

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY REPORT

PROPOSED DEGAZETTEMET OF SEREGEYA LIKUYANI BLOCK 1 FROM TURBO FOREST RESERVE

Location:

Likuyani Ward, Likuyani Sub-county in Kakamega County
Coordinates at St. Columban's Primary School: Latitude 0.6338476° N, Longitude
35.0516601° E

Proponent

County Government of Kakamega (CGK)
P. O. Box 36 – 50100 Kakamega, Kenya

**Prepared for submission to the National Environment Management Authority (NEMA)
by:**

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CERTIFICATION

This is to certify that an ESIA has been carried out for the Proposed Degazettement of Seregeya Likuyani Block 1 from Turbo Forest Reserve. The assessment was carried out by NEMA-registered EIA/ EA experts in accordance with Environmental Management and Co-ordination Act (EMCA), 1999 (Cap. 387) (Amendment 2015) and the Environmental (Impact Assessment and Audit) Regulations, 2003. The experts also compiled this ESIA study report. We the undersigned hereby certify that the information and particulars given in this report are correct as at the time the ESIA was conducted.

FOR THE CONSULTANT (ENVERTEK AFRICA CONSULT LIMITED)

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LIST OF ABBREVIATIONS AND ACRONYMS

%	Percentage
°	Degrees (A unit of measuring latitudes and longitudes)
°C	Degrees Celsius
asl	Above Sea Level
Cap.	Refers to ‘chapter’ in the Laws of Kenya
CBO(s)	Community Based Organization(s)
CFA	Community Forest Association
CGK	County Government of Kakamega
CGUG	County Government of Uasin Gishu
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management and Monitoring Plan
ft	Foot/ feet (a unit of measuring length)
GoK	Government of Kenya
Ha	Hectares (a unit of measuring area of land)
Hon.	Honourable
KFS	Kenya Forest Service
KWS	Kenya Wildlife Service
M/ m	Metre(s) (a unit of measuring length)
MCA	Member of County Assembly
mm	Millimeter(s) (a unit of measuring length)
MP	Member of Parliament
NCLR	National Council for Law Reporting
NEAP	National Environment Action Plan
NEC	National Environmental Council
NEMA	National Environment Management Authority
NMK	National Museums of Kenya
NYS	National Youth Service
OSHA	Occupational Health and Safety Act
P. O.	Post Office
PDP	Part Development Plan
PEV	Post-election Violence
Reg. No.	Registration number
Spp	Species
TOR	Terms of Reference

DEFINITIONS OF OPERATIONAL TERMS

Authority: Refers to NEMA established under section 7 of EMCA, 1999.

Decommissioning: This is the permanent withdrawal from a site or close down of a facility for restoration.

Developer/ Proponent: Means a person proposing or executing a project that is subjected to an EIA or undertaking an activity specified in the second schedule of EMCA, 1999 (Cap. 387) (Amendment 2015). In this case, the Proponent is County Government of Kakamega (CGK).

EA: The systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing in management of the environment.

EIA: A systematic evaluation of activities and processes of an upcoming project/ facility to determine how far these activities and programs conform to the approved environmental management plan of that specific project and sound environmental management practices.

EMP: Means all details of project activities, impacts, mitigation measure, time, schedule, costs, impact or activities, including monitoring and environmental audit during implementation and decommissioning phase of a project.

Environment: Physical factors of surroundings of human beings including land, water, atmosphere, climate, sound, odor, taste, the biological factors of animals and plants and social factor of aesthetics, culture and includes both the natural and the built environment.

ESIA: An EIA project or study with many social issues.

Excision/ degazettement: In this report, excision/ degazettement refers to a legal process that will lead to the separation of the pieces of land under Seregeya Likuyani Block 1 from the land under Turbo Forest Reserve.

Involuntary resettlement: Refers both to physical displacement through relocation or loss of shelter and to economic displacement where there is loss of assets or access to assets that leads to loss of income sources or other means of livelihood as a result of project-related land acquisition and/ or restrictions on land-use in which the affected persons or communities do not have the right to refuse land acquisition or restrictions on land-use.

Mitigation: Measures which include engineering works, technology improvement management ways and means of minimizing negative aspects, including socio-economic and cultural losses suffered by communities and individuals, whilst enhancing positive aspects of the project.

Project: Means any undertaking that may have an impact on the environment.

Scoping: Is the process of determining the content and extent of the matters that should be covered in the environmental report to be submitted to the Authority for projects that are subject to ESIA.

