 10 percent forest cover as well as National Climate Change Action Plan be used as indicators. Further, Green Economy Strategy and Implementation Plan (GESIP) will play a role in guiding the greening processes and provide indicators specific to employment. Other Policies on land, agriculture and tourism will also be used to develop respective livelihood indicators. The Master Plan will also be aligned to different programmes and projects undertaking restorative activities in the landscapes.

(ii) Under Data Collection and Reporting

During the execution of the Plan, it will be necessary to collect data on results at various levels including inputs, outputs, outcomes and impacts. The Master Plan will guide the process of data collection, management, analysis and reporting. An assessment of data needs for the restoration efforts will be done at national and county levels; individual programme and project levels; wider ecosystem and individual thematic areas. In order to harmonize data collection, standard data tools will be used at all stages of all levels.

(iii) Under Institutional Framework

The framework for Monitoring and Evaluation (M&E) will follow the overall guideline proposed for the implementation of the Master Plan. Thematic M&E groups or hubs will also be created at all the levels including Joint Policy Steering Committee, Joint Technical Steering committee, Joint Programme Steering committee, County Programme Steering committees and Service Providers undertaking projects in the ecosystem. The thematic M&E groups will create vertical and horizontal linkages with each other to gather data and information and report on the same using data tools described above.

CHAPTER 9 : THE RESOURCE MOBILIZATION PLAN

9.1 Engagement of Stakeholders

This chapter outlines the process of engaging stakeholders to finance the activities of the Master plan. Resources will be mobilised from National and County Governments, Development partners, private sector, individuals, and regional and international institutions. Resources will be used to facilitate implementation of the proposed interventions in the five zones and cross-cutting areas over a period of 10 years.

9.2 Engagement of Partnerships

In order to successfully implement this Master Plan, both the National and the County Governments will explore opportunities for financing the proposed strategies. For this to be achieved, a sustainable relationship ought to be nurtured between the National and County Governments and strategic development partners, the private sector and communities in the area under focus. The needs and interests of each partner will be taken into account to explore possibilities of increasing their interest in and knowledge of the strategies highlighted in the Master Plan.

Project proposals and concepts drawn from the Master Plan will also be prepared and will be used to secure part of the funding from various funding sources.

9.3 Financing Strategies

Below are some proposed strategies through which this Master plan will be financed:

- i. Establishment of a joint coordination Committee for mobilization of Resources with participation of National and County Governments, NGOs, Development Partners and the private sector;
- ii. Seeking for enhanced funding from the National Treasury through a Cabinet Memorandum;
- iii. Mobilization of diversified revenue streams from eco-tourism and Payment for Ecosystem Services (PES), and through Kenya Forest Service and the Kenya Wildlife Service, including from sale of mature and over-mature trees in public forest plantations;
- iv. Establishment of viable public-private partnerships to enhance seedlings production and infrastructure development as potential targets under this arrangement;

- v.** Mobilization of additional resources from conservation levies, particularly water and tourism levies;
- vi.** Establishment of benefit-sharing schemes modelled around a Trust Fund, and;
- vii.** Supporting the development and implementation of a Water Fund

CHAPTER 10: CONCLUSION AND WAY FORWARD

10.1 Ensuring Implementation

The chapter conclusively summarises why the Master Plan was necessary in the first place. It also proposes the way forward in order to ensure that what has been planned and documented herein is actually implemented.

10.2 Summary Conclusion

Cherangany-Elgeyo Hills is an important ecosystem in Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu counties. It is a critical water catchment area for the trans-boundary Lake Victoria and Lake Turkana. Besides providing water, it helps to regulate climate and also supports local culture, ecotourism activities and soil conservation, all key to the sustenance of community livelihoods. However, this ecosystem faces a myriad of threats and challenges that have led to reduction of forest cover, ballooning of cropland into the protected areas and degradation of critical water catchment areas, and settlement and cultivation along and on the steep slopes. This has led to increased levels of degradation resulting to increased landslides, reduced volumes of water in rivers and siltation. There is therefore an urgent need for initiatives and campaigns that foster rehabilitation and restoration of this ecosystem.

