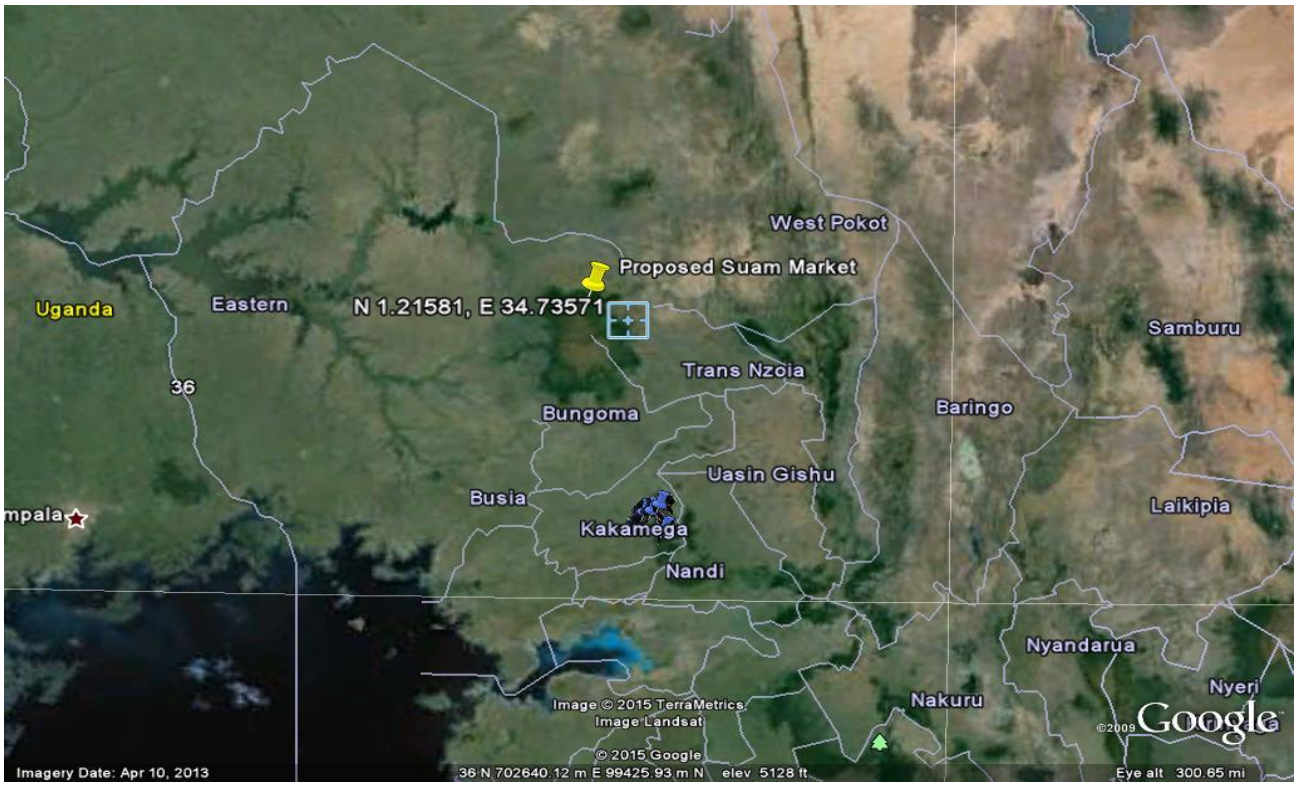
Trans-Nzoia
County Government

TRANS NZOIA

PROPOSED EXCISION OF 50 HECTARES OF SUAM FOREST FOR THE DEVELOPMENT OF A TOWN AT SUAM BORDER IN TRANSNZOIA COUNTY



ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

ENDEBESS SUB COUNTY

TRANS NZOIA COUNY

MAY 2016

CERTIFICATION

The EIA/EA consultants on behalf of the Proponent, submits the following Environment Impact Assessment Project Report, for the proposed Suam Market establishment on plot LR No. Kitale/1757/2001/01 located in Suam forest, Chepchoina ward and location, Endebesi division and Kwanza sub county. The Environmental Impact Assessment Project Report has been carried out in accordance with the Environmental Management and Co-ordination Act, 1999 and Environmental (Impact Assessment and Audit) Regulations, 2003.

Lead Expert:

Anastacia W. Mwaura
Registration No. 1589
P.O Box 879 – 50100
Kakamega.
Mobile No. 0727486515

Signed: _____ Date: _____

PROPONENT

Signed: _____ Date: _____
For County Government of Transnzoia

Contact person

Signature ……..

Name ……..

Position ……..

Tel No ……..

Disclaimer:
This Environmental Impact Assessment Project Report is strictly confidential to County Government of Transnzoia (the Proponent) and any use of the materials thereof should be strictly in accordance with the agreement between the Proponent and the consultant. It is, however, subject to conditions in section 34 of the Environmental (Impact Assessment and Audit) Regulation 2003.

OFFICIAL STAMP

ACKNOWLEDGMENT

The EIA/Ea experts are grateful to the project proponent (Ministry of Lands, Housing and Urban Development) for commissioning us to conduct this Environmental Impact Assessment report in respect to the proposed Suam Market Centre. We would like to further acknowledge with great appreciation to the community for their participation in the public consultation process throughout the exercise. We further acknowledge the support either direct or indirect from the various parties who assisted the EIA/EA experts team towards the successful completion of this report.

Table 1: The Experts who carried out the project study include:

Name	**Position**	**Area of Specialization**	**Roles**
Eng Charles W. Barasa	Lead Expert NEMA Reg. No. 6873	Bsc Agricultural Engineering (Hons) PEng, MIEK Certificate in EIA/EA	Team Leader, coordinating all the activities, meeting the proponent and Report Submission
Ms Anastacia Mwaura Sikoyo	Lead Expert NEMA Reg. No. 1589 Team Leader	Msc. Geo-Information Science Bsc. Environmental Science Certificate in EIA/EA	Field Data Collection, Data Analysis and report preparation
Mr Josephat Omari	Lead Expert Nema Reg. No. 7645	BSc Environmental Engineering Post Graduate Diploma Project Management	Field Data Collection, Data Analysis and report preparation
Caroline J. Lagat	Lead Expert, Nema Reg No. 2235	MSc Agricultural Extension, BSc Animal Science	Socio Economist, Animal Scientist, Livelihood Analysis and Planning
Francesca Chepkoech	Associate Expert, Nema Reg No. 7134	MSc Environmental Planning and Management, BSc	Geospatial Planning and Environmental Infrastructure

		Environmental Science	Analysis
Maryvine Nyanchoka	Associate Expert, Nema Reg No.1944	MSc Forestry and Agroforestry, BSc Environmental Science	Forest Management and Conservation, Environmental Management

TABLE OF CONTENTS

List of photos

List of Tables

ACRONYMS & ABBREVIATIONS

CBD	Convention on Biological Diversity
CBOs	Community Based Organizations
CDM	Clean Development Mechanism
CFA	Community Forestry Associations
CGT	County Government of Transnzoia
CPC	Consultative Public Consultations
EAC	East African Community
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
FCCs	Forest Conservation Committees
FGD	Focus Group Discussions
FMP	Forest Management Plan
GDP	Gross Domestic Product
GHG	Green House Gases
GoK	Government of Kenya
KEFRI	Kenya Forestry Research Institute
KFMP	Kenya Forestry Master Plan
KFS	Kenya Forest Service
KNBS	Kenya National Bureau of Statistics
KWS	Kenya Wildlife Service
MDGs	Millennium Development Goals
MoU	Memorandum of Understanding
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NEPAD	New partnership fo African Development
NEPAD	New Partnership for African Development
NET	National Environment Tribunal
NGO	Non-Governmental Organization
PFM	Participatory Forest Management
TMA	Timber Manufacturers Association
ToR	Terms of Reference
UNEP	United Nations Environment Programme
UNESCO	United Nations Scientific and Cultural Organization
WRMA	Water Resources Management Authority

EXECUTIVE SUMMARY

Trans Nzoia County is one of the forty seven (47) counties in Kenya and it has five sub-counties. The County comprises five constituencies namely Endebess, Cherangany, Saboti, Kwanza and Kiminini. The county borders the Republic of Uganda to the West, Bungoma and Kakamega Counties to the South, West Pokot County to the East and Elgeyo Marakwet and Uasin Gishu Counties to the South East. The county lies approximately between latitudes 00° 52´ and 10° 18´ north of the Equator and longitudes 34° 38´ and 35° 23´ east of the Prime Meridian. The County covers an area of 2,495.6 square kilometers.

The county Government of Transnzoia now plans to establish a border town at Suam border crossing to Uganda just as the Government of Uganda has done across Kenya's border. The proposed border town at Suam will see the conversion of 50 Ha out of the existing 2,350Ha of Suam forest into a border town complete with both national and county government functions. Plots will be allocated to interested parties for use them in accordance with with the County Government of Transnzoia urban planning guidelines. There will be the associated infrastructure such as roads, waste management, electricity, national government offices, and many other land alterations that are associated with urban development. These interventions are likely to come with impacts to the existing Suam forest block which is part of the larger Mt Elgon forest. Mt Elgon forest is an important but yet delicate ecosystem which has been recognized by UNESCO as a man and biosphere reserve. As such any proposed alteration of its very existence should be thoroughly scrutinized for purposes of identifying beforehand, the possible negative impacts followed by suggesting practical mitigation measures for the identified impacts.

The Forests Act 2005 states inter aria that all forests plantations owned by the state will be managed by the Kenya Forest Service on a sustainable basis with primary objectives being production of wood and other forest products and services for commercial purposes. The proposal to hive off a section of the forest has to be done cautiously to avoid interfering with the integrity of the remaining forest.

Under EMCA 1999, the proposed project on forest excisions and urban development falls under the second schedule (Annex 1) for projects that require an Environmental Impact Assessment (EIA) before commencement. Thus, in order to comply with NEMA requirements, the County Government of Transnzoia Contracted a Nema approved Environmental Impact Assessment expert to undertake an ESIA for the excision, border town establishment, and the associated developments. This ESIA project report provides relevant baseline information of the Suam forest, anticipated impacts to the

environment and social aspects, appropriate mitigation measures necessary for incorporation into the project implementation, as well as a comprehensive environmental management and monitoring plan. Approval will, therefore, be sought on the grounds that environmental performance will be assured in all project phases through the implementation of the environmental management actions and monitoring programs recommended in this report and subsequent environmental audits.

ESIA Objectives

This assignment is meant to:

- Generate baseline conditions against which to monitor and evaluate the mitigation measures implemented during the plantation developments activities.
- To ensure that the forest excision and subsequent border town establishment program is in compliance with the EMCA 1999.
- To determine, document and inform CGT on the anticipated environmental, social and economic impacts from all operations throughout the project.
- Suggest appropriate mitigation measures against negative impacts and enhancement of positive impacts of forest plantation management.
- To develop an environmental management and monitoring plan for forest plantation management program in Mt. Elgon Ecosystem.

ESIA Methodology

The study was carried out at desk level and also through a detailed and structured field study. The process included: collection of baseline data to describe the status of the project site before project implementation commences; data analysis and evaluation; consultations to identify the concerns of stakeholders and preparation of an ESIA study report encompassing the details specified in the Environmental Impact Assessment/Audit Regulations (2003).

Policy, Legal and Regulatory Framework

The Environmental Management and Co-ordination Act 1999, is the legislation that governs ESIA studies in Kenya. This project falls under the Second Schedule of EMCA 1999, which lists the type of projects that are required to undergo ESIA studies. Other key national laws that govern the management of environmental resources in the country have been discussed in this report. The study also recognizes different international agreements which are relevant to supporting the national efforts in environmental management including the welfare of communities.

Main Project Components

The excision of the forest and subsequent establishment of the border town will involve:

- Site clearance and boundary demarcation

- Utilities establishment
- Operationalization of the Urban environment
- Decommissioning

The proposed town establishment will undergo project activities over a 3 years period and in perpetuity.

Project Cost
The project will involve the construction of market shed that will include offices, shops and ablution block at a cost of **Kshs. 39,856,482.00**

Site Ownership
The proposed urban center project will be managed by the County Government of Transnzoia. The County will have to acquire land for the project from the Kenya Forest Service which is the custodian of all gazetted forests in Kenya.