Screening: It is a coarse analysis of the possible impacts of an action with a view to identifying those impacts which are worthy of detailed study for a project to be considered for an ESIA process or not.

Standards: Means the limit of discharge or emission established under the Act or under Regulations.

EXECUTIVE SUMMARY

This document is an Environmental and Social Impact Assessment (ESIA) study report for the Proposed Degazettement of Seregeya Likuyani Block 1 Turbo Township from Turbo Forest Reserve. The purpose of Environmental and Social Impact Assessment (ESIA) is to identify potential positive and negative environmental impacts associated with a proposed project and thus provide recommendations on how to take advantage of the positive impacts on one hand and how to mitigate the negative environmental impacts on the other. The Proponent of the proposed project is County Government of Kakamega (CGK).

The EIA team carried out the assessment using a combination of methods including consultations with the Proponent; ground surveys; review of the project-related documents; and public participation meeting with the area residents and other interested people and groups in the area regarding the proposed project.

Seregeya Likuyani Block 1 is found in Likuyani Ward, Likuyani Sub-county in Kakamega County. It is neighbored by Turbo Township in Uasin Gishu County to the West, Turbo Forest Reserve to the North, East and Northeast. Webuye – Eldoret Highway traverses the area to the South of Seregeya Likuyani Block 1. The area to be degazetted consists of 140 acres for the development of Seregeya Likuyani Block 1 Turbo Township i.e. a market, CGK offices and social amenities; 460 acres of agricultural land; and 100 acres under police station and National Youth Service (NYS). The area is completely settled but still under Turbo Forest Reserve.

The excision exercise will entail identification of genuine settlers and the acreages of land that was allocated to them. There will be marking of areas under forest reserve and riparian reserve, areas of significant cultural and environmental importance, and the effected community agricultural land. Ground surveys will be done to establish areas that were set aside for social infrastructure including access roads, schools, places of worship, dispensaries and government offices and community land and the need to establish new ones. Title deeds will be processed and issued to genuine settlers. The objective of the proposed project is to facilitate acquisition of land-holding rights by settlers and government and social facilities including a police station, a market, National Youth Service (NYS) and churches; prevent haphazard development; and expand commercial area, public purposes and utilities, and residential and educational spaces.

During the assessment, various Acts and Regulations were reviewed to gather information which would help in preparing the project. This review was done within provisions of the county and national policy papers, Acts of Parliament, codes and regulations; and international frameworks. Some of the legislations that were reviewed include:

- a) The Constitution of Kenya, 2010
- b) Environmental Management and Coordination Act, 1999 (Cap. 387) (Amendment 2015)
- c) National Environment Policy, 2012
- d) County Governments Act, 2012
- e) Physical Planning Act, 1996 (Cap. 286)
- f) Kakamega County Integrated Development Plan (CIDP) II (2018 – 2022)
- g) Forest Conservation and Management Act, 2016
- h) Agriculture, Fisheries and Food Authority Act, 2013
- i) Land Control Act (Cap. 302) (Revised Edition 2012)

- j) Land Act, 2012
- k) Public Roads and Roads of Access Act (Cap. 399)
- l) Urban Areas and Cities Act, 2011
- m) Physical and Land-use Planning Act, 2019
- n) World Commission on Environment and Development (1987)
- o) World Bank (WB) Performance Standards on Environmental and Social Sustainability
- p) Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests
- q) UN Framework Convention on Climate Change (UNFCCC)
- r) Rio Declaration on Environment and Development (1992)

The writing of this report adopted various similar case studies within and outside the area.

Public participation was conducted by consultations with the Proponent and a public participation meeting with the area residents and other interested people and groups in the area regarding the proposed project. From the public consultation, it was evident that the proposed project has high public support and the people have no objection with the proposed project at the proposed site.

Feasible land-use options were compared in terms of cost and benefit criteria: environmental impacts, social acceptability, economics (including productivity of land-use) and design feasibility. These included the “no-action” alternative, the relocation alternative and the alternative land-uses option.

Potential beneficial and adverse environmental and social impacts associated with the proposed project were identified and discussed. The main positive contribution of the proposed project is that the excision will allow the community members have full land ownership rights. Additionally, socio-economic development will be enhanced in the area and haphazard development will be minimized. A summary of these potential impacts and a brief description of their mitigation measures have been provided in Table I.