This Master Plan has adopted the altitudinal zonation approach towards conservation of the gazetted forests, upland areas surrounding the gazetted forests, the escarpments, lowland areas and the riparian areas in the Cherangany-Elgeyo Hills ecosystem. A rehabilitation and restoration plan designed to suit the needs of each of these five zones has been proposed, its indicative budget amounting to KES 7.485 billion (\$74 million). Funds to cover this budget will be drawn from development partners, National Government, County Governments, Civil Societies, Private Sectors, NGOs and the local communities.

10.3 Proposals for the Way Forward

Based on preliminary assessment of the threats and challenges the ecosystem faces, the intervention measures proposed, and financing options, the recommended way forward for the implementation of the Master Plan are the following:

- i. Complete the validation processes for the Master Plan;
- ii. Follow Cabinet instructions relating to the Master Plan, particularly in securing Government funds;
- iii. Mobilise more stakeholders to implement various aspects of the Master Plan;

- iv.** Evaluate the Total Economic Value of the Elgeyo Hills as part of baseline statistics;
- v.** Develop comprehensive workplans for the various initiatives proposed;
- vi.** Establish a Multi-Agency Team to develop an integrated conservation and management plan for the established five zones;
- vii.** Develop requisite guidelines for implementation;
- viii.** Sign MoUs/MoAs with stakeholders including the County Governments of Elgeyo-Marakwet, West Pokot, Trans-Nzoia and Uasin Gishu as a way of affirming commitment to the implementation of the Master Plan;
- ix.** Carry out public and stakeholder participation on activities to be undertaken, to ensure successful implementation of recommended restoration efforts;
- x.** Establish institutional arrangements necessary for driving the rest of the proposed initiatives, and;
- xi.** Implement the recommendations of a report jointly developed by the County Commissioners and County Government of Elgeyo-Marakwet that addresses land tenure issues as a pre-requisite for meaningful development.

ANNEXES

Annex 1: The Terms of Reference for Development of an Integrated Masterplan for Rehabilitation and Restoration of Cherangany – Elgeyo Hills Ecosystem

Background

Development of the Integrated Masterplan for Rehabilitation and Restoration of Cherangany – Elgeyo Hills Ecosystem is to seek a lasting and inclusive solution to the perennial, interconnected environmental challenges in Embobut and the entire Cherangany – Elgeyo Hills landscape. It also responds to the 2019 directive by the National Development Implementation Communication and Coordination Committee (NDICCC) of the Cabinet for comprehensive remedial and anticipatory solutions to environmental hazards in the ecosystem.

Challenges to the ecosystem include conflicts to land ownership and tenure, perennial landslides and claims of abuse to indigenous community. Further, there is encroachment in gazetted areas and wanton degradation of the landscape. Previous disciplinary interventions to these challenges have not resulted in tangible and lasting solutions thus lending credence to a strategy change for integrated, robust, trans-disciplinary and multi-agency approaches contained in this Master Plan.

Objective of the Master Plan

The overall goal of the Plan is to provide an integrated framework for the rehabilitation and restoration of the Elgeyo-Cherangany Hills ecosystem.

The specific objectives of the Master Plan are:

1. To provide an overview of the current status, threats and proposed intervention measures for the Elgeyo-Cherangany Hills ecosystem;
2. To characterise and develop zonation for rehabilitation and restoration within Elgeyo-Cherangany Hills ecosystem;
3. To outline the effort made in addressing identified threats and challenges;
4. To develop an implementation Master Plan for identified challenges and threats in the ecosystem
5. To develop an implementation and monitoring plan to guide the rehabilitation and restoration of Elgeyo-Cherangany Hills ecosystem;
6. To develop an Integrated Master Plan for rehabilitation and restoration of Elgeyo-Cherangany Hills ecosystem.