Summary of Findings
The anticipated negative environmental and social issues associated with the proposed town establishment at Suam are summarized as follows:

Negative Environmental impacts during at the towns Pre-construction phase

Environment/Social Aspect	Anticipated negative impact	Mitigation / Enhancement
Soil disturbance	- Felling and uprooting of tree stumps may cause soil disturbance	- Avoid pulling out tree stumps but rather use other environment friendly technology such as cutting trees very close to the ground. - Fell tree that must be removed. Otherwise retention of trees that may not hinder works should be encouraged
Biodiversity loss	- Site clearance might lead to reduction or elimination of some species. - Illegal harvesting of some wildlife species might reduce species abundance	- Enhanced surveillance against poachers - Continuous sensitization of workers against overexploitation of species - Enforcement of trespass Act
Deforestation	- The proposed site will have trees cleared in some areas. - Illegal poaching of trees	- Enhanced surveillance against poachers - Continuous sensitization of workers against

	might occur	overexploitation of species - Enforcement of trespass Act
Poaching of wildlife	- Workers might poach stray wild animals for food - Small game Poachers might gain entry into the forest to poach	- Enhanced surveillance against poachers - Continuous sensitization of workers against overexploitation of species - Enforcement of trespass Act
Hydrology	- Clearance of vegetation might reduce water infiltration into the underground	Ensure that no complete elimination is done Bare ground to be grassed Soil and water conservation structures
Negative Environmental Impacts during the town's operation phase		
Environment/Social Aspect	**Anticipated negative impact**	**Mitigation / Enhancement**
Fire hazard	Established plantation may be predisposed to fires due to their uniformity and inherent tree characteristics such as resins and oils	- Regular maintenance of firebreaks - Removal and dispose brush from the forest boundary - Install and maintain fire hazard signs - Sensitise the communities on fire hazards - Maintain fire preparedness including regular patrols - Grade roads that act as barriers before onset of fire season - Adopt no-burn strategy in high altitude - areas - Enforce Grass Fire Act Cap 327 - Set up fire watch towers in all forests
Increased human - wildlife conflicts	Increase in human-wildlife conflicts especially related to stray animals into urban area	- CFAs should liaise with KWS and establish a reliable Problem Animal Control unit to manage human wildlife conflicts - KWS to keep wildlife within park

		- Fencing in forest plantation areas - Use bee hive barriers which have proved to be effective in controlling problem elephants.
Deterioration of sanitation	-poor waste management might lead to impaired sanitation -pit latrines might contaminate groundwater	-establish and manage well a waste management site -establish and run well a sewerage system
Pollution of R. Suam water	- Waste might be thrown/dumped into the river - Accidental spillage into the river -	- Demarcate and put visible beacons in place to show extent of riparian zone - Respect planning laws - Enforce relevant laws - Operationalize a well-designed dumpsite
Insecurity	-Being a border town, illegal migrants from other countries are likely - a growing town might experience insecurity issues	- Tight surveillance of border - Install CCTV - Empower immigration office at the border - Expand National Police services at the border - Community policing
Conversion of Agricultural land to urban use	Attractive land prices might induce adjacent community to convert agricultural land into urban use	- Sensitize locals to make informed decisions - Change of use to be done
Soil compaction and erosion	Due to many construction projects, soil are likely to be loose and hence prone to erosion	- Soil and water conservation structures
Resource use conflicts	Portable water Resources are likely to be scarce with increasing population	- Proper water resource planning - Establish gravity water supply scheme
Human wildlife conflicts	Stray wildlife such as monkeys, snakes and baboons may trigger conflicts	- Fence off town especially border with forest - Deploy KWS staff near town for quick response
Tree pest and diseases	Movement of forest produce across the border may trigger the outbreak of certain pests and diseases	- Enhanced surveillance by customs , KRA, KEPHIS and KWS officers
Water use and depletion	Over extraction of water resources might lead to depletion	- Water resource planning
Water pollution due to urban agriculture	Use of fertilizers, pesticides, and other agro-chemicals might cause pollution of water	- Formulation and enforcement of rules and regulations to guide this practice

Encroachment into R. Suam's riparian zone	Pressure for commercial land might lead to encroachment into the riparian zone	- Enforce physical planning rules and reguations

Environmental Management Plan

Following the desk studies, field investigations and public consultations undertaken in this study, an Environmental plan (EMP) has subsequently been developed. The responsibility for the incorporation of mitigation measures for the project implementation lies with the County Government who must ensure that all specified mitigation measures are implemented.

Conclusions and recommendation

Overall, the proposed border town establishment at Suam border crossing has been planned to be implemented with due attention to the environmental mitigation and management measures thus, it is anticipated that it will not pose any serious adverse and negative environmental and social impacts. Thus, it is recommended that the project be approved by NEMA for implementation

CHAPTER 1: INTRODUCTION

1.1 Background

Trans Nzoia County is one of the forty seven (47) counties in Kenya and it has five sub-counties. The County comprises five constituencies namely Endebess, Cherangany, Saboti, Kwanza and Kiminini. The county borders the Republic of Uganda to the West, Bungoma and Kakamega Counties to the South, West Pokot County to the East and Elgeyo Marakwet and Uasin Gishu Counties to the South East. The county lies approximately between latitudes 00° 52´ and 10° 18´ north of the Equator and longitudes 34° 38´ and 35° 23´ east of the Prime Meridian. The County covers an area of 2,495.6 square kilometers.

The County Government of Transnzoia now plans to establish a border town at Suam just as the Government of Uganda has done across the border. The proposed border town at Suam will see the conversion of 50 Ha out of the 2,350Ha (2.09%) of Suam forest into an urban environment by establishing an economic hub. Plots will be allocated to interested parties for use for various purposes. There will be the associated infrastructure such as roads, waste management infrastructure (such as the sewer treatment ponds), power lines, national government services (such as security arrangements), and many other land alterations that are associated with urban developments. These interventions are likely to come with impacts to the existing Suam forest block which is part of the larger Mt Elgon forest.

Mt Elgon forest is an important but yet delicate ecosystem which has been recognized by UNESCO as a biosphere reserve. As such any proposed alteration of its very existence should be thoroughly scrutinized for purposes of identifying beforehand, the possible negative impacts followed by suggesting practical mitigation measures for the identified impacts. The Forests Act 2005 states inter alia that forest plantations in state forests will be managed by the Kenya Forest Service with a primary objective being production of wood and other forest products and services for commercial purposes.

1.2 Project Objectives

The main objective of the proposed town establishment is to enhance the economic activities between Kenya and her neighboring country Uganda and other East African countries by opening a fully operational border town that has ancillary facilities.

1.3 ESIA Objectives

This assignment is meant to:

- Generate baseline conditions against which to monitor and evaluate the mitigation measures implemented during the plantation developments activities
- To ensure that the border town establishment is in compliance with the EMCA 1999.
- To determine, document and inform the County Government of Transnzoia on the anticipated environmental, social and economic impacts from all operations throughout the project.
- Suggest appropriate mitigation measures against negative impacts and enhancement of positive impacts of forest plantation management.
- To develop an environmental management and monitoring plan for forest plantation management program in Mt. Elgon Ecosystem.

1.4 Terms of Reference

The Terms of Reference (TORs) focuses on key issues concerning town establishment at the Suam border. The study covers all activities in acquisition of forest land and guiding legislation, urban planning and development, and the role of public participation. It contains detailed information on the project that includes the following;

a) The location and objectives of the project;
b) Baseline information such as descriptions of the natural, social and operational environments, the current policy and legal framework and the administrative arrangement under which the project will operate;
c) The technology, procedures and processes to be used in implementation of the project;
d) Alternative technologies and processes available and reasons for preferring the chosen technology and processes;
e) The wastes to be generated by the project and ways of handling them;
f) A description of potentially affected environment;
g) The environmental effects of the project: including the social and cultural effects and the direct/indirect, cumulative, irreversible, short term and long term effects anticipated;
h) An EMP proposing measures for eliminating, minimizing or mitigating adverse impacts on the environment, while enhancing the positive effects; including the cost, time frame and responsibility to implement the measures;
i) Provision of an action plan for the prevention and management of foreseeable accidents and hazardous activities;
j) Measures to prevent health hazards and to ensure security in the working environment for the employees and users of the facility and for management of emergencies;
k) An economic and social analysis of the project;

l) An identification of gaps in knowledge and uncertainties which were encountered in compiling the information; and
m) A non-technical summary outlining the key findings, conclusions and recommendations of the study.

1.5 Study Methodology

1.5.1 Overview

This EIA study was based on the available baseline information and reports on the proposed project area. Among the sectoral issues addressed by the study were: solid and liquid waste management; infrastructure and hydro-geology; Socio-economic and socio-cultural issues; Bio-diversity, resource use; physical planning; and public health and safety. The latter aspect was considered as cross cutting and therefore was captured in pertinent sectoral issues.

This EIA Study Report was prepared in accordance with "The Environmental (Impact Assessment and Audit) Regulations, 2003 for submission to the National Environmental Management Authority (NEMA). ESIA is both a planning and a decision making tool. As a planning tool, ESIA presents methodologies and techniques for identification, prediction and evaluation of potential environmental impacts of projects as per the project cycle (planning, implementation and decommissioning phases).
The key activities undertaken during the assessment were as follows:

i. Preparatory meetings were held with the project staff at County Government of Transnzoia office in Kitale.
ii. Review of existing related legislation and regulations and documentation on the proposed activity. The review of literature was to compliment field survey data;
iii. Field surveys based on pre-determined parameters and acceptable methodologies used in environmental impact assessment. Field surveys included observations and assessment of the proposed area at Mt. Elgon's Suam forest
iv. Consultative meetings with stakeholders;
v. Reporting, review and submissions.

Below is a typical outline of the basic EIA steps that were followed during this assessment:

1.5.2 Environmental Screening

This is the first stage where the proposed project was evaluated guided by EMCA, 1999. In this stage, the project was confirmed to fall within a category that requires an EIA prior to commencement. Considerations during the screening process included physical

site location, environmental sensitivity of the areas surrounding the proposed site, nature of community and social activities in the project area.

1.5.3 Environmental Scoping

The EIA team undertook scoping of the project to isolate the broad areas on which the proposed project would potentially have impacts on the environment. The EIA team conducted a reconnaissance survey accompanied by officials from KFS and the County Government whereby the latter provided an overview of the proposed project and took the team on a tour of the site.

1.5.4 Review of secondary information

The review provided an understanding of the terms of reference, environmental and social status, demographic trends, land use practices, development strategies and plans as well as the policy and legal documents.

1.5.5 Field Assessment

With the background obtained from review of project documentation, the consultancy team undertook field visits to Suam border to:

- Appreciate conditions of the project areas
- Preliminary analysis of potential key direct and indirect impacts of the Project, environmental and social conditions in the potentially affected areas
- Identify and map the stakeholders to be consulted during the detail field visits and data collection
- Collect available information from the KFS station offices and other line ministries

1.5.6 Stakeholders Consultations

The stakeholders were identified in consultation with the County Government of Transnzoia staff. Representation of the stakeholders was drawn from county and government line ministries, community forest associations and interest groups. The stakeholders were invited to a consultative forum that was held at the site on 1st June 2016.

Plate 1: A section of the sampled population giving their views

Plate 2: Residents give views about the proposed project

CHAPTER 2: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Overview

Environmental Impact Assessment is a tool for ensuring new projects and programs incorporate appropriate measures to mitigate adverse impacts to the environment and peoples' health and safety as well as enhancing sustainable operations with respect to environmental resources and co-existence with other socio-economic activities in their neighborhood. Necessary policies and legislation that ensures annual environmental audits (EA) are carried out on every running project, activity or programme and a report submitted to National Environmental Management Authority (NEMA) for approval and issuance of relevant certificates.

According to the Kenya National Environment Action Plan (NEAP, 1994) the Government recognized the negative impacts on ecosystems emanating from industrial, economic and social development programmes that disregarded environmental sustainability. Following on this, establishment of appropriate policies and legal guidelines as well as harmonization of the existing ones have been accomplished and/or are in the process of development. The NEAP process introduced environmental assessments in the country with among the key stakeholders being industrialists, business community and local authorities. This culminated into the enactment of the Policy on Environment and Development under the Sessional Paper No. 6 of 1999.

2.2 National Policy Framework

Sessional Paper No 6 of 1999 on Environment and Development presents broad categories of development issues that require sustainable approach. Among the goals of the policy are to:

- Incorporate environmental management and economic development as integral aspects of the process of sustainable development; and
- Encourage sustainable utilization of resources and ecosystems for the benefit of the present generations, while ensuring their potential to meet the needs of the biosphere and future dependents.
- Following on this, the policy outlines the following objectives among others:
    - Conservation and management of the natural resources of Kenya including air, water, land, flora and fauna,
    - Promotion of environmental conservation through the sustainable use of natural resources to meet the needs of the present generations while preserving their ability to meet the needs of future generations,
    - Meeting national goals and international obligations by conserving bio-diversity, arresting desertification, mitigating effects of disasters, protecting the ozone layer and maintaining an ecological balance on earth

2.2.1 The Constitution of Kenya

Article 42 of the Bill of Rights of the Kenyan Constitution provides that 'every Kenyan has the right to a clean and healthy environment, which includes the right to have the March, 2016 environment protected for the benefit of present and future generations through legislative and other measures'. Under Chapter 5 (Land and Environment), Part 1 is devoted to land. It requires that land be used and managed in 'a manner that is equitable, efficient, productive and sustainable, and in accordance with the following principles:

i. Equitable access to land;
ii. Security of land rights;
iii. Sustainable and productive management of land resources;
iv. Transparent and cost effective administration of land; and
v. Sound conservation and protection of ecologically sensitive areas.

Part 2 of Chapter 5 of the Constitution is dedicated to Environment and Natural Resources.

Article 69 in Part 2 provides that the state shall;

i. Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
ii. Work to achieve and maintain tree cover of at least ten per cent of the land area of Kenya;
iii. Encourage public participation in the management of, protection and conservation of the environment;
iv. Protect genetic resources and biological diversity;
v. Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;
vi. Eliminate processes and activities that are likely to endanger the environment; and
vii. Utilize the environment and natural resources for the benefit of the people of Kenya.

Further, Article 70 states that if a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress. The sub-project should ensure compliance with the constitution in so far as equitable sharing of the resources, between the stakeholders. Further, the project should ensure the sustainability of livelihoods and biological resources within the project areas are protected. Any development proposals should also be cognizant of the increased

powers under the Constitution given to communities and individuals to enforce their rights through legal redress.

2.2.2 Kenya Vision 2030

One of the aims of the vision is to make Kenya to be a nation that has a clean, secure and sustainable environment by 2030. This will be achieved through promoting environmental conservation to better support the economic pillar. The envisaged growth under Kenya Vision 2030 will be dependent on agriculture, tourism, manufacturing and the energy sector, which heavily rely on exploitation of natural resources and the environment. All the expected changes to spur economic development will exert immense pressure on the already declining natural resources base and on the country's fragile environment. This necessitates a strong policy on the environment in order to sustain economic growth while mitigating the impacts of rapid industrialization.

Kenya's Vision 2030 strategy is specifically is to help transform Kenya into a "newly industrializing, middle-income (income exceeding World's average currently at US$10000) country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. It is to be developed through "an all-inclusive and participatory stakeholder consultative process, involving Kenyans from all parts of the country. The Vision 2030 is anchored on three key pillars: Economic; Social; and Political Governance. The objective of the economic pillar is to achieve an economic growth rate of 10 per cent per annum and sustaining the same till 2030. To address the economic growth objective, the programme envisaged strengthening of the macroeconomic framework, a more responsible fiscal stance, increasing the role of private sector in economic development and improvement in physical infrastructure. The government will in the course of this plan period implement measures to strengthen our economic competitiveness through accelerated governance and public sector reforms and by increasing government spending on expansion, and modernization of our railways, roads, ports, airports, energy, water and the ICT and telecommunications infrastructure.

Since its promulgation in 2010, the Kenya constitution has altered our governance framework fundamentally by creating a two-tier government one at national and the other in our 47 counties. The distribution of functions of counties is outlined in the Fourth Schedule of the Constitution. Trade within and outside the country remains a priority sector of the economic pillar. Over the plan period the government will strengthen economic partnerships with our neighbours in East Africa and the rest of

Africa. The country's foreign policy will aim at increasing international trade, and international economic partnerships.