Table I: Summary of potential areas of concern

Area of concern	Recommended action
Limited land-holding rights	Issue title deed to affected settlers
Limited access to communal resources and assets	<ul style="list-style-type: none"> a) Develop appropriate means of access through demarcation and creation of access roads within the degazetted area b) Develop an all-inclusive joint forest management plan between Kenya Forest Service (KFS) and the community or update the existing management plan to cater for the current issues
Limited access to social services and facilities and increased pressure on existing social services and facilities	Establish and/ or construct all the needed peripheral developments within the degazetted area
Changed subsistence/ livelihoods and income-earning capacities	Capacity building of the community members through training and agribusiness opportunities

Area of concern	Recommended action
Changes in movement and socialization patterns and other impacts on social groupings and social behaviours	Sensitization to bring together the people in the community and educate them on need for staying together in harmony
Loss of forest land forest resources and challenges in forest management	<ul style="list-style-type: none"> a) Properly demarcate the forest land to differentiate it from the community land and enforce laws governing access to and use of forest resources b) Re-establish vegetation in farms, riparian areas and in annihilated areas within the forest through implementation of well-designed afforestation and reforestation programmes by planting of appropriate plants c) Sensitize the community on the importance of conserving the forest and the need for staying together in harmony
Post-excision establishment of social and physical infrastructure	<ul style="list-style-type: none"> a) Involve/ consult appropriate professional personnel incorporating environmental experts, engineers, physical planners, public works officers, architects, and public health officers among others when planning to establish these structures b) Conduct screening and prepare environmental assessment reports for respective projects listed under the Second Schedule of the Environmental Management and Coordination Act (EMCA), 1999 (Cap. 387) (Amendment 2015) and submit them to the Authority for further advice and/ or approval c) Demarcate the project area to be affected by the respective projects/ structures in order to prevent their effects from spilling over to other areas d) Provide workers with appropriate protective equipment e) Re-establishing vegetation in some or part of the disturbed areas through implementation of a well-designed agroforestry and/ or landscaping programme f) Establish storm drainages, sanitary facilities (pit latrines and septic tanks or a public sewer system) in accordance with advice from relevant professionals g) Rehabilitate areas within and outside the respective project sites that will have been adversely affected by these project activities
Increased spread of COVID-19	Provide adequate hand washing facilities e.g. soap and water, hand sanitizers, face masks and temperature testers/ meters at the site

There is an Environmental Management Plan (EMP) at the end of this report. This plan ensures that environmental impacts are identified and mitigated during all phases of the project.

A number of recommendations have been given at the end of the report. The report concludes that if all the suggested mitigation measures are followed and the recommendations put in place, then the proposed project will not adversely affect the environment.

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1. INTRODUCTION

1.1 Background to the proposed project

The County Government of Kakamega (CGK) is seeking approval for the Degazettement of Seregeya Likuyani Block 1 from Turbo Forest Reserve in Likuyani Ward, Likuyani Sub-county in Kakamega County. This degazettement will involve the excision of about 700 acres, which are part of the 1,577.88 Ha under Mautuma Settlement Scheme that is located within Turbo Forest Reserve. These 700 acres include 140 acres that have been approved for the development of a market, CGK offices and social amenities i.e. the Seregeya Likuyani Block 1 Turbo Township (Appendix 1). They also include 100 acres under a police station and the National Youth Service (NYS) and 460 acres of agricultural land on which over 3,000 residents translating to about 225 households have settled. The Ministry of Lands and Physical Planning will issue title deeds to these people on approval of the proposed degazettement. The larger Mautuma Settlement Scheme has been in existence for about 29 years, established in 1992 for settling squatters. The 2007/ 2008 post-election violence (PEV) forced most of these settlers to move out of the area. The objective of the proposed degazettement is to facilitate acquisition of land-holding rights by settlers and government and social facilities including a police station, a market, NYS and churches; prevent haphazard development; and expand commercial area, public purposes and utilities, and residential and educational spaces. This will create a market centre and will help in planning for social amenities for the area residents in order to meet their increasing economic and social needs.