Responsibilities of the task team in each specific objective

A. Overview of the current status, threats and proposed intervention measures for the Elgeyo-Cherangany Hills ecosystem;

Applicable Tasks

1. To describe the mandate of the Ministry of Environment and Forestry and the relevance thereof with the task at hand
2. To develop an appropriate criterion for delineating the boundaries of the intervention area with specific characterization of each zonation.
3. To relate the mandate of the Ministry with the context and urgency of making restorative actions in the landscape based on analysis of climate, biodiversity, socio-economic and demographic variables.

B. To characterize and develop zonation for rehabilitation and restoration within Elgeyo-Cherangany Hills ecosystem.

Applicable Tasks

1. To profile the ecosystem services on productive sectors of the landscape including rainfed and irrigated agriculture, tourism and cultural activities as well as hydroelectric power generation.
2. To characterize degradation in the landscape based on applicable criteria
3. To establish including from secondary sources the baseline Total Economic Valuation the landscape.
4. To profile unique characteristics of the ecosystem and how these can be used to establish unique zones to guide in the profiling of threats and challenges and to design interventions
5. Identify key threats and challenges facing the Cherangany-Elgeyo Hills ecosystem aggregated per distinctive zone identified

C. To outline the effort made in addressing identified threats and challenges;

Applicable tasks

1. To review both national and county level policy, legal, strategic and planning frameworks for restoration activities
2. To review relevant global and regional policy documents as a basis for the Integrated Master Plan.
3. Review baseline projects and initiatives that have been and are still continuing in the landscape,
4. Review lessons learnt from implementation of previous projects and initiatives.

D. To develop an implementation Master Plan for identified challenges and threats in the ecosystem

Applicable tasks

1. To review and document expert and stakeholder views on solutions to the challenges and threats in the ecosystem and come up with recommendations for each of the zones identified
2. To develop a matrix indicating the recommendations and mandated organisations to intervene on them
3. To develop an institutional architecture for implementing the Master plan
4. To identify necessary guidelines required to implement the Master Plan
5. To develop an implementation and monitoring plan to guide the rehabilitation and restoration of Elgeyo-Cherangany Hills ecosystem.

E. To develop an Integrated Master Plan for rehabilitation and restoration of Elgeyo-Cherangany Hills ecosystem.

Applicable tasks

1. To develop a final plan aggregating all the information from the other tasks
2. To undertake validation of the above Masterplan with different stakeholders
3. To edit and publish the Master Plan and subject to government approval
4. To establish the next steps for rolling out the Master Plan.

Responsibilities of the Ministry of Environment and Forestry

1. To facilitate the task team in carrying out the identified tasks
2. To facilitate validation sessions for the Master Plan
3. To engage in partnerships for financing various aspects of the plan
4. To forward the Masterplan for requisite government approvals
5. To mainstream the Masterplan into national planning frameworks including bilateral resource mobilisation negotiations.

Annex 2: The Costed Common Programme Framework for the Integrated Masterplan for Cherangany – Elgeyo Hills Ecosystem

	Indicative Budget MKES
Priority Programme 1: Increasing land production and productivity	
Component 1: Rehabilitation, Reclamation and Restoration of degraded areas	960
Project Area 1: Promotion of agro-forestry and farm forestry using indigenous, fodder, fruits, bamboo	320
Project Area 2: Promotion of soil conservation measures such as terracing, gulley rehabilitation, spring protection and	470
Project Area 3: Addressing of historical land use issues along the escarpment	270
Project Area 4: Development and implementation of Flood and landslide Management Plans	170
Component 2: Strengthening Conservation Agriculture and Innovative Water Harvesting Technologies	695
Project Area 1: Promotion and adoption of conservation agriculture	170
Project Area 2: Development of Water harvesting technologies such as earth dams, water pans	180
Project Area 3: Development and implementation of sustainable land grazing management	75
Priority Programme 2; Increasing Biodiversity Restoration and Ecosystem Conservation	
Component 1: Strengthening Security, Protection and Growth of Biodiversity	970
Project Area 1: Conversion of plantation forests to indigenous / bamboo forests	130