2.2.3 Kenya Forest Policy

The broad objective of the Forest Policy is to provide continuous guidance to all Kenyans on the sustainable management of forests. The Sessional Paper takes cognizance of other existing policies relating to land and land use, tenure, agriculture, energy, environment, mining, wildlife and water. Further, this policy stresses the need for greater cooperation and linkage among resource owners, users, and resource planners. The Forest Policy addresses indigenous forest management, farm forestry, industrial forest development, dry land forestry, forest health and protection, private sector involvement and participatory forest management. It recognizes that there are benefits arising from involvement of local communities and other stakeholders in forest management. The main goal of the Policy is to enhance the contribution of the forest sector in the provision of economic, social and environmental goods and services. The specific objectives of this policy that is relevant to the implementation of the proposed forest plantation project to:

i. Contribute to poverty reduction, employment creation and improvement of livelihoods through sustainable use, conservation and management of forests and trees.
ii. Contribute to sustainable land use through soil, water and biodiversity conservation, and tree planting through the sustainable management of forests and trees.
iii. Promote the participation of the private sector, communities and other stakeholders in forest management to conserve water catchment areas, create employment, reduce poverty and ensure the sustainability of the forest sector.

2.2.4 Kenya Forest Master Plan

The Kenya Forest Master Plan (KFMP) was developed in 1994 as a forest sector master plan that set out national goals, objectives, and strategies for the forestry sector. On plantation development, the long-term objective of industrial plantation management is to satisfy the country's need for industrial and construction wood and to explore opportunities for carbon sequestration, among others. To attain these objectives, the master plan sought to:

- Improve managerial input in plantation management;
- Rationalize the management of existing and future plantations;
- Increase revenue collection rates; and
- Increase the consumption of labour services and complimentary inputs

The proposed project seeks to convert a small portion of the Suam forest block and use it as a border town but ensure that the remaining forest is sustainably managed.

2.2.5 The Land Policy (2007)

Environmental management principles: To restore the environmental integrity, the government shall introduce incentives and encourage use of technology and scientific methods for soil conservation and maintain beaches at high and low water mars and put in place measures to control beach erosion. Fragile ecosystems shall be managed and protected by developing a comprehensive land use policy bearing in mind the needs of the surrounding communities. Zoning of catchment areas to protect them from further degradation and establishing participatory mechanisms for sustainable management of fragile ecosystems will also be done. It will also develop procedures for co-management and rehabilitation of forest resources while recognizing traditional management systems and sharing of benefits with contiguous communities and individuals. Lastly all the national parks, game reserves, islands, front row beaches and all areas hosting fragile biodiversity are declared fragile ecosystems.

Conservation and sustainable management of land based natural resources: The sustainable management of land based natural resources depends largely on the governance system that defines the relationships between people, and between people and resources. To achieve an integrated approach to management of land based natural resources, all policies, regulations and laws dealing with these resources shall be harmonized with the framework established by the Environmental Management and Coordination Act (EMCA),1999. The most relevant section of the land policy to Mt. Elgon Forest Ecosystem is Section 3.4.3.2 – ecosystem protection (including wetlands). Measures for protection are required with sub-section 135 addressing fragile ecosystems to be managed and protected. Sub-section 137 focuses on Protection of watersheds, lakes, drainage basins & wetlands shall be guided by among other principles prohibition of settlement and agricultural activities in the water catchment areas, identification, delineation and gazettement of all water courses and wetlands as well as integrated resource management based on ecosystem structure.

2.2.6 The National Biodiversity Strategy, 2007

The overall objective of the National Biodiversity Strategy and Action Plan (NBSAP) is to address the national and international undertakings elaborated in Article 6 of the Convention on Biological Diversity (CBD). It is a national framework of action to ensure that the present rate of biodiversity loss is reversed and the present levels of biological resources are maintained at sustainable levels for posterity. The general objectives of the strategy are to conserve Kenya's biodiversity to sustainably use its components; to fairly

and equitably share the benefits arising from the utilization of biological resources among the stakeholders; and to enhance technical and scientific cooperation nationally and internationally, including the exchange of information in support of biological conservation.

2.2.7 National Policy on Water Resources Management and Development

The National Policy on Water Resources Management and Development (Sessional Paper No. 1 of 1999) was established with an objective to preserve, conserve and protect available water resources and allocate it in a sustainable rational and economic way. It also desires to supply water of good quality and in sufficient quantities to meet the various water needs while ensuring safe disposal of wastewater and environmental protection. The policy focuses on streamlining provision of water for domestic use, agriculture, livestock development and industrial utilization with a view to realizing the goals of the Millennium Development Goals (MDGs) as well as Kenya Vision 2030. This policy has implications for the forestry sector in its objective with regard to environmental protection. It recognizes the fact that increased human activities, especially in water catchment areas has resulted in the reduction and deterioration of forest cover area and constitutes a threat to the country's water resources.

The policy addresses these issues through the protection of water catchments, river basin management and practices that take into account the role forests and soil conservation measures play in conservation of water resources. Furthermore, it states that water catchments need to be identified and delineated, and water catchment preservation and protection programmes instituted in collaboration with the relevant Ministry in charge of forests.

The proposed project will contribute to substantial water pollution if no proper protection measures are put in place.

2.2.8 Agriculture/National Food Policy 1994

The agriculture/national food policy (Sessional Paper No.2 of 1994) promotes soil conservation and prevents the destruction of vegetation. It can help addresses the biggest threat to forest conservation i.e. encroachment for agriculture, which is one of the main force behind forest degradation. The Ministry of Agriculture and Livestock has developed the Strategy for Revitalizing Agriculture (SRA), and a Policy on Agriculture Extension. These are significant policy frameworks that can be called upon to promote enforcement of the Forests Act (2005) in relation to soil conservation and food security.

The PELIS system will be used to enhance forest cover within the larger Mt Elgon forest to compensate for any lost vegetation at Suam.

2.3 National Legal Framework

Application of national statutes and regulations on environmental conservation suggest that the Proponent has a legal duty and social responsibility to ensure that the proposed development is carried out without compromising the status of the environment, natural resources, public health and safety. This position enhances the importance of this environmental impact assessment for the proposed site to provide a benchmark for its sustainable operation.

Kenya has approximately 77 statutes that relate to environmental concerns. Most of these statutes are sector specific, covering issues such as public health; SOB erosion; protected areas; endangered species; water rights and water quality; air quality, noise and vibration; cultural, historical, scientific and archaeological sites; land use; resettlement; etc. Previously, environmental management activities were implemented through a variety of instruments such as policy statements and sectoral laws, and also through permits and licenses. For example, the Physical Planning Act of 1996 empowers local authorities to request existing facilities to conduct environmental assessments, while under the Local Government Act of 1998; it is an offence to emit smoke, fumes or dust which may be a source of danger, discomfort or annoyance.

The key national laws that are relevant to establishing excising a forest will be followed and as follows:

2.3.1 Forests Act No. 7 of 2005

The Forest Acts of 2005 established the Kenya Forest Service (KFS) to protect and manage the country's forests; a Forest Management and Conservation Fund to provide for conservation, education and management activities; and rules and regulations for the creation and management of forests that help to address the problem of politically motivated excisions from Kenya's gazetted forests with minimal review. It also provided for community involvement in forest management through creation of Community Forest Associations.

The Forests Act, 2005 has clear provisions for participatory forest management and user rights for local communities; provides for management of all catchment areas with linkages to agriculture and the water sector; provision for environmental impact assessments, public consultations, and parliamentary approval before degazettement of forests. Some Rules and Regulations to operationalize the Act have been gazetted. The

Forests (Participatory in Sustainable Forest Management) Rules, 2010 apply to the participation of the private sector and forest communities in the sustainable management of state forests and will apply during the implementation of this project. The Forest (Harvesting) Rules, 2009 apply to commercial harvesting of timber in state forests. The Forest Act is also concerned with regulating the use of forest products within gazetted forest reserves and on un-alienated government land. The Act lays down the guidelines for the issuance of licences for timber and non-timber forest products and the fines and penalties for non-compliance.

2.3.2. The Occupational Health and Safety Act, 2007

This Act deals with factories and other places of work. Sections 21 and 22 of the Act provides that every flywheel or part on a prime mover or transmission machinery or any dangerous part of any machinery should be securely fenced so as to be safe to every person employed or working at the premises. Following on these sections, section 25 requires that all fencing or other safeguards provided for safety should be of substantial construction and constantly maintained and kept in position while the parts required to be fenced or safeguarded are in motion.

Part VI provides for the general welfare of the workers with respect to supply of drinking water, washing facilities and first aid among other aspects. Related to the workers welfare, Part VII section 51 states in part "In every factory or work place in which, in connection with any process carried on, there is given off any dust or fumes or other impurity of such a character and to such an extent as to be likely to be injurious or offensive to the persons employed, or any substantial quantity of dust of any kind, all practicable measures shall be taken to protect the persons employed against inhalation of the dust or fume or other impurity and to prevent it accumulation in any workroom, and in particular, where the nature of the process makes it practicable exhaust appliances shall be provided and maintained as near as possible to the point of origin of the dust or fumes". Section 53 of this Act requires that workers employed in a process involving exposure to wet or to any injurious or offensive substances, suitable protective clothing and appliances (gloves, footwear, goggles, and head coverage) shall be provided.

Section 4 of Kenya subsidiary legislation of 2004, Legal Notice No. 31 of Kenya Gazette Supplement No. 25 of 24th May, 2004 of the Factories Act Cap 514, requires that, all factories or other workplace owners to establish a safety and health committee, which shall consist of safety representatives from the management and the workers. The number of the committee members will range from 3 to 7 depending on the size (number) of employees. The Act also requires the management to appoint a competent person who is a member of the management staff to be responsible for safety, health and welfare in the factory or workplace. Section 13 goes ahead to state that a health and safety audit of the workplace be carried out every twelve months by a registered health

and safety adviser. If the owner(s) or management contravenes any of the rules, he/she shall be guilty of an offence.

The contractor will ensure that safety precautions are observed during construction.

2.3.3 Environmental Management and Coordination Act (EMCA), 1999

The EMCA, 1999 is the main piece of legislation dealing with environmental management in Kenya. Part II of the Environment Management & Coordination Act, 1999 states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. In order to partly ensure this is achieved, Section 58 (1) of the EMCA requires that all activities related to the projects listed in the Second Schedule of the Act should be subjected to an EIA. Section 58 (5) of the EMCA and Sections 7(3) and 13(2) of the Regulations, require that EIA studies must be carried out by individual EIA experts or firms of experts registered by NEMA. Regulation 31(2) requires that EIA shall be carried out by experts approved by NEMA. The EMCA also makes provisions for the procedure for applying for an Environmental Impact Assessment License.

Finally, the Environmental Impact Assessment Guidelines require that a study be conducted in accordance with the issues and general guidelines spelt out in the Second and Third schedules of the Environmental Regulations (2003). These include coverage of the issues on Schedule 2 (ecological, social, landscape, land use and water considerations) and general guidelines on Schedule 3 (impacts and their sources, project details, national legislation, mitigation measures, a management plan and environmental auditing schedules and procedures. This proposed plantation management project requires adhering to the provisions of the Act. EMCA was enacted to ensure sustainability of the environment in a state that does not affect the surrounding biophysical and human environments during project operation. This is to avoid adverse effects on the environment and if there are any, ensure necessary mitigation measures are undertaken.

2.3.4 Environmental (Impact Assessment and Audit) Regulations, 2003 (Legal Notice No.101)

The Regulations operationalize the provisions of the EMCA (1999) on environmental impact assessment and auditing. These Regulations stipulate how an EIA will be undertaken and what the EIA study Report should contain. They provide details regarding Environmental Audits, auditing and monitoring, which the proposed project will be required to undertake later on. The regulations are thus important to the

proposed project with regard to EIA and EA. The County Government of Transnzoia has undertaken this ESIA in compliance with the Regulations.

2.3.5 EMCA (CBD and Resources, Access to GR and Benefit Sharing) Regulations, 2006

The Act states that no person shall engage in any activity that may have an adverse impact on any ecosystem, lead to the introduction of any exotic species, or lead to unsustainable use of natural resources, without an Environmental Impact Assessment License issued by the Authority under the Act.

The Proponent has commissioned this environmental assessment study and seeks to obtain an EIA License from the Authority (NEMA) in compliance with the Act; the environmental management plan included in this report provides guidelines for the mitigation of potentially adverse impacts on natural resources.

2.3.6 Trespass Act, CAP 294

This act confers protection to land owned or occupied by virtue of freehold title, cultivated or enclosed land, or any forest area.
The Act is relevant to the control of squatters in Forest Reserves.

2.3.7 Wildlife (Conservation and Management) Act, CAP 376 of 1976 and 1989

The Act provides for the protection and Management of Kenya's Wildlife through National Parks and Reserves. The Act controls activities in these protected areas and the conservation of wildlife populations outside the protected areas. It is important for the proposed project, which touches on wildlife, and will impact on their habitat and movement. The act establishes rules and regulations for wildlife resources management and coordination for maximum economic returns to the government. The Wildlife Act further recognizes the role played by different agencies of the government and seeks to establish close collaboration in the management of ecosystems in which wildlife resides, such as forests. Such agencies include the KFS, Fisheries Department, and the County governments. The Wildlife Act and current Forests Act 2005 are closely related. The Wildlife Act covers the protection, conservation, and management of wildlife (both flora and fauna) in Kenya. It includes the conservation of forests within national parks, national reserves, and sanctuaries, and all wild animals occurring in the forests. It is a requirement that there is control of permitted and prohibited activities in national parks, national reserves, and sanctuaries and in areas adjacent to these gazetted areas to ensure the protection and security of the flora and fauna of their habitats.

Appropriate measures will be put in place to ensure that wildlife will not be affected throughout the project period.

2.3.8 Water Act, 2002

This Act is ideal for catchment protection and protection of wells and springs that occur in the forest. The Act supports community involvement in catchment protection. It can also be useful in riverine vegetation protection and also supports the user-pay principle as proposed in the new Forests Policy. The Minister may declare an area to be a protected catchment area and order, require, regulate or prohibit certain activities. The Water Act lays out mechanisms for the development of natural water resources and a management strategy for the management, protection, use, development, conservation, and control of water resources. Regarding the forestry sector, the national strategy under the act is required to encompass mechanisms for determination of important water catchments. The strategy devolves the authority for conservation of such catchments to the local stakeholders who manage the catchment areas in collaboration with the Water Resources Management Authority, also established under the act.