1.2 Justification of the Environmental and Social Impact Assessment

According to the Legal Notice No. 31, Legislative Supplement No. 16 published in the Kenya Gazette Supplement No. 62 on 30th April, 2019 i.e. Amendment of the Second Schedule which lists the projects to undergo EIA [Section 58 (1) of EMCA, 1999 (Cap. 387) (Amendment 2015)], the proposed project (degazettement) is categorized as a Medium-Risk project. The project falls under the category described as “Forestry related activities including – Excision of gazetted forests i.e. Sub-section 3. (7) (d). Therefore, it requires undertaking of an ESIA before it is implemented in compliance with Sections 58 to 67 and 138 of the Act i.e. EMCA, 1999 (Cap. 387) (Amendment 2015) and Section 31 (3) (a) (i) and (ii), of its subsequent legislation i.e. the Environmental (Impact Assessment and Audit) Regulations, 2003. These require all projects listed under the Second Schedule of the Act to be subjected to ESIA and their reports submitted to the Authority for licensing before commencement. Furthermore, the proposed project has potential to pose both environmental and social impacts and must be subjected to ESIA. The Environmental (Impact Assessment and Audit) Regulations, 2003 provides guidelines for carrying out ESIA in Kenya. The ESIA will assist the Proponent, NEMA and all other stakeholders in understanding potential environmental consequences of a proposed project and thus provide a basis for making informed decisions on the proposed project. It is for this reason that CGK is undertaking an ESIA as a prerequisite step for the proposed undertaking.

1.3 Objectives of the Environmental and Social Impact Assessment

The following are the main objectives of the ESIA:

- a) To comply with EMCA, 1999 (Cap. 387) (Amendment 2015) and other relevant county, national and international legislations;
- b) To examine, evaluate and assess the likely environmental impacts that would arise with the implementation of the excision exercise; and
- c) To establish a benchmark for an appropriate environmental management system that aims at sustainability of the environment.

1.4 Terms of Reference for the Environmental and Social Impact Assessment

The TOR developed for this ESIA therefore covered the following:

- a) Generate environmental baseline conditions of the project area and review of available information and data related to the proposed degazettement exercise.
- b) Establish key areas of environmental, health and safety concerns and effects associated with the proposal focusing on both the positive and negative effects as well as effects to the biophysical, social, economic and cultural components of the environment. The potential impacts must relate to the location of the proposed area.
- c) Outline the legislations and regulations relevant to the proposal, review the relevant legislative frameworks and show their relevance in relation to the exercise.
- d) Describe the potentially affected components of environments including the local people and social facilities.
- e) Obtain the views and opinions of the affected communities, both original local people and resettled people regarding the proposed excision exercise.
- f) Describe and analyze alternatives to the proposal and processes and the reasons for preferring the selected alternative.
- g) Assess the capacities of agencies that will be involved in the implementation of proposed project and the mitigation measures.
- h) Assess socio-cultural aspects including present and projected impacts by use of qualitative and quantitative methods.
- i) Analyze social aspects and beneficiary participation analysis of the social aspects.
- j) Analyze impacts and recommend mitigation measures.
- k) Generate comprehensive environmental and social management and monitoring plans for the proposed project covering all appropriate phases upon which all mitigation/enhancement measures will be carried out, specifying who will be responsible for their implementation and the schedule for their implementation. The monitoring plans indicate the parameters to be monitored, the frequency of monitoring, the indicators of performance, the organizations/ individuals responsible for monitoring and the associated costs.
- l) Generate a comprehensive ESIA project/ study report in accordance with the Environmental (Impact Assessment and Audit) Regulations, 2003 for submission to the Authority and for further instructions and/ or approval.

1.5 Scope of the ESIA

In order to accomplish the above TOR, the Proponent and the EIA/ EA experts did the following:

- a) Collected baseline information relevant to the proposal;
- b) Described the location of the proposed activities;
- c) Provided a clear description of activities to be undertaken in all phases of the proposed project and the environmental changes that will occur;
- d) Identified and described the processes to be followed and outcomes in all phases;
- e) Undertook a public participation process by holding a public meeting and consultations in order to obtain views and comments from interested and affected persons;
- f) Identified and evaluated the economic and socio-cultural impacts of the proposed project to the local community, the county and the nation in general;
- g) Identified mitigation measures to the identified impacts and developed action plans that ensure the health and safety of the workers and neighbours in the project cycle;
- h) Developed environmental management and monitoring plans for effective management of the environment and for future monitoring; and
- i) Prepared an ESIA project/ study report and necessary soft and hard copies and submitted them to the Authority in the prescribed submission form.

1.6 Assessment methodology and limitations

The general steps that were followed during the assessment included:

- a) Extensive site tours to physically inspect and document existing baseline information especially facilities and natural and socio-economic features of importance in the schemes and neighbouring areas.
- b) Interviews and consultations with the Proponent; relevant government officials from Kenya Forest Service (KFS), NYS and Kenya Police; and other parties of interest including the area residents.
- c) Environmental scoping to help narrow down to the most significant issues.
- d) Desktop studies for documentary review on the nature of the activities of the proposed activities, proposal's related documents, processes, policy and legislative frameworks as well as the environmental setting of the area amongst other things.
- e) Review of draft reports by the Proponent, the community and the consultant and production of final report for submission to the Authority.