Project Area 2: Afforestation and re-afforestation initiatives	360
Project Area 3: Re-adjudication and mapping out ecologically sensitive areas	160
Project Area 4: Monitoring and surveillance on status of the ecosystem	200
Project Area 5: Promotion of research and innovation	120
Project Area 6: Protection of wildlife corridors and their habitats	90
Component 2: Strengthening conservation and restoration initiatives through boundary mapping, titling and management of the ecosystem	2430
Project Area 1: Implementation of titling program for forest blocks	100
Project Area 2: Boundary survey and re-alignment	280
Project Area 3: Mapping and addressing historical land issues	240
Project Area 4: Establishment of commercial community tree nurseries with indigenous species based on species matching for different zones	470
Project Area 5: Restoration and rehabilitation of critical water catchment areas through planting of bamboo and spring protection	360
Project Area 6: Research, develop and implement innovative and sustainable forest management technologies	80
Project Area 7: Securing and rehabilitation of the riparian areas through marking, pegging and planting of bamboo and other indigenous trees and removal of eucalyptus	340
Project Area 9: Enhance sensitization and community awareness on conservation	70
Project Area 10: Promotion and implementation of benefit sharing schemes such as PES and Water Fund	400

Priority Programme Area 3: Increasing ecosystem resilience to climate change	
Component 1: Promote Alternative Community Livelihoods	1040
Project Area 1: Enhance livestock buybacks schemes and encourage intensive livestock production	200
Project Area 2: Commercialization of bamboo as an alternative option for furniture, tooth picks, incense sticks making	110
Project Area 4: Promotion of value chains on honey and fruit trees including Mangoes, Passion, Pawpaw, Avocadoes, Tamarind and aquaculture;	180
Project Area 6: Provision of additional extension services including incentives for Private Extension Service providers	110
Component 2: Promote Mainstreaming of Climate Change Considerations in conservation interventions	450
Project Area 1: Promotion and adoption of alternative energy sources such energy jikos, solar, briquettes, biogas	345
Project Area 2: Mainstreaming climate change adaptation in all interventions	105
8.3.1 Priority Programme Area 4: Strengthen Institutional Capacities for Conservation and Restoration	
Component 1: Support Development and Roll Out of Milestones for Conversion and Gazettement of Elgeyo Hills Water Tower	50
Component 2: Support capacity of community and organizations for conservation	890

Project Area 1: Strengthening local based conservation organizations such as the CFAs	50
Project Area 2: Support initiatives by regulatory Authorities to enforce laws to curb illegal activities through patrols, surveillance and prosecution	80
Project Area 3: Support development and implementation of fire management plan	60
Project Area 4: Support development and application of instruments for public private partnerships	130
Project Area 5: Support development and implementation of initiatives for the promotion of peace building efforts	120
	100
Project Area 6: Support development and implementation of green policy instruments to guide stakeholders in post covid recovery	350
Project Area 7: Monitoring and Implementation Framework for Master Plan projects	
Total Budget	7.485B

Annex 3: National Steering Committee Members for the Development of the Integrated Master Plan for Rehabilitation and Restoration of Cherangany-Elgeyo Hills Ecosystem

1. Dr. Chris Kiptoo, CBS, Principal Secretary, Ministry of Environment and Forestry – Chairperson
2. Agnes Yobterik – Team Leader
3. Alfred Gichu – Team Leader
4. Kennedy Olwasi, MEF –Member
5. Dr. Winnie Musila, KWTa – Member
6. Abdi Noor Hassan, KFS – Member
7. Dr. Paul Ongugo, KEFRI – Member
8. Joyce Lagat, NECC – Member
9. Salome Machua, NEMA – Member
10. Chrispin Omondi, NETFUND – Member
11. Jackson Kiplagat, WWF Kenya – Member
12. Antony K. Musyoka, KFS – Member
13. Abraham Barsosio, CEC Elgeyo-Marakwet – Member
14. Meave Shatete, KWTa – Member
15. Stephen Kibet, KWTa –Member



Ministry of
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Forestry



Government of Kenya, Ministry of Environment and Forestry, 2021