The strength of this act is in its endeavor to promote participatory forest management in water catchments. This is seen through the devolution of roles and responsibilities to the stakeholders, who not only participate in the development of catchment management plans, but also are responsible for conflict resolution, cooperative management, and providing catchment and water resources use and management advice to the Regional Office of the Water Resource Management Authority (WRMA). This allows social, economic, and ecological aspects of the catchments to be incorporated in the management plans.

This legislation is important as the proposed project may impact on water resources including access to some water bodies by both humans and wildlife. It may also impact on water bodies including Suam River and other neighboring streams and wetlands.

2.3.9 The Physical Planning Act (Cap. 286).

Section 24 of the Physical Planning Act gives provision for the development of local physical development plan for guiding and coordinating development of infrastructure facilities and services within the area of authority of County, municipal and town council and for specific control of the use and development of land. The plan should show the manner in which the land in the area may be used. Section 29 of the physical Planning Act gives the county councils power to prohibit and control the use of land, building, and subdivision of land, in the interest of proper and orderly development of its area. The same section also allows them to approve all development applications and grant development permissions as well as to ensure the proper execution and implications of approved physical development plans. On zoning, the act empowers them to formulate by-laws in respect of use and density of development.

Section 30 states that any person who carries out development within an area of a county without development permission shall be guilty of an offence and the development shall be invalid. The act also gives the County government power to compel the developer to restore the land on which such development has taken place to its original conditions within a period of ninety days. If no action is taken, then the council will restore the land and recover the cost incurred thereto from the developer. In addition, the same section also states that no person shall carry out development within the area of a County government without development permission granted by the County government. At the same time, sub-section 5, re-enforce it further that, no licensing authority shall grant under any written law, a license for commercial use for which no development permission had been granted by the respective County government.

Section 36 states that if in connection with development application a County government is of the opinion that, the proposed activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an Environmental Impact Assessment report. The environmental impact assessment report must be approved by the National Environmental Management Authority (NEMA) and followed by annual environmental audits as spelled out by EMCA 1999. Section 38 states that if the County government finds out that the development activity is not complying to all laid down regulations, the County government may serve an enforcement notice specifying the conditions of the development permissions alleged to have been contravened and compel the developer to restore the land to it's original conditions.

The County Government of Transnzoia is carrying out this ESIA in addition to developing a spatial plan in order to comply with this requirement.

2.4 Regional and International Agreements/conventions

The Forests Act (2005) Article 61 recognizes Kenya's International obligation with respect to forests and provides for the Act to be carried out in accordance with any treaties, conventions or International Agreements concerning forests or forest resources to which Kenya is a party.

2.4.1 East African Community Protocol on Environment and Natural Resource Management

This Protocol was signed by the three countries on 3rd April 2006. Article 11 (1) of the protocol states that the Partner States shall co-operate in all activities relating to development, conservation, sustainable management and utilization of all types of forests, trees, and trade in forest products throughout the Community.

2.4.2 East African Community Treaty, 1999

This is an intergovernmental organization with the mandate of promoting regional integration and development among member states (Kenya, Uganda and Tanzania). Its

overriding goal is to promote a people-centred economic, political, social and cultural development based on balance, equity and mutual benefit of member states. EAC's focus has been policy harmonization and development of economic infrastructure. As per its development strategy, EAC justifies that for sustainable development to be achieved, there is need to manage well our natural resources and also protect the environment. This includes among others; management and conservation of forest resources and harmonization of environmental policies. Several articles of the EAC Treaty that are of relevance to forest management and the proposed project include:

- Article 120 on Environmental issues and natural resources-objective is to ensure sustainable utilization of natural resources plus preservation, protection and good quality environment.
- Article 121 on the management of the environment – advocates for policy harmonization and community involvement in management of natural resources (PFM)

2.4.3 The United Nations Framework Convention on Climate Change (UNFCCC)

The main objective of the Convention is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Convention requires parties to avoid adverse effects on the environment and adopt measures and policies to control carbon dioxide emissions in technologies, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances. The Parties are required to take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments formulated and determined nationally with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment of projects or measures undertaken by them to mitigate or adapt to climate change. The Convention on Climate Change was signed and ratified by Kenya on 30th August 1994 and established a National coordinating climate change committee whose functions include translation of UNFCCC objectives and related protocols into national development priorities.

Project implementation will be done in a manner that will allow adequate vegetation cover that will provide carbon sinks. The project proponent will endeavor to encourage the use of clean energy within the proposed town.

2.4.4 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention) is an international agreement between governments, drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature (IUCN). The text of the convention was agreed upon in 1973, and CITES entered into force on 1st July 1975. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival and it accords varying degrees of protection to more than 33,000 species of animals and plants.

2.4.5 The Clean Development Mechanism (CDM)

The Clean Development Mechanism (CDM) is one of the three flexibility mechanisms of the Kyoto Protocol. The CDM was created to promote the hosting of GHG reduction projects by developing country parties to the Kyoto Protocol, using finance provided by developed country parties in order to make these projects possible. By enabling the implementation of GHG reduction projects in developing countries, the CDM contributes to the sustainable development of those countries, while also allowing them to contribute to the GHG reduction objectives of the UNFCCC and Kyoto Protocol. At the same time, CDM projects assist developed country parties that finance such projects to meet their legally binding GHG reduction obligations, by generating Certified Emission Reductions (CERs) that can be used to meet their emission reduction obligations under the Kyoto Protocol or the European Union Emission Trading Scheme. The modalities and procedures for afforestation and reforestation project activities under CDM for the first commitment period of the Kyoto Protocol (decision 5/CMP.1 Appendix B; project design document for afforestation and reforestation project activities under the CDM) states that the analysis of environmental impact assessment must include negative effects in four major themes: Soil, hydrology (water), biodiversity and vegetation among others like risk of fire, pests, and diseases.

2.4.6 Convention on Biological Diversity (CBD)

The Convention has three main objectives all of which have implications for Environmental Impact Assessment, these are: to conserve biological diversity; the use biological diversity in a sustainable fashion and to share the benefits of biological diversity fairly and equitably (Article 1). The Convention makes the following requirements in relation to EIA:

- Parties are required to use EIA effectively to avoid or minimize significant adverse impacts on biodiversity (Article 14);
- Parties are also required to promote consultation on activities that are likely to significantly affect adversely the biodiversity of areas beyond the limits of national jurisdiction, by encouraging the conclusion of bilateral, regional or multilateral arrangements, as appropriate.

The proposed project has undertaken this EIA to ensure that Suam forest biodiversity is not negatively impacted on by the proposed plantation development activities.

2.4.7 Rio Declaration on Environment

The Rio Declaration on Environment and Development, often shortened to Rio Declaration, was a short document produced at the 1992 United Nations "Conference on Environment and Development" (UNCED), informally known as the Earth Summit. The Rio Declaration consisted of 27 principles intended to guide future sustainable development around the world

A few of the relevant principles include:

Principle 4: Environmental Protection in the Development Process

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 10: Public Participation

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 22: Indigenous Peoples have a Vital Role

Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

2.5 Administrative/Institutional Framework

2.5.1 The County Government of Transnzoia

Trans Nzoia County is one of the forty seven (47) counties in Kenya and it has three sub-counties. The County comprises five constituencies namely Endebess, Cherangany, Saboti, Kwanza and Kiminini. The County Government which is the project proponent intends to implement this project through its department of lands, urban development and housing. The project will be supervised by the Chief Officer in charge of lands, housing and urban development.

2.5.2 The Kenya Forest Service (KFS)

Kenya Forest Service (KFS) was established in February 2007, as a state corporation under the Ministry of Environment, Water and Natural Resources, mandated under the Forests Act, 2005 to implement the Forest Policy objectives. The mandate includes

development, establishment and sustainable management of forest resources for Kenya's social-economic development. The KFS is a semi-autonomous institution whose mandate is to provide for the establishment, development and sustainable management, including conservation and rational utilization of forest resources for the socio-economic development of the country.

The Kenya Forest Service is managed at two main levels i.e. the Board and the Management with distinct functions as provided for in the Forests Act 2005. The Board of KFS has an oversight function over the Service. The KFS management consisting of the Director, assisted by a Senior Deputy Director, Deputy Directors and Senior Assistant Directors are responsible for day-to-day management of the operations of the Service. The functions of KFS Management as provided for in the Act include forest administration, policy development, forest regulation, training, extension and protection of natural forests. In addition, the Service works closely with the various sectors such as agriculture, water, land, energy and tourism for efficient management of the forest resources. The KFS management is mandated to among others to:

- Formulate policies and guidelines regarding the management, conservation and utilisation of all types of forest areas in the country for approval by the Board of Kenya Forest Service;
- Manage all State forests;
- Protect forests in Kenya in accordance with the provisions of the Forests Act 2005;
- Enforce the conditions and regulations pertaining to logging, charcoal making and other forest utilization activities;
- Collaborate with other organizations and communities in the management and conservation of forests and for the utilization of the biodiversity therein;
- Promote the empowerment of associations and communities in the control and management of forests;
- Manage forests on water catchment areas primarily for purposes of water and soil conservation, carbon sequestration and other environmental services

2.5.3 Community Forest Associations (CFAs)

According to the Forests Act 2005, section 46 (1), a member of a forest adjacent community may together with other members or persons resident in the same area register a Community Forest Association (CFA) under the Society's Act. According to section 46 (2), an association registered under section (1) may apply to the Director of Forest Service for permission to participate in the conservation and management of a state forest or a local authority forest in accordance with the provisions of the act. The introduction of Participatory Forestry Management (PFM) under the Forest Act has led to the formation of Community Forest Associations (CFAs) at the community level countrywide.

The CFAs work with KFS to sustainably manage forest resources. Most of the CFAs are currently preparing to enter into forest management agreements with KFS based on agreed forest management plans. This will confer management roles to the community with the KFS retaining the forest resource ownership right and the right to withdraw the agreement in total or part. The CFAs are formed by individual members who join by paying a prescribed membership fee.
The CFAs operating at the proposed project site is Suam CFA.

2.5.4 National Environmental Management Authority

The National Environmental Management Authority is the supreme regulatory and advisory body on environmental management in Kenya. NEMA is required to coordinate and supervise the various environmental management activities being undertaken by statutory organs with a view to promoting their integration into development policies, programmes, plans and projects that provide sustainable development and a safe and healthy environment to all Kenyans. The key functions of NEMA through the National Environment Council include:
Responsibility for policy formulation and direction for the purposes of the Act;

- Setting national goals and objectives and determining policies and priorities for the protection of the environment;
- Promotion of cooperation among public departments, local authorities, private sector non-governmental organizations and such other organizations engaged in
- Environmental protection programmes; and performs such other functions as are assigned by the Act.

CHAPTER 3: BASELINE INFORMATION

3.1 Bio-Physical Environment

These are the abiotic factors that influence the biotic structure of the Mt. Elgon ecosystem. The major factors considered here are climate, topography, geology, soils, and the hydrology pattern.

3.1.1 Climate

The climatic conditions greatly influence the vegetation profile, temporal and spatial distribution of wildlife within the Mt. Elgon ecosystem. The mean annual precipitation ranges from 890 mm in a drought year to 1525 mm in a very wet year, with the eastern and northern slopes receiving less rainfall as compared to the southern and western slopes, which receive higher rainfall. The moist south-westerly and dry north-easterly influence the bimodal rainfall received in Mt. Elgon thus bringing about the long rains (March-July) and short rains (September-November). The months of December to March are characterized by dry weather conditions. Very high altitude areas receive almost continuous precipitation throughout the year in the form of light drizzle and mist. Temperatures are generally influenced by altitude whereby the very high peak areas display very cold conditions with low temperatures ranging from < 0-20°C while the lower altitude zones at the base of the mountain are relatively warmer with high temperatures. Minimum and maximum temperatures experienced in the region range from < 0 to 27 ^{0}C and this is influenced by the altitude. Its physical conditions under influence of high rainfall and temperatures accelerate the weathering and leaching processes thus bringing about diverse changes in the chemical composition of the soils.

3.1.2 Topography

Kwanza Sub-County has two important topographic features; Mt. Elgon (4313m) and the Suam River which flows into Lake Turkana. River Suam is permanent therefore it can be used to foster development in the Sub-County as a source of water for domestic use, consumption as well as hydro-electricity generation and irrigation. The central part of the plot is relatively flat and well raised in relation to its surrounding. The plot has predominant red soil some few sections have doting rocks. The topography of this land at the confluence slopes very gently to the river. The area is flood free except under severe rainy conditions.

3.1.3 Geology

The Mt Elgon is an extinct volcano that was formed from lava debris' blown out from a greatly enlarged vent during the Miocene period about 12-20 million years ago. This resulted in its characteristic low, convex structure. The landscape is made up of cliffs, tuffs, rocks, ash and mudflows present in very small quantities. In the caldera are tiny lakes and moraine ridges, which indicate that glaciations occurred here during the Pleistocene era about 1.5 million years ago. These subsequently cut through the caldera as low as 3500m above sea level thus giving rise to the Suam gorge and Uganda pass

when the weight of the melt waters in the caldera cut stream beds out of the weak volcanic ash and agglomerate walls. These activities coupled with other factors gave rise to the various physical features that characterize Mt.. Elgon like the Caldera, Endebess Bluff and the Elephant Platform.

3.1.4 Soils

The general types of soils in the Mt. Elgon area are mainly nithosols and andosols. Nithosols are well-developed soils due to sufficient weathering and are reddish -brown to dark brown colour. Andosols are ashy soils, with high organic matter, and are a mixture of black topsoil, clay and loam, mainly derived from volcanic matter from the mountain. On the steep slopes of the moorland, shallow soils are present but with deep humus, reddish-brown and clay loams formed on the more gentle slopes. Soils on the afro-montane forest zone are shallow loams on the mountain crests but deep red loams on the gentle sloping areas. On the lower slopes to the southern section of the mountain are shallow to moderately deep, brown clay loams covering the volcanic rocks.