The main limitation to the assessment was inadequate existing and reliable information. Thus, the ESIA team relied on responses from stakeholders and the Proponent. The consultant has evaluated information obtained within the limits of the established scope of work.

1.7 Organization of report chapters

The following are the main chapters of this ESIA report:

1. Introduction which details the background information and rationale for the ESIA
2. Description of the area of influence and proposed activities
3. Baseline information of the proposed area
4. Policy-legal and administrative framework
5. Public consultations and disclosures
6. Project alternatives
7. Potential impacts and mitigation/ enhancement measures
8. Environmental Management and Monitoring Plans
9. Recommendation and Conclusions

2. DESCRIPTION OF THE PROPOSED PROJECT ACTIVITIES

2.1 Preliminary activities

In the initial stages, a committee was established to oversee the process of excision. This committee consists of representatives from various ministries, departments and authorities from the county and national governments and the local community. The committee has facilitated the carrying out of the ESIA, production of the ESIA study report and submission to the Authority for review and licensing. The proposal will also be presented to the national assembly and senate for approval.

2.2 Proposed activities

Some of the proposed activities include:

- 1) Public meetings between the relevant ministries, departments and authorities at the community, county and national levels.
- 2) Identification of genuine settlers and the acreages of land that was allocated to them.
- 3) Ground surveys to establish areas that were set aside for individual private lands; and social infrastructure including access roads, schools, places of worship, dispensaries and government offices and community land and the need to establish new ones.
- 4) Marking of areas under forest reserve and riparian reserve, areas of significant cultural and environmental importance, and the effected community agricultural land.
- 5) Education and sensitization meetings in order to make the community aware of the importance of staying together in harmony and the need for them to protect the environment.
- 6) Capacity building to the community and other stakeholders that will be involved in the implementation of mitigation measures.
- 7) Processing and issuance of title deeds to the genuine settlers.
- 8) Monitoring and evaluation to ensure compliance with an approved resettlement plan.

3. BASELINE INFORMATION OF THE PROPOSED AREA

3.1 Introduction

In this chapter, the proposed project area and its neighbourhood are described in terms of resources, vegetation, land-use patterns, socio-economic activities, population, topography, climate and geology among others in order to provide information from which the potential impacts of the proposed activities can be predicted.

3.2 Location

Seregeya Likuyani Block 1 is neighboured by Turbo Township in Uasin Gishu County to the West, Turbo Forest Reserve to the North, East and Northeast. Webuye – Eldoret Highway traverses the area to the South of Seregeya Likuyani Block 1. The area in question is completely settled but still under Turbo Forest Reserve. Figure 3.1 presents Seregeya Likuyani Block 1 and its neighbourhood. The PDP for the area is attached (Appendix 1).



Figure 3.1: Seregeya Likuyani Block 1 and its neighbourhood

Source: Google Maps (2020)

3.3 Challenges to development and economic growth in the area

The area faces a number of challenges to socio-economic development including:

- a) Poor access road connectivity to the areas far away from major roads and especially areas within the Seregeya Likuyani Block 1;
- b) The increasing population which poses pressure on the existing resources for example potable water, land and the forest and facilities such as schools and health facilities resulting into encroachment into the forest, reserved lands and private property and consequent conflicts among the community members and between the community and authorities such KFS;
- c) Limited access to resources such as potable water and facilities such as schools and places of worship;
- d) Conflicts over access to and use of resources such as potable water, land and the forest and facilities such as schools;
- e) Mono-culture that has reduced the fertility of land and resulted in encroachment into riparian reserves and forested areas;
- f) Unregulated development due to non-formalized land ownership arrangements;
- g) Conflicts over collection of revenue from the area between officers from CGK and County Government of Uasin Gishu (CGUG) since the area in question borders Uasin Gishu County; and
- h) Poorly maintained storm drainages that are associated with silt-filled culverts.