3.1.5 Hydrology

The high rainfall received in the area gives rise to permanent rivers and streams. Other water sources are springs and rock surface water. Due to the topography of the area, river flow exhibits a radial drainage system, with most rivers originating from the mountain peaks, flowing radially down slope along the valleys and gorges that cut down the mountain. MEE constitutes a 'major catchment area for Lake Victoria and Turkana with its many tributaries draining into the major rivers that lead to these main water bodies. The Suam River that flows from the caldera northwards and the Lukhakha River, which flows southwards, mark the boundary between Kenya and Uganda Other rivers that drain the ecoystem on the Kenyan side are Kamukuywa, Sosio Kimilili, Kibisu, Kuiywa, Sit and Malakisi in Mt. Elgon, and Kisawai, Kimothon, Koitoboss, Kiptogot, Kaibei, Mubere, Kaptega, Suam and Kamjong in Trans-Nzoia. The Koitoboss River is a tributary of Nzoia River originating from the Cherangani hills.

3.2 Biological resources

Currently there are no vulnerable habitats on the ground, as attributed by extensive human activities on the site.

3.2.1 Flora

The climate conditions are favorable for rich vegetation however there are some remnant trees, grass, fodder and other vegetation cover especially on the lower side near the river bed.

3.2.2 Fauna

The main fauna in the area include monkeys, rodents, snakes, insects, birds and other crawling animals.

3.3 Socio-Economic and Cultural Environment

3.3.1 Forest adjacent communities

Sabaots, Luhyas, and Teso mainly inhabit areas surrounding Mt. Elgon Forest Reserves as the main tribes. There are thousands of households that constitute these communities in this area stretching from Suam to Cheptais area. The early ancestors of these communities, who lived in the forest, were predominantly hunters and gatherers, depended on the ecosystem for their livelihood. In 1974, the government resettled them on the lower areas in the Chepyuk settlement scheme, which was a part of the forest. The local communities living adjacent to the reserves are pre-dominantly dependent on its resources for their livelihood. The level of dependence differs according to the socio - economic status of each household, distance from the reserve boundaries, interests and needs of individuals and communities. Moreover, these communities have a great attachment to the ecosystem through the diverse cultural, traditional, environmental, and ecological benefits and value it offers. The increased dependence over the years has been a result of lack of initiatives to develop alternative source forest resources in the farmlands. This over reliance has negatively impacted on the ecosystem. The people living around Mt. Elgon should take initiative in developing alternative sources of forest products and venture into other income generating activities and stop relying too heavily on the dwindling forest resources. This calls for diversification of extension programmes in Mt. Elgon area.

3.3.2 Local economic Activities

Mt. Elgon is a high agricultural potential area that is well endowed with fertile volcanic soils. Land tenure system is rather undefined and does not encourage development due to ownership uncertainties. Agricultural land is being fragmented into smaller units due to the increasing human population. The area is suitable for cash as well as subsistence food crops.

The main cash crops grown are coffee, sunflower, tea, pyrethrum and wheat, which contribute enormously to the local economy. The staple foods here are maize and beans, which are grown more than any other crops. Horticultural subsistence crops include onions, cabbages, potatoes, carrots and garlic, which are used locally and sold in market centers in western region of Kenya. The midlands are good for dairy cattle fanning, sheep and goat farming. Production of fruits and flowers are well adapted in the lower slopes and are targeted for export. The local communities get gainful employment from the farmland and trade in agricultural products in nearby towns and other commercial centers.

3.3.3 Interaction between the Local communities and the Ecosystem

The significance of Mt. Elgon as a resource base to the local communities cannot be over emphasized. The livelihood of the local people revolves around forest goods and services. Since time immemorial, communities in the region have derived their subsistence needs from the forest. The mountain is held with high esteem because of its traditional and sociocultural importance, which contributed to enhanced interaction with the community. Ceremonies and sacrifices were conducted in the forest to appease gods. It offered a strategic location during wars. The re- introduction of NRC has offered more opportunity in enhancing more interactions between communities and ecosystem manager. Interaction opportunities that presently exist are basically related to resource use. It is worth noting that strong collaboration should be developed and strengthened if the ecosystem has to meet the needs/interests of the communities as well as the managing institutions. The local community is composed of diverse user groups who relate to the ecosystem in different dimensions such as timber loggers, non - residential cultivators, firewood collectors, herbalists, herders, beekeepers, honey collectors and other subsistence groups. They constitute an important stakeholder groups in resource utilization. The local communities should not only be viewed as users but also be involved in participatory development of the ecosystem.

3.3.4 Rights and Privileges

The National Park does not allow for extractive and consumptive use of its resources by the local communities, but rather for non- consumptive use such as tourism. In the Forest Reserves, access to forest products is regulated and controlled by FD through licensing system and issuance of permits. Extraction of minor forest produce for subsistence use is allowed through issuance of permits at a specified fee for a particular product i.e. withies, poles, soil, murram, seedlings, firewood etc. Water is widely used in the area and is accessed downstream freely. Adjacent communities are allowed to collect fruits/berries, fodder, and thatching grass and to graze livestock. Other privileges include cultivation in forestland by the adjacent communities through the newly introduced Non- Residential Cultivation (NRC), in order to support plantation establishment.

3.4 Organizations in the Project Area

3.4.1 Overview

Stakeholders of Mt. Elgon are those individuals, groups and institutions who are directly affected by decisions made on the utilization, management and conservation of Mt. Elgon ecosystem and whose aspirations coincide with the objectives of conservation of the area. Stakeholders in this ecosystem range from the managing institutions i.e.

Forest Department, Kenya Wildlife Service, research institutions such as KEFRI and NMK, saw millers, reserve adjacent communities, government ministries i.e. Ministry of Agriculture, Water, Environment and Physical Planning departments, local administration, tour operators, Tranzoia County Government and non-governmental organizations. All stakeholders have an interest in the manner the ecosystem is being managed. The heterogeneity of these groups requires that close working relationship be established.

The integration of stakeholders is important as it:-

- Promotes a sense of ownership of the resource
- Promotes and sustains the long-term management of the resource on sustainable basis
- Assists in strengthening social security, protects traditional user rights and access to ecosystem resources;
- Fosters communal risk adjustment strategies i.e group based collective decision making either in utilizing or protecting the resources;
- Encourages complimentary rather than competitive activities in resources management
- Ensures that environmental and economic objectives are achieved at tolerable costs to the society

CHAPTER 4: PROJECT DESCRIPTION

4.1 Location of project site

The project site is to be on Suam forest, Chepchoina Ward and Location, Endebess division and Kwanza Sub-County on coordinates N1.21581° and E 34.73571°. The proposed site referred to as Kitale/1757/2001/01 represents Suam trading centre. The area required for the construction of the proposed market measures approximately 50 Hectares . Currently the proposed site is designated as a forest. The proponent has applied for change of user from a forest reserve to a commercial market establishment.

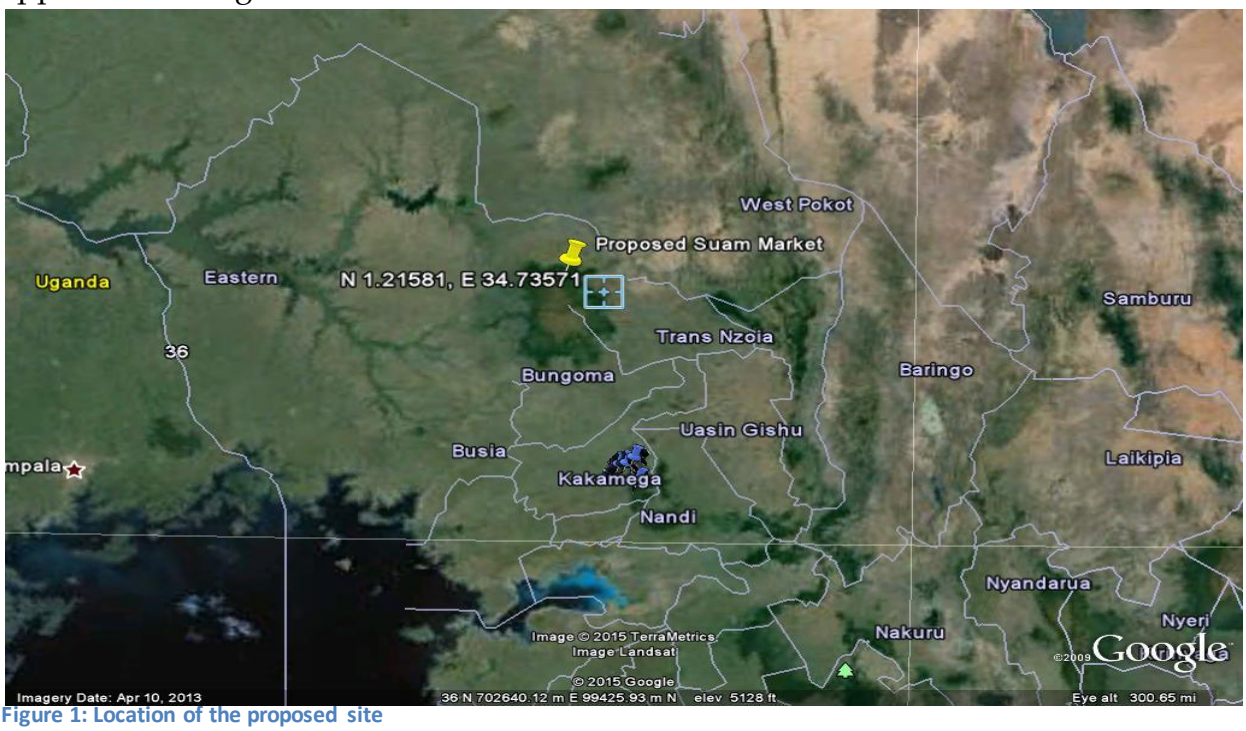


Figure 1: Location of the proposed site

Kwanza Sub-County is situated at the extreme west of Kenya at the Ugandan border. It is one of the three Sub-Counties of Trans-Nzoia County. It has an area of 105.5km². It borders Uganda to the north-west, Trans-Nzoia East Sub-County to the East, Mt. Elgon to the west, West Pokot to the north and Trans-Nzoia West Sub-County to the south. The Sub-County is characterized by large farms owned by ADC, Kenya Seed and Suam Orchards among other private farms. The main activities involve maize and wheat farming and dairy production by Kenya Seed Company and ADC farms. The Sub-County also hosts Mt. Elgon National Park. Various settlement schemes have been created to settle the landless. The population is therefore scattered and only densely populated in the schemes.

The Population and Housing Census of 1999 enumerated total of 150,208 persons in Kwanza Sub-County, of these 75,089 males and 75,119 females. The above figures were projected to reach 199,142 persons, 209645 persons and 246,170 persons in 2008, 2010

and 2012 respectively. This translated into an increase of 47,031(19%) persons by the end of 2012.

Plate 3: Suam forest block. Note the hectreage of which the project aims to take 50Ha (2.09%) only

The land for the proposed site is currently under plantation forest and cultivation. It is a public plot having been set aside for Kenya Forest Service (KFS). The CGT has applied to National Land Commission for the Change of use of the 200acres to be converted into a border town. Conducting of this ESIA is part of the legal requirements that will guide the decision to transfer the said land.

4.2 Project Design and Cost

The proposed development will be a market. The main funding of the project is through the County government and it is estimated to cost **Kshs 39,856,482** upon completion. The components of the project include; market shed, kiosks, offices and ablution block which will be constructed using appropriate locally available materials and proven methods. The provision of key services such as clean water, power and security will be retained within the developer's remit. The proposed development will incorporate environmental, health and safety standards during all phases of the project (construction, operation and decommissioning phases). The detailed plan is attached at the Appendix.

4.3 Justification of the project

Kenya's Vision 2030 strategy is specifically is to help transform Kenya into a "newly industrializing, middle-income (income exceeding World's average currently at US$10000) country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. It is to be developed through "an all-inclusive and participatory stakeholder consultative process, involving Kenyans from all parts of the country. The Vision 2030 is anchored on three key pillars: Economic; Social; and Political Governance. The objective of the economic pillar is to achieve an economic growth rate of 10 per cent per annum and sustaining the same till 2030. To address the economic growth objective, the programme envisaged strengthening of the macroeconomic framework, a more responsible fiscal stance, increasing the role of private sector in economic development and improvement in physical infrastructure. The government will in the course of this plan period implement measures to strengthen our economic competitiveness through accelerated governance and public sector reforms and by increasing government spending on expansion, and modernization of our railways, roads, ports, airports, energy, water and the ICT and telecommunications infrastructure.

Since its promulgation in 2010, the Kenya constitution has altered our governance framework fundamentally by creating a two-tier government one at national and the other in our 47 counties. Within counties, municipalities and urban areas which are a key part of our national development programme will be managed by independent boards responsible to county authorities. The distribution of functions of counties is outlined in the Fourth Schedule of the Constitution. These include development responsibilities that are central to this medium term plan among them agriculture, county hospitals and public health, early child education, cooperatives, trade, county roads, fisheries and livestock. The Ministry of Devolution and Planning will prepare regular reports on progress made under second MTP which will be submitted to National and County Government Coordinating Summit. These reports will also be made publicly available on the Ministry's website, so that stakeholders and the public can access information on implementation of projects of interest to them.

Trade within and outside the country remains a priority sector of the economic pillar. Over the plan period the government will strengthen economic partnerships with our neighbours in East Africa and the rest of Africa. Our foreign policy will aim at increasing international trade, and international economic partnerships.

4.4 Project objective

The key link between the County Government of Transnzoia's CIDP with the Kenya vision 2030 is that it provides a vehicle through which the national development objectives and targets as set in the Vision 2030 and medium term plans as well as the national sector plans are translated into actionable projects and programmes whose outputs and service delivery respond to the needs of the community. It is the wish of the community to have a border town at Suam in order to enhance economic interaction between the county and the neighboring Uganda. Kenya as a nation and Transnzoia as a county stand to gain immensely due to the increased economic interaction across the border.

4.5 Project Activities

4.5.1 Development of an urban spatial plan

Land use planning has been done to help in deciding in advance what to do, where, when, with what, how, on or under the land. It is a thought process that guides land use activities on space. This process has been guided by a set of rules, regulations and standards.

4.5.2 Establishment of utilities for public purposes

This include;

a) **Health services**

The preferred location for health services should be easily accessible by an ambulance and be provided with basic infrastructural services. A Sub district hospital with a minimum hectreage of 4 hectares has been provided.

b) **Administrative areas**

These are areas/zones where public buildings/offices are sited for the purposes of administering public matters and rendering services to the general public.

c) **Law and order**

These include Administrative Use (D.Os office, Sub- County), Police stations, Law courts, Prisons

d) **Community centers**

As the name denotes these are community facilities and therefore an integral part of residential neighborhood. They include social halls, libraries and cultural museums, religious institutions, fire stations, post office

4.5.3 Establishment of the commercial zone

The town centre will offer commercial and other related services that will be used by the population of the town or urban area as a whole including the inhabitants of its hinterland. The most important requirements that have been considered for a town center are geographical centrality, accessibility to vehicles and pedestrians, ample parking space.

4.5.5 Public Utilities

Public utilities are those essential services or facilities that support human live. They include water, sewerage, garbage collection, Electricity/power, Telephone, Cattle dips, holding grounds, Cemeteries etc. Other emerging utilities include Tree Nurseries and Agricultural produce collection centers e.g. Tea and Milk outlets.

Plate 4: Well established border control offices on the Uganda side. Compare with the inadequate government offices on the right

Table 1: Summary of Land use Proposals

Principal Land Use	Zone ID/Code	Proposed Use	Description
Residential	0_1	PROPOSED GOVERNMENT QUARTERS	This site is proposed for establishment of residential houses for the staff in the public service.
	0_2.0_5	PROPOSED HIGH DENSITY RESIDENTIAL	This zone will host low income earning group of the society. It will supply the much demanded housing needs. A minimum subdivision density of 0.04Ha (1/8 acre) with a plot coverage of 70% is recommended.
	0_6	PROPOSED LOW DENSITY RESIDENTIAL	This zone will accommodate high end residential houses. The types of dwelling units recommended are Bungalows and masionettes. It is expected to bridge the gap in housing provision.
Industrial	1_1.1_2	PROPOSED LIGHT INDUSTRIAL	This site is proposed for establishment of small entrepreneur activities like juakali sheds, fabrication and furniture workshops to provide the much needed employment to the youth and women.
Education	2_1	PROPOSED SECONDARY SCHOOL	There is a proposed secondary school to cater for population within the proposed market and surrounding.
	2_2	PROPOSED PRIMARY SCHOOL	At the boundary between the Mumia Highway, it is proposed a green strip planted with tree to act as buffer and absorb the smoke from the vehicles. This aims at purifying the air circulation and beautifying the town
	2_3-2_5	PROPOSED NURSERY SCHOOL	They have been proposed within the residential neighborhoods within walking distance. It's also proposed that existing primary schools should have kindergartens attached to them with adequate land as the playing field for the children to play
	2_6	PROPOSED TERTIARY COLLEGE	A college is also necessary so that the youth who do not transmit to other higher educational institutions can gain vital skills especially in science and technology.
Recreation	3_1,3_2,3_3,3_4,3_5	PROPOSED STADIUM, OPEN SPACE,RECREATIONAL PARK/GREEN PARK	The proposed sites are generally flat. It's central and accessible since it's close to the main highway. This will provided recreational spaces within the planning area.
Public Purpose	4_2	EXISTING POLICE STATION & PROPOSED ADMINISTRATION	A proposed extension of the existing police station and lines will accommodate more staff and equipment to enhance security.
	4_3 -4_4	PROPOSED COUNTY GOVERNMENT OFFICES	It is proposed that public administration offices to be located next to the proposed social hall and another along the highway close to parking for transit vehicles
	4_5	PROPOSED SOCIAL HALL	There being no social place for youths therefore a social hall is proposed next to the proposed administrative offices.
	4_6	PROPOSED FIRE STATION	A fire station is proposed close to the social hall.
	4_8	PROPOSED HEALTH CENTRE	Currently there no health facilities. One facility is proposed to serve plan area and beyond.
	4_9,4_{10} -4_{11}	PROPOSED MOSQUE & CHURCH	Separated religious institutions to cater for Christians and Muslims are proposed in various

			points of the plan area.
	5_1	PROPOSED OPEN AIR MARKET	To ease congestion in town, a space will be set aside on the plan for a market shed. The proposed market is auxiliary to the proposed bus park to serve about 300 traders.
Commercial	5_2 -5_7	PROPOSED COMMERCIAL	Proposed commercial is necessary to also compliment and provide services that are located in the CBD conveniently. The users of the activities within planning area will not be required to travel far to get commercial services.
	5_8 -5_9	PROPOSED TOURIST HOTEL	Mt Elgon region is tourists attraction site. There is a proposed hotel to cater for tourists visiting Uganda and Mt. Elgon park.
	5_{13}	PROPOSED COURIOR SHOPS	The proposed site being close to the Mt Elgon National Park and Uganda, tourists will be making stop overs at Suam. The plan proposes to establish couriors shops for sale of artifacts and other art items to the tourists.
	6_1	PROPOSED DUMP SITE	This site will provide temporary collection point of solid waste.
Public utilities	6_2	PROPOSED SEWERAGE TREATMENT WORKS	Treatment plant will be located at lowest level close to the river. Upon treatment the treated water will be recycled for irrigation.
	6_3	PROPOSED WATER RESERVOIR	This site proposed at highest point of the plan area in order to ensure constant water flow through gravity.
	6_4 & 6_5	PROPOSED CHRISTIAN & MUSLIM CEMETRY	There is no cemetery in Suam. A Christian and Muslim cemetery are proposed at area along the Main road. The cemetery should be well buffered by tree planting.
	7_2 -7_4	PROPOSED PETROL SERVICE STATION	To cater for expected increased traffic, petrol stations are proposed along the main roads. The stations will have pumps and convenient shops.
Transportation	7_5	PROPOSED BUS PARK	Parking will be provided for other categories of vehicles (cars). These will include 'park and ride' facilities whereby motorists are able to park their cars and board public.
	7_6-7_7	PROPOSED PARKING FOR TRANSIT VEHICLES	It envisaged that there will be a lot of vehicles on transit to and fro Uganda. The proposed parking for transit vehicles is meant to serve them either while on the queue or at night. The parking will be constructed to modern standards. It will be controlled to ensure prudent use.

CHAPTER 5: CONSULTATIVE PUBLIC PARTICIPATION

5.1 Overview

The Kenya government has enshrined the need for human societies' involvement in project development in the Constitution. This has been set out in the *EMCA Act, 1999* and *Environmental (Impact and Audit) Regulations, 2003*. Stakeholders' consultations and participation ensures ownership of the proposed project. It has also demonstrated successfully that projects that go through this process will acquire high level of acceptance and accrue benefits to a wider section of the society.

The proposed project has incorporated stakeholders' consultations in order to understand the local impacts, needs and thoughts and eventually incorporate them into the final designs and operations of the project.

5.2 Specific purpose of the stakeholder consultations

The main objectives of the public consultation process were to:

- Inform all the stakeholders details of the proposed Project;
- Collect the view and concerns of the stakeholders on the proposed project;
- Collect views on the positive and negative impacts anticipated by the stakeholders and how these can be overcome; and
- Build stakeholder consensus and acceptance of the proposed project.

5.3 Stakeholders Consultative Process

The consultative process involved:

- Identification of stakeholders through consultation with Chief Officer In charge of Lands, housing and urban planning
- Invitation of the stakeholders by use of letters
- Stakeholders' consultative meeting held at the site on 1st June 2016.

The highlights of the agenda included:

- Opening Remarks by Chief Officer In charge of Lands, housing and urban planning and description of the Proposed Project on Plantation Management
- Highlight of the EIA Process
- Group work
- Group Presentations and Plenary
- Administration of questionnaires that were designed to allow various stakeholders to write down their views concerning the proposed development project.

Plate 5: Forest reserve adjacent communities in discussions

5.4 Categories of stakeholders consulted

The categories of stakeholders consulted were as follows:

a) Forest department,
b) Kenya wildlife service,
c) Research institutions such as kefri and universities
d) National museums of Kenya
e) Saw millers,
f) Reserve adjacent communities,
g) Government ministries i.e. Ministry of agriculture,
h) Water,
i) Environment and
j) Physical planning departments,
k) Local administration,
l) Tour operators,
m) Transnzoia county government and
n) Non-governmental organizations.

6.5 Feedback from working group discussions and plenary

Among the benefits identified by participants include;

i. Creation of markets for their agricultural goods
ii. Improved infrastructure such as roads, electricity supply and portable water
iii. Provision of social amenities such as good hospitals
iv. Employment opportunities by investors

v. Increased value of land
vi. Increased security
vii. Enhanced inter-border economic activities
viii. Better utilization of land resources

Participants however expressed their concerns that the following negative impacts are likely;

i. Enhanced deforestation through illegal felling of trees
ii. Illegal poaching
iii. Climate change and food insecurity
iv. Increased water pollution
v. Deterioration of sanitary conditions
vi. Enhanced soil erosion
vii. Increased deterioration of natural resources
viii. Increased rural-urban migration
ix. Resource use conflicts
x. Insecurity
xi. Conversion of agricultural land into other land uses
xii. Traffic congestion
xiii. Increased crime

CHAPTER 6: ANTICIPATED ENVIRONMENTAL SOCIAL IMPACTS

6.1 Overview

This chapter identifies and discusses anticipated positive and negative impacts associated with the proposed border town establishment project in three phases of project cycle namely:

- Site clearance and land demarcation
- Construction activities
- Operational phase
- Decommissioning

Impacts to the environment could be positive or negative, direct or indirect, reversible or irreversible.

6.1.1 Description of activities at Pre-construction phase

This will involve land demarcation, setting out of the border town boundaries, river riparian zone, siting of various utilities and plots on the ground and, actual siting of government plots on the ground.

6.1.2 Description of activities during the construction phase

Construction activities will involve the following:

(i) Site preparation (fencing to avoid intrusion).
(ii) Excavations, filling and foundation laying.
(iii) Building works and removal of construction wastes.
(iv) Procurement of construction materials and delivery of the same to the site.
(v) Storage and utilization of materials.
(vi) Civil, mechanical, and electrical works.
(vii) Completion of the main building.
(viii) Solid waste collection and disposal.

Input Materials

The building will be constructed using common construction materials and construction procedures that are not expected to compromise the safety of the neighboring residents as well as the general environment. Among the following inputs will be required for construction:

(i) Raw materials e.g. sand, cement, blocks, hard core, iron sheets, gravel and ceramic tiles.
(ii) Reinforcement steel bars of various sizes depending the parts of the building
(iii) Timber (e.g. doors and frames, fixed furniture, etc.)
(iv) Glass panes for various sections of the building.
(v) Pipes (steel and plastics) for plumbing and waste conduits.
(vi) Water.

(vii) Paints, solvents, white wash, etc.
(viii) Machinery (concrete mixers etc.)
(ix) Labor force (of both skilled and unskilled workers).

6.1.3 Description of activities during the operation phase

Completion of construction activities will be followed by commissioning of the project. In this case the contractor is expected to hand over the ready market to the proponent. The proponent will there after organize for occupation and operation of the facility. Both solid and liquid wastes will be generated thus, the proponent shall avail litterbins within the compound for temporary storage. In addition, solid waste handlers will collect and dump wastes in approved dumping sites.

6.1.4 Decommissioning

During decommissioning, the building with all other associated infrastructure will be demolished in order to restore the parcel of land to its original state. Different kind of works and equipment will be deployed to carry out these tasks. This will produce a lot of solid waste that may be reused for other construction works or if not reusable, disposed of appropriately by a licensed waste disposal company. Electrical installations, sewerage system, furniture, pipes and sinks among others will be dismantled during decommissioning of the project. The proponent is expected to recover most materials for sale or future use. Those that are obsolete or greatly damaged shall be disposed in authorized dumping sites and/or incinerated to reduce their volume.

Decommissioning will also entail restoring the project area to its original state. Activities during restoration include landscaping, planting of trees and removal of barriers among others. It will be upon the proponent and the contractor to ensure restoration is done appropriately.

6.2 ANTICIPATED POSITIVE IMPACTS FROM BORDER TOWN ESTABLISHMENT

The anticipated positive impacts associated with border town establishment are as follows:

6.2.1 Access to central government services

The existing National government services such as Immigration, KRA, public administration and registration of persons, will be upgraded. It is expected that other services such as improved medical services, will be introduced.

6.2.2 Increased security

Participants noted that the security situation is not very good at the moment. With the proposed establishment of a police station and other national government security structures, security measures are likely to be improved.

6.2.3 Creation of employment

The project will provide direct employment to forest adjacent communities (CFAs members) during the various activities of the project. Labor will be required in the various establishments that will be introduced. The border town will attract diverse investors who will in turn employ locals in their various undertakings.

6.2.4 Local community involvement in forest management

The project, through CFAs involvement as per the Forests Act, 2005 will promote local community involvement in forest management due to the increased interaction with conservation groups and donors.

6.2.5 Improved infrastructure

Border town establishment will come with improved roads leading into and out of this urban center. Roads will be improved into all-weather roads. The town will be supplied with reliable source of energy that will serve various players.

Plate 6: Current state of the Main Kitale-Endebess-Suam road that stands to be improved should the border town at Suam be established

Neighboring communities will benefit from these services. There are plans to find a good and reliable source of portable water to be used within the town and by the adjacent communities.

6.2.6 Enhanced cross-border economic activities

The proposed border town will enhance trade between the two countries. Processing of inter-border crossing documents will be faster as compared to processing the same through Malaba or Busia border crossing.

Plate 7: Border town in Uganda side. Businessmen on the Kenyan side on makeshift structures

6.2.7 Poverty alleviation

There will be diverse sources of livelihoods that will go beyond the current over-reliance on agriculture forest goods and services, and menial work in the neighboring Anderson flowers.

6.2.8 Enhanced access to health facilities

There is a proposal to establish a health facility at the border town to serve the residents and those in the neighborhood.

6.2.9 Increased value of land

Prices of land in the neighborhood of the proposed site are very low. It is anticipated that this prices will respond positively with the establishment and operationalizing of the various activities in this area.

6.2.10 Improved livelihoods

There will be diverse sources of income and hence the corresponding betterment of the local's livelihoods.