3.4 Bio-ecological environment

There are no wildlife sanctuaries, national reserves and national parks within the Likuyani Ward. Turbo Forest Reserve is the only protected area in the area. Animals within this reserve include some species of butterflies, birds, monkeys and snakes. Vegetation is characteristic of modified tropical rainforest. Turbo Forest Reserve is the main forested area in the area and has a high diversity of flora and fauna. It consists of thick shrubs and trees with grass cover in exposed places especially where anthropogenic activities have not adversely affected the plant cover. The main trees in the forest are plantations of *Cupressus lusitanica* (cypress) trees. Other trees in the area include *Markhamia lutea*, *Bischofia javonica*, *Spathodea nilotica*, *Croton megalocarpus*, *Eucalyptus* spp, and *Pinus* sp. In human settlement areas, land is under agricultural crops including maize and beans. Farms have scattered trees most of which are planted exotic trees such as *Eucalyptus* spp, *Grevillia robusta* and *Cupressus lusitanica* and very few reserved indigenous trees. Trees in homesteads and farms are used mainly for shade, boundary demarcation, fencing, production of fruits, timber, fuel wood and for ornamental purposes. Common fruit trees include *Persea americana*, *Syzygium guminii* and *Eryobotria japonica*. Shrubs include *Lantana camara*, *Tethonia diversifolia* and *Solanum incanum*. Domesticated animals in the sub-county include cattle, sheep, goats, pigs and poultry among others.

3.5 Physical environment

3.5.1 Topography

Topography in ranges from gentle slopes in higher areas to sharp slopes as the land approaches valleys. Generally, the area is characterized by rough undulating terrain with slopes falling sharply into river and stream valleys.

3.5.2 Altitude and climate

The average altitude of the proposed site is about 1,877 m asl. The climate of the area is tropical sub-humid. It is comparable to that of the wider Western Region and is characterized by the following:

3.5.2.1 Rainfall

Annual precipitation is high. Rainfall is spread into two wet seasons. The long rains usually begin from March and end in June while the short rains span from August to October. The average annual rainfall is 1,000 mm and it varies between 1,000 mm and 2,200 mm.

3.5.2.2 Temperatures

Temperatures range from 13 °C to 32 °C depending on the month of the year. The mean maximum varies from 22 °C in July/ August to 28 °C in March. Diurnal temperature variations are minimal

3.5.2.3 Wind patterns

An occasional dry season characterized with hot sun and strong winds is an annual feature in the area. A significant feature of the climate is the frequency with which the wind comes from the Northeast and to a somewhat lesser degree from the Southeast. These are the Northeast and Southeast monsoons and blow very steadily but without high intensity. Both wind run and mean wind speed are at their maximum in December. Winds also remain high during January, February and March that coincides with the period of higher potential evaporation.

3.5.2.4 Sunshine and solar radiation

Solar radiation and sunshine are considered together since they are so closely connected. The wider Western Region experiences about 2,500 hrs of bright sunshine per annum. This is equivalent to an annual mean of approximately 6.8 hrs of sunshine per day. July and August are characterized by cloudiness and during these months, the average daily sunshine is 4 hours. Frequently there are several days in succession when the sun fails to penetrate the thick stratocumulus cover, although on other days the cloud does break to a greater or lesser extent for a short period. There is about 30 % more sunshine in the afternoon than in the morning and it follows that westerly exposures receive more isolation than easterly one.

3.5.2.5 Heat balance

On hot sunny days, when the wind is light, considerable turbulence is experienced in the first few 100 ft above the ground due to differential heating of the surface and dangerous down draughts frequently occur in areas where the configuration of the ground is uneven.

3.5.2.6 Evaporation

The annual variation of evaporation is affected by temperature and sunshine. The mean annual evaporation as measured by the pan is seen slightly to exceed the mean rainfall at the altitude of the area but it would be expected that at higher altitudes this position would be reversed. The peak evaporation is during March followed by January, February and October. The mean yearly evaporation is 72 mm. The highest annual evaporation is 1,951 mm while the lowest is 1,519 mm.

3.5.3 Geology and soils

Rocks in the project area range from early Precambrian to Quaternary. Three major rock types are found in the proposed project catchment area: The Nyanzian and Kavirodian systems, Mozambique belt rocks system and Tertiary lavas. The Kavirondian system has undergone low-grade metamorphism but of sediments. Rocks in this system include mudstones and grits, which are of Archean age. These rocks are banded and have a general east-west strike and occur interbedded. In the Nzoia Catchment area, these rocks extend into the Nandi escarpment. The Mozambique metamorphic belt rocks that belong to this group have experienced a high degree of metamorphism so that their original structures are highly modified. Two groups are inferred: the well-foliated gneisses, schists, and those that are of intrusion origin.

The lower sections of the catchment area have granitoid intrusions as the dominant types of rocks that have undergone a high degree of metamorphism. Most of the upper part of Nzoia Catchment are separated by the Nandi escarpment and consist of gneisses with no intrusions present. Lavas of tertiary age lie within the periphery of the eastern side of the catchment. The tertiary lavas include trachytes, phonolites and basalts. Some of the rocks are exposed metamorphic rocks and the volcanic lavas in the area resulted from peneplanation and erosion.

The project area is underlain by soils developed on undifferentiated basement system rocks, which are predominantly gneisses. These are well drained, very deep, red to dark red, very friable to friable clays (rhodic ferrosols). Some of the soils are plateau soils of low fertility (Sombroek *et al.*, 1982).

Vegetation cover on land helps to prevent loss of soil and soil nutrients through soil erosion and landslides. In some farms, soils have high humus content, high water holding capacity, are high in nutrient availability and, therefore, favour crop cultivation an activity carried out by most of the residents in the area.

3.5.4 Water resources and water quality

Due to the high rainfall throughout the year, rivers and springs are perennial. Most of Likuyani Ward has a high potential for groundwater due to presence of many permanent boreholes. The average depths of striking water vary depending on the geology of an area. Some people have dug wells and others drilled boreholes for their supply of water. There are numerous springs, which form the sources of the various streams in the area. Many households in the rural areas access water from protected springs. Piped water is available in Turbo Township, in the neighbouring Uasin Gishu County. Vendors also supply potable water. People in Seregeya Likuyani Block 1 get potable water from protected springs. They also harvest rainwater and store it in plastic tanks and containers. The streams in the area are important sources of water for farming and livestock.

3.5.5 Air quality and noise levels

Air quality in becomes deteriorated due to the presence of dust particles and vehicle emissions in the air which are accelerated mainly by vehicles moving on dry and dusty roads rural access roads. Other sources of emissions are burning of wastes, which also results in unpleasant odour. Noise is within the acceptable levels since there are very few vehicles and commercial activities in the area.

3.6 Socio-economic and socio-cultural environment

3.6.1 Demographic patterns

According to the area leaders, 255 households were settled in the scheme. Over time, these families have increased in numbers due to population growth because of births. Currently the expected number of families in the scheme is about 3,000. The expected population is about 10,000 people. However, the increase in human population in the settlement schemes is because of the births and land grabbers in search of new and free land.

3.6.2 Land-uses

Land in the area outside Turbo Forest Reserve is primarily used for settlement and agriculture. In Turbo Township, land is divided into residential and commercial establishments. There are government institutions, schools and other social amenities in the area.

3.6.3 Agriculture

Farming is more pronounced in the area. Farmers in the area cultivate a variety of crops including sugarcane, beans, sweet potatoes, cassava, sorghum, finger millet, maize and vegetables. Animals kept include poultry, cow, sheep and goats. Farmers sell sugarcane to Nzoia, Butali and West Kenya sugar companies for processing into sugar. Farmers have applied soil conservation practices including agroforestry that helps to prevent soil erosion. The main challenge to agriculture in the area is land fragmentation and the increasing shift in use of land from agricultural to commercial.

3.6.4 Business activities and employment in the area

Business entrepreneurs in the area include retail shops, motorcycle and motor vehicle repairs, welding, bars and restaurants. The nearest financial institutions such as commercial banks and micro-financial institutions are found in Moi's Bridge and Eldoret towns in Uasin Gishu County. These enhance economic activities by offering credit facilities to investors and farmers. There are institutions within the area that offer employment opportunities to people in the area.

3.6.5 Physical and social infrastructure

3.6.5.1 Electricity and fire safety

Kenya Power Company supplies electricity in the area. However, some institutions have opted to the installation of back-up generators to supplement this supply. Sugar companies in the area, CGK and CGUG have fire tenders that are available to suppress large-scale fire emergencies. Fire management in institutions is ensured by installation of fire extinguishers and marking fire exit points within buildings and fire assembly points outside buildings.

3.6.5.2 Sewerage and storm water management

The project setting is not served by any public sewer system. Pit latrines are the common sanitary facilities in homesteads, schools and in many government institutions. Where flush toilets, bathrooms and sinks are found in buildings, they are connected to septic tanks and soak pits that are installed at respective sites. Storm drainage channels are directed along roads and into cut-off drains that lead into valleys in order to accommodate excess storm discharges. Gutters are installed on many buildings to harvest rainwater and this reduces the amount of surface run-off from the area.

3.6.5.3 Solid waste management

A waste management company contracted by CGUG for Turbo Township does waste collection. Within the rural areas, people manage solid wastes by incineration and decomposing. Recycling companies have contracted some people to collect wastes for recycling purposes. Such wastes that are collected for recycling purposes from residential areas include waste plastic bottles and metals.

3.6.5.4 Transport and communication

The area is served by traffic on Webuye – Eldoret Highway. Other feeder roads connect rural areas to this road. However, these feeder roads are dry weather roads and most of them become impassable during the rainy seasons. Communication is excellent for mobile reception from Safaricom, Airtel and Telkom Kenya networks. The Forest Road is the main access road linking the project area to Webuye – Eldoret Highway at Turbo.

3.6.5.5 Health facilities and learning institutions

There are some private and public hospitals and clinics within the area. There are a number of learning institutions in the area and these are mostly primary and secondary schools. The only school in Seregeya Likuyani Block 1 is St. Columban's Primary School

3.6.5.6 Security

There is a police post at Turbo. There are a number of security firms with operations in the area. Many institutions have fenced their compounds and have provided them with lockable gates and day and night time guards. Security lighting has been installed in many places to enhance ensure visibility and security at night.

4. RELEVANT LEGISLATIVE AND REGULATORY FRAMEWORK

4.1 Introduction

There is need to take care of the environment in order to ensure survival of human beings. The law has intervened to ensure that human beings are considerate, cautious and careful in their dealings with the environment. The laws governing the environment in Kenya include the constitution of Kenya, 2010; national policies, EMCA, 1999 (Cap. 387) (Amendment 2015) and its subsidiary legislations; and other Kenyan and multilateral environmental laws. EMCA, 1999 (Cap. 387) (Amendment 2015) was developed to harmonize and co-ordinate environmental management issues in Kenya by providing for the establishment of an appropriate legal and institutional framework for the management of the environment. The institution is the National Environment Management Authority (NEMA). The Act covers all aspects of the environment. Kenya is a signatory to some international legislation. Some of these are relevant to this project and were reviewed for writing this report. Environmental management issues are addressed differently in several legal statutes, but the main objective in all of them is sustainability. It is however noted that wherever any of the laws contradict each other, EMCA, 1999 (Cap. 387) (Amendment 2015) prevails.

4.2 National policy framework with relevance to the proposed project

According to the Kenya National Environment Action Plan (NEAP), 1994, GOK recognized the negative impacts on ecosystems emanating from economic and social development programmes that disregarded environmental sustainability. This led to establishment of appropriate environmental policies and legal guidelines as well as harmonization of those that were existing at the time. NEAP introduced environmental assessments in the country culminating into the enactment of the Policy on Environment and Development under the Sessional Paper No. 6 of 1999.

4.2.1 Sessional Paper No. 6 of 1999 on Environment and Development

This on Environment and Development emphasizes that EIA must be undertaken by the developers as an integral part of a project preparation. It also proposes for periodic environmental auditing to investigate if developer is fully mitigating the impacts identified in the assessment report. It presents broad categories of development issues that require a sustainable approach. Among the specific goals of the policy are:

- a) To incorporate environmental management and economic development as integral aspects of the process of sustainable development; and
- b) To encourage sustainable utilization of resources and ecosystems for the benefit of the present generations, while maintaining their potential to meet the needs of the biosphere and future dependents.

In compliance with the section on Biological Diversity, both GoK through KFS and CGK will endeavour to:

- a) Develop and maintain an inventory of all vital habitats in the county and country at large, and create a biodiversity information database of all plant and animal species, indicating their potential use, and prepare plans for conservation and management of such areas. With respect to this, the government(s) may decide to conserve and manage the Turbo Forest Reserve if it has species that have the potential use to the whole nation or particular group of people. Therefore, the government has the right to conserve such areas such as Turbo Forest Reserve if it is found that it contain different important animal and plant species of high value.
- b) Identify species that are rare and endangered with a view to protecting them from extinction through the establishment, where necessary, of more biosphere reserves, national parks and reserves, botanical gardens, arboreta, and through their propagation and captive breeding. The government(s) may identify the endangered species in Turbo Forest Reserve and protect them from extinction.
- c) Encourage the participation local communities in biodiversity conservation and management; and create incentives for effective conservation of biodiversity by local communities.
- d) Involve the community who live on Seregeya