6.2.11 Better utilization of natural resources

With proper urban and environmental planning, the ecosystem services will be appreciated by the residents and visiting groups. A serene environment characterized by an attractive and appealing environment, coupled with natural picturesque of the area will not only be a source of local tourist attraction, but also a potential magnet to attract international tourism.

6.2.12 Increased tourism in the Mt Elgon region

The proposed establishment of a tourist hotel at the border town will see tourists of all cadres visit the Mt Elgon region due to availability of tourism related services.

6.3 ANTICIPATED NEGATIVE IMPACTS

6.3.1 Soil disturbance

In order to pave way for various constructions, vegetation cover has to be reduced by felling the existing trees and uprooting the tree stumps by use of various methods. This will cause soil disturbance leading to erosion

6.3.2 Water use and depletion

There will be the exploitation of both surface and underground water resources. Due to the influx of people into urban areas, it is anticipated that water abstraction will be very high.

6.3.3 Pollution from urban agriculture

It's common to find people practicing agriculture in its various forms in most urban centers. Being an agricultural area, residents might opt to carry out some activities within the proposed urban area.

6.3.4 Reduced biodiversity

Legal and illegal extraction of some plant and animal material is expected to increase. Mt Elgon area is home to various medicinal plants. The area also is home to big and small game which has been hunted by man for food. Proper measure need to be put in place to prevent poaching.

6.3.5 Fire hazard and tree pests and diseases

The immediate neighborhood to the proposed town is the gazetted Suam forest. If no proper measures are put in place, unintended fires might start from this new township and then spread to cause destruction into the deeper parts of the forest.

The opening of the border town is likely to enhance movement of goods and services across the border. It's possible to have a pest contaminated material moving into the country and cause harm to our forest and agricultural resources. It's suggested that there be increased surveillance on goods passing through this border point.

6.3.6 Increased Human-wildlife conflicts

Stray animals such as monkeys, baboons, birds, and even snakes might find their way out of the forest and cause damage to the residents of the proposed town.

6.3.7 Tree Pests and diseases

Contaminated material might be passed through the border town only to cause damage on the Kenyan side.

6.3.8 Resource use conflicts

Competition for resources is likely to increase. This might spark out serious conflicts if no proper measures are in place.

6.3.9 Compaction and soil erosion

Continuous traction upon land by man, livestock and machinery can be the source of this problem.

6.3.11 Increased deforestation

Demand for building material and proximity to forest resources might trigger the illegal harvesting of forest resources.

6.3.12 Illegal wildlife poaching

There is likely to be increased poaching due to proximity of the town to the park. The town will be established in a forest reserve which also acts as a small wildlife dispersal area. The stray game is likely to be poached if rules are not enforced

6.3.13 Hydrology

Due to the creation of a built environment, runoff will be generated instead of percolating into the ground. Proper storm water and waste water drains will be put in place to drain off excess water.

6.3.15 Deterioration of Sanitary conditions

Lots of both solid and liquid waste will be generated in a town. Proper disposal facilities will be required to avoid the deterioration of the urban environment.

6.3.16 Pollution of R. Suam's water resources

Suam River is adjacent to the proposed town. Prudent management of Waste must be ensured to avoid pollution of this important water resource which serves downstream users before it drains into L. Turkana.

6.3.17 Insecurity

The border town might attract criminals who will be after the forest resources. Smugglers of items across the border are also likely to be found in this town.

6.3.18 Conversion of Agricultural land to urban development

Due to higher value of the land, adjacent land owners might be tempted to convert their land into urban use hence impacting negatively on food security.

6.6 Evaluation of Project Impacts

In assessing the significance of impacts, the five factors considered are:

1. Relationship of the impact to **temporal** scales – the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
2. Relationship of the impact to **spatial** scales – the spatial scale defines the physical extent of the impact.
3. The severity of the impact – the **severity/beneficial** scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected system (for ecological impacts) or a particular affected party. The severity of impacts can be evaluated with and without mitigation in order to demonstrate how serious the impact is when nothing is done about it. The word 'mitigation' means not just 'compensation', but also the ideas of containment and remedy. For beneficial impacts, optimization means anything that can enhance the benefits. However, mitigation or optimization must be practical, technically feasible and economically viable.
4. The **likelihood** of the impact in occurring – the likelihood of impacts taking place as a result of project actions differs between potential impacts. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.
5. Each criterion is ranked with scores assigned values as presented in Table 12 to determine the overall **significance** of an activity. The criterion is then considered in two categories, viz. effect of the activity and the likelihood of the impact. The total scores recorded for the effect and likelihood are then read off the matrix presented in the table below,

Table 2: Ranking of Evaluation Criteria

Effects	Temporal Scale Score		Score
	Short term	Less than 5 years	1
	Medium term	Between 5 and 20 years 2	2

	Long Term	Between 20 and 40 years (a generation) and from a human perspective almost permanent.		3
	Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there		4
	Spatial scale			
	Localized	At localized scale and a few hectares in extent 1		1
	Project area	The proposed site and its immediate environs 2		2
	Regional	District and Provincial level		3
	National	Country		3
	International	Internationally		4
	*	**Severity**	**Benefit**	
	Slight / Slight Beneficial	Slight impacts on the affected system(s) or party (ies).	Slightly beneficial to the affected system(s) or party (ies).	1
	Moderate / Moderate Beneficial	Moderate impacts on the affected system(s) or party (ies).	An impact of real benefit to the affected system(s) or party (ies)	2
	Severe / Beneficial	Severe impacts on the affected system(s) or party (ies).	A substantial benefit to the affected system(s) or party (ies).	4
	Very Severe / Very Beneficial	Very severe change to the affected system(s) or party (ies).	A very substantial benefit to the affected system(s) or party (ies).	8
Likelihood	**Likelihood**			
	Unlikely	The likelihood of these impacts occurring is slight		1
	May Occur	The likelihood of these impacts occurring is possible		2
	Probable	The likelihood of these impacts occurring is probable		3
	Definite	The likelihood is that this impact will definitely occur		4

** In certain cases it may not be possible to determine the severity of an impact thus it may be determined: Don't now/can't know*

	Effects														
likelihood		3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	2	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	3	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	4	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Table 3: Ranking matrix to provide an Environmental Significance

Environmental Significance Negative		
LOW	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent development. These impacts will result in either Positive or negative medium to short term effects on the social and/or natural environment	**4-7**
MODERATE	Social environment and result in severe negative or beneficial effects. An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which, in conjunction with other impacts may prevent its implementation. These impacts will usually result in either positive or negative medium to long term effect on the social and/or natural environment.	**8-11**
HIGH	These impacts would be considered by society as constituting a major and usually long term change to the natural and/or social environment and result in severe negative or beneficial effects.	**12-15**
VERY HIGH	A very serious impact which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects or very beneficial effects.	**16-20**

The ***environmental significance*** scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact that can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society.

Cumulative Impacts

Cumulative Impacts affect the significance ranking of an impact because it considers the impact in terms of both on-site and off-site sources. For example, the noise generated by an activity (onsite) may result in a value which is within the World Bank Noise Standards for residential areas. Activities in the surrounding area may also create noise, resulting in levels also within the World Bank Standards. If both on-site and off-site activities take place simultaneously, the total noise level at the specified receptor may exceed the World Bank Standards. For this reason it is important to consider impacts in terms of their cumulative nature.

Seasonality

Although seasonality is not considered in the ranking of the significance, it may influence the evaluation during various times of year. As seasonality will only influence certain impacts, it will only be considered for these, with management measures being imposed accordingly (i.e. dust suppression measures being implemented during the dry season).

Prioritizing

The evaluation of the impacts, as described above is used to prioritize which impacts require mitigation measures. Beneficial impacts do not require mitigation and therefore do not require prioritization. Negative impacts that are ranked as being of "**VERY HIGH**" and "**HIGH**" significance will be investigated further to determine how the impact can be minimized or what alternative activities or mitigation measures can be implemented. These impacts may also assist decision makers i.e. lots of **HIGH** negative impacts may bring about a negative decision.

For impacts identified as having a negative impact of "**MODERATE**" significance, it is standard practice to investigate alternate activities and/or mitigation measures. The most effective and practical mitigations measures will then be proposed.

For impacts ranked as "**LOW**" significance, no investigations or alternatives will be considered. Possible management measures will be investigated to ensure that the impacts remain of low significance.

A summary of the risk categorization for the identified impacts are as shown overleaf:

Table 4: Summary of risk categorization of project impacts

IMPACTS	WITHOUT MITIGATION					WITH MITIGATION		
	TEMPORAL	SPATIAL	SEVERITY	LIKELIHOOD	SIGNIFICANCE	SEVERITY	LIKELIHOOD	SIGNIFICANCE
	Short term <5 yrs Medium term 5-20 yrs Long term 20-40 yrs Permanent 40 yrs+	Localized Project Area Regional National International	Very Severe Severe Moderately Severe Slight No effect	Very unlikely Unlikely to occur May occur Definitely occurs Very High	High Moderate Low No significance Don't know	Very Severe Severe Moderately Severe Slight No effect	Very unlikely Unlikely to occur May occur Will definitely occur	Very High High Moderate Low No significance Don't know
Soil disturbance	Medium term	Localized	Moderate	Definitely occur	Moderate	Slight	Will occur definitely	Low
Biodiversity loss	medium term	Project area	Severe	Definitely occurs	Moderate	No effect	Will occur definitely	Low
Deforestation	medium term	Project area	Very severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Poaching of wildlife	medium term	Project area	Severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Hydrology	Medium term	Project area	Severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Deterioration of sanitation	Medium term	Project area	Very severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Pollution of R. suam waters	Medium term	Project area	Very severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Insecurity	Medium term	Localized	Severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Conversion of Agricultural land for urban use	Medium term	Project area	Very severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low
Soil compaction and erosion	Medium term	Project area	Severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low
Resource use conflicts	Medium term	Project area	Very severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low

Human wildlife conflicts	Medium term	Project area	Severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low
Fire hazard	Medium term	Project area	Severe	Definitely occurs	High	Moderately severe	Will occur definitely	Low
Tree pest and diseases	Medium term	Project area	Severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low
Water use and depletion	Medium term	Project area	Severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low
Pollution from use of pesticides in urban agriculture	Medium term	Project area	Severe	Definitely occurs	Moderate	Moderately severe	Will occur definitely	Low

CHAPTER 7: ANALYSIS OF PROJECT ALTERNATIVES

7.1 Significance of Alternatives

This Environmental and Social Impact Assessment (ESIA) Report of the Suam border town has identified positive and negative impacts and proposed mitigating measures. However, the study is not complete without the identification and analysis of alternatives that could be considered as viable options for the project site, design and implementation.

7.2 The 'No Project' Alternative

This alternative means that the status quo remains and the target area remain in their present state i.e. no establishing of a border town at the Suam border crossing. This implies that the current shortage of national government services and low economic activity at Suam border crossing will persist and even worsen. The country will lose out in its effort to achieve its economic targets as set out in the Vision 2030. In not undertaking the border town project, the County Government will incur opportunity cost of losing revenue in form of taxes and from planned commercial activities that would otherwise be obtained through the project establishment and the role of providing improved service and enhanced livelihoods to its people.

The no project alternative also implies reduced cross border activities and that the optimal use of such an important facility will be low. Social benefits such as employment opportunities for the local communities, improved security, provision of medical services, establishment of a tourist hotel, among others, will be forfeited. This alternative will lead to massive loss to the local communities in light of what the project intends to do to them.

7.3 The Proposed Project Option

Under this option, establishing a border town at Suam will be undertaken by the County Government of Transnzoia in collaboration with the National Government. The proposed project will assist in changing the livelihood of the local community besides increasing the country's economy through enhanced cross border business. Furthermore, the area will benefit from enhanced infrastructure such as road and electricity network.

The existing border crossings to Uganda at Malaba and Busia will be decongested with the opening and up-scaling activities at the proposed site. Currently there is an immigration office at the border but it's not fully utilized. Town establishment and

associated infrastructure will see the decongestion of other crossing points. Other benefits include;

- More jobs will be created in the construction industry;
- There will be the existence of a ready market for construction materials;
- It will contribute to the realization of vision 2030 of providing business space;
- It will result in further development and improvement of local infrastructure and
- There will be increased revenue inform of taxes to the government.

The proposed site is also ideal because of its proximity to passable roads and the locality has infrastructure such as electricity and water. In terms of security, the proposed site is safe and police surveillance is easy because of accessibility and being a border point between Kenya and Uganda.

7.4 Alternatives to border town establishment at Suam

7.4.1 Expanding the Chepchoina Market centre

Chepchoina market centre is approximately 10km from the proposed project site. Establishing a town here with all the proposed utilities is an alternative. This market center is surrounded by the Agricultural Development Corporation (ADC) land. The centre that was established during the colonial times has experienced a huge population growth and is currently constrained by space and a huge gap exists in terms of provision of essential services. Space for expansion to accommodate a modern hospital, a market and other essential services is limiting.

Any additional facilities at Chepchoina market centre will exert more pressure on this small market centre which is already supporting facilities beyond its capacity. The situation is made worse by the fact that the market centre hasn't been planned for waste management and other essential services.

Taking this option of expanding this Chepchoina market will not be a viable option. It will imply that many other important components of the project be dropped and hence lose the purpose of establishing this border town.

7.4.6 Border town establishment through Clean Development Mechanism (CDM) Option

The Clean Development Mechanism (CDM) is one of three market-based mechanisms in the Kyoto protocol, which are aimed at assisting developed countries meet their greenhouse gas (GHG) emission targets at the least cost under the Protocol. The main aims of the CDM are to:

- contribute to the stabilization of greenhouse gas concentrations in the atmosphere;
- assist industrialized countries achieve compliance with their emission targets under the Kyoto Protocol at the least cost;
- encourage the private sector and developing countries to contribute to emission reduction efforts, and
- assist developing countries in achieving sustainable development.

In order to achieve this, the County Government of Transnzoia through its planning office and the Environmental conservation stakeholders will identify vegetation that **MUST** be cleared to pave way for the town establishment and its associated infrastructure. The remaining vegetation will be maintained and/ or enhanced in order for them to continue providing their services of carbon sequestration. Vegetation removed must be re-established within the project area.

7.5 Mitigation for the Proposed Action

Mitigation measures, including best environmental management practices, have been recommended in this ESIA report, and when diligently implemented will help to protect the physical, ecological and socio-economic environment of the affected forest areas. CGT undertakes to incorporate all necessary measures to ensure adverse impacts are mitigated to the maximum extent practicable during all the project phases

CHAPTER 8: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

8.1 General

Along with the potential impacts presented in this chapter, proposed mitigation measures have also been highlighted for appropriate action. Some impact mitigation has already been proactively addressed in the design, and legal and regulatory framework, while others would be undertaken through considered incorporation in the implementation of the project and guided by the environmental and social management plan (ESMP) developed under this report. The ESMP provides a general outlay of the activities, associated impacts, mitigation action plans and appropriate monitoring indicators. Implementation timeframes and responsibilities are also defined.

8.2 Management Plan Principles

To realize the project goal, acceptability by a majority of the beneficiaries and minimal effects to the physical environment will require to be integrated in the project through constant consultations throughout the project coverage. It is recommended that management guiding principles specific to this project be developed that will allow integration of environmental management considerations during the construction and operations. Among the basic areas that need to be considered in guiding management of this particular project implementation will include;

i. Soil erosion control, prevention of siltation and discharge of pollutants into the River Suam mainly from runoff and contaminated storm water from the proposed town,
ii. Integration of environmental, social and economic functions into the project implementation,
iii. Compensations or appropriate acquisition process of any land acquired and/or property affected by the projects is in accordance with the laid down guidelines,
iv. The contractors and other players in the project activities are prevailed upon to implement the EMP through a sustained supervision and continuous consultations.

8.2 Specific Management Issues

In order to implement the management plan, it is recommended that County Government appoints an expert to oversee environment and management aspects and to co-ordinate and monitor environmental management the entire process of the project.

The responsibility relationship is as follows;

i. CGT will be responsible for coordination of activities and liaisons, particularly in Urban planning and associated social issues during the project implementation,

ii. CGT will liaise with the County Environment Officers on matters of environmental and social nature and overseeing that the implementation of the environmental management plan established under this report and that there are no adverse impacts,
iii. The National Environmental Management Authority (NEMA) through the County Environment Offices in the project shall be responsible of surveillance of environmental and social aspects of the project implementation,
iv. Water Resources Management Authority (WRMA), responsible of water resources management, will be responsible of streamlining water abstraction and use in the project areas.

8.4 Environmental and Social Management Plan

The scope of this environmental management plan (ESMP) document is to give guidelines to all parties involved in the designing, implementing and day to day running of the proposed town project in fulfillment of environmental and social requirements. The management plan has a long-term objective to ensure that:

i. Environmental management conditions and requirements are implemented throughout the border town's existence management cycle, and
ii. Precautions against damage to environment and property and claims arising from Damages are compensated expeditiously.

The tables below therefore summaries the Environmental and Social Management Plan for this project. They describe the parameters that can be monitored, and suggests how monitoring should to be done, how frequently, and who should be responsible for monitoring and action.

8.4.1 Environmental Management Plan for site clearance Phase

Table 5: Environmental Management Plan Site clearance Phase

Environment/Social Aspect	Anticipated negative impact	Mitigation / Enhancement	Responsibility	Monitoring time frame	Mitigation costs (Ksh)
Soil disturbance	- Felling and uprooting of tree stumps may cause soil disturbance	- Avoid pulling out tree stumps but rather use other environment friendly technology such as cutting trees very close to the ground. - Fell tree that must be removed. Otherwise retention of trees that may not hinder works should be encouraged	CGT KFS NEMA Project manager	Site clearance phase	100,000
Biodiversity loss	- Site clearance might lead to reduction or elimination of some species. - Illegal harvesting of some wildlife species might reduce species abundance	- Enhanced surveillance against poachers - Continuous sensitization of workers against overexploitation of species - Enforcement of trespass Act	KFS NEMA CFA Project manager	Project period	100,000
Deforestation	- The proposed site will have trees cleared in some areas. - Illegal poaching of trees might occur	- Enhanced surveillance against poachers - Continuous sensitization of workers against overexploitation of species - Enforcement of trespass Act	KFS NEMA CFA Project manager	Project period	100000

Poaching of wildlife	- Workers might poach stray wild animals for food - Small game Poachers might gain entry into the forest to poach	- Enhanced surveillance against poachers - Continuous sensitization of workers against overexploitation of species - Enforcement of trespass Act	KFS NEMA CFA Project manager	Project period	70,000
Hydrology	- Clearance of vegetation might reduce water infiltration into the underground	Ensure that no complete elimination is done Bare ground to be grassed Soil and water conservation structures	Project manager CGT	Project period	10000

8.4.2 Environmental Management Plan for the town operational Phase

Table 6: Environmental Management Plan for the town operationalizing Phase

Environment/Social Aspect	Anticipated negative impact	Mitigation / Enhancement	Responsibility	Monitoring time frame	Mitigation costs (Kshs)
Fire hazard	Established plantation may be predisposed to fires due to their uniformity and inherent tree characteristics such as resins and oils	- Regular maintenance of firebreaks - Removal and dispose brush from the forest boundary - Install and maintain fire hazard signs - Sensitise the communities on fire hazards - Maintain fire preparedness including regular patrols - Grade roads that act as barriers before onset of fire season - Adopt no-burn strategy in high altitude - areas - Enforce Grass Fire Act Cap 327 - Set up fire watch towers in all forests	- KFS - CFAs - Fire Scouts	Entire project life	Cost included in FMPs
Increased human - wildlife	Increase in human-wildlife conflicts especially related to	- CFAs should liaise with KWS and	- KFS - CFAs	Entire project life	Cost included in

conflicts	stray animals into urban area	establish a reliable Problem Animal Control unit to manage human wildlife conflicts - KWS to keep wildlife within park - Fencing in forest plantation areas - Use bee hive barriers which have proved to be effective in controlling problem elephants.	- KWS		FMPs
Deterioration of sanitation	-poor waste management might lead to impaired sanitation -pit latrines might contaminate groundwater	-establish and manage well a waste management site -establish and run well a sewerage system	- CGT	Entire project life	100M
Pollution of R. Suam water	- Waste might be thrown/dumped into the river - Accidental spillage into the river -	- Demarcate and put visible beacons in place to show extent of riparian zone - Respect planning laws - Enforce relevant laws - Operationalize a well-designed dumpsite	- NEMA - CGT - WRMA - Town administrator	Entire project life	2million
Insecurity	-Being a border town, illegal migrants from other countries are likely - a growing town might experience insecurity issues	- Tight surveillance of border - Install CCTV - Empower immigration office at the border - Expand National Police services at the border - Community policing	- NPS - Immigration officers - CGT	Entire project life	1 Billion from both National Government and CGT

Conversion of Agricultural land to urban use	Attractive land prices might induce adjacent community to convert agricultural land into urban use	- Sensitize locals to make informed decisions - Change of use to be done	- CGT - NLC	Entire project life	1M
Soil compaction and erosion	Due to many construction projects, soil are likely to be loose and hence prone to erosion	- Soil and water conservation structures	- CGT - NEMA - Agric	Entire project life	500,000
Resource use conflicts	Portable water Resources are likely to be scarce with increasing population	- Proper water resource planning - Establish gravity water supply scheme	- CGT - NEMA - Agric - CFA - WRMA - KWS - KFS	Entire project life	1 billion
Human wildlife conflicts	Stray wildlife such as monkeys, snakes and baboons may trigger conflicts	- Fence off town especially border with forest - Deploy KWS staff near town for quick response	- CGT - NEMA - Agric - KWS - CFAs	Entire project life	4M
Tree pest and diseases	Movement of forest produce across the border may trigger the outbreak of certain pests and diseases	- Enhanced surveillance by customs , KRA, KEPHIS and KWS officers	- CGT - NEMA - CFA - KFS - Agric	Entire project life	4M
Water use and depletion	Over extraction of water resources might lead to depletion	- Water resource planning	- CGT - WRMA - NEMA - Agric	Entire project life	1M
Water pollution due to urban agriculture	Use of fertilizers, pesticides, and other agro-chemicals might cause pollution of water	- Formulation and enforcement of rules and regulations to guide this practice	- CGT - NEMA - Agric - WRMA	Entire project life	1M
Encroachment into R. Suam's riparian zone	Pressure for commercial land might lead to	- Enforce physical planning rules and	- CGT - NEMA	Entire project life	2M

	encroachment into the riparian zone	reguations	- Agric - WRMA		

CHAPTER 9: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

The environmental and social monitoring will involve a continuous surveillance of performance of specific functions during the planation management of the project is as follows:

Table 7: Environmental and social monitoring plan

Environmental/social aspect	Monitoring indicators	Frequency	Remarks
Environmental pollution (Air, noise, water, etc.)	Fire outbreaks	Monthly	- Consider boundary between town and forest - Extra caution during dry seasons
	Air quality	Continuous visual observation, quarterly measurement	- Mainly dust during infrastructure development - During construction by various investors
	Noise and vibrations	Continuous visual observation, quarterly measurement	- Depends on maintenance level of construction equipment
	Water quality	Quarterly	- Due to sediment load and agrochemical use
	Soil loss	Continuous surveillance	- Depends on soil disturbance
Ecological trends	Invasive species	Annual survey	- May arise from increased activity in newly created town - Proper mitigation measures required immediately
	Pests and diseases	Quarterly	- May arise from increased activity across the border - Urgent and appropriate mitigation measures required immediately
	Natural habitats	Continuous survey	- Should not be affected
	Deforestation	Continuous survey	- Be closely monitored to protect ecological integrity of the Mt Elgon forest
Hydrology	Groundwater	Annual survey	- Adequate ground cover to be maintained

	Sediment loss	Annual measurements	- Important to protect the Suam River water quality
Social	Human wildlife conflicts	Continuous survey	- KWS and CFAs to be involved in preventive and compensation efforts
	Conflict resolution and management	Continuous during project life	- KWS and CFAs and local administration to be involved in preventive and resolution efforts
	Land use changes	Continuous during project life	- An important indicator of ecological sustainability
	Security	Continuous during project life	- Has great influence on economic performance of the town - Will determine investor confidence
Economic	Revenue generation	Annual	- Will indicate value for investment done by government
	Improved livelihoods	Annual	- A pointer of Government goal of establishing this town

CHAPTER 10: CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

a) The County Government of Transnzoia as the proponent proposes this project of border town establishment at Suam border to provide basic services to the area residents as well as expand the economic activities across the border.
b) The National Government stands to increase on revenue collection due to increased cross-border activities.
c) From a socio-economic context, the project is socially desirable as it will enhance the provision of essential services such as improved health services, access to quality education, portable water supply, and improved security.
d) It is hoped that CGT as the custodian this project will ensure that the proposed project is implemented and managed on sound socio-economic, socio-cultural and environmentally sustainable basis.

10.2 Recommendations

A summary of the recommendations for the prevention and mitigation of potentially adverse environmental and socio-economic impacts are stated below:

i. The proponent to implement the mitigation guideline provided in the environmental management and monitoring plan;
ii. Border town establishment works at Suam be carried out in accordance with approved Physical planning Act and associated regulations, policies and laws;
iii. The establishment and Operation of the said town to comply with the best management practices and the principles of environmental management including the principles of sustainability, intergenerational equity, prevention, precaution and polluter pays;
iv. A complete audit be undertaken and submitted to NEMA a year after the project is commissioned to ensure that all the proposed mitigation measures have been complied with. This will be followed by the annual self-audits.

Overall, the proposed border town establishment at Suam border crossing has been planned to be implemented with due attention to the environmental mitigation and management measures thus, it is anticipated that it will not pose any serious adverse and negative environmental and social impacts. Thus, it is recommended that the project be approved by NEMA for implementation

REFERENCES

ACTS-UNEP, 2001.The Making of a framework Environmental Law in Kenya.Actspress,Nairobi, Kenya.

Ahmad, Y. J., and G. K. Sammy. 1985. Guidelines to Environmental Impact Assessment in Developing Countries. Sponsored by the United Nations Environment Programme.

Environmental Management and Co-ordination Act. 1999. Government Printer, 14th January 2000.

IUCN: Community involvement in Forest Management in Eastern and Southern Africa, 2004

Republic of Kenya (1999).The Environmental Management and Co-ordination Act, No. 8 of 1999. Government Printer, Nairobi.

Republic of Kenya (2003). Legislative Supplement No. 31, Legal Notice No. 101: The Environmental (Impact Assessment and Audit) Regulations, 2003. Government Printer, Nairobi.

Republic of Kenya (2006). Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006 – Legal Notice No. 131. Government Printer, Nairobi.

Republic of Kenya (2006). Environmental Management and Coordination (Waste Management Regulations, 2006 – Legal Notice No. 121. Government Printer, Nairobi.

Republic of Kenya (2006). The Environmental Management and Coordination (Water Quality) Regulations, 2006 – Legal Notice No. 120. Government Printer, Nairobi.

Republic of Kenya /Forest Action Network and others: Understanding the new Forest Policy and Forests Act (2005): A framework for sustainable forest management in Kenya: 2006

Republic of Kenya, 1977. The Wildlife (Conservation and Management) Act Chapter 376 Laws of Kenya. The Government Printer, Nairobi, Kenya.

Republic of Kenya, 1982. The Forests Act Chapter 303 Laws of Kenya. The Government Printer, Nairobi, Kenya.

Republic of Kenya, 1989. The Wildlife (Conservation and Management) Act Chapter 376 Laws of Kenya. The Government Printer, Nairobi, Kenya.

Republic of Kenya, 1994. The Kenya National Environment Plan (NEAP) Report. Ministry of Environment and Natural Resources. The Government Printer, Nairobi, Kenya.

Republic of Kenya: The Forest Act- 2005

United Nations Environment Programme (UNEP). 1996. Environmental Impact Assessment: Issues, Trends and Practice.

World Bank, Environmental Assessment Sourcebook. Volume II. Sectoral Guidelines. Technical paper number 140. Environmental Department. The World Bank, Washington,D.C., 1998.

ANNEXES

Annex Description

1. Stakeholder invitation letter *(Appendix 3)*
2. Forum programme *(Appendix 4)*
3. List of participants who attended the stakeholder's forum *(Appendix 5)*
4. Filled stakeholders' participation questionnaires *(Appendix 6)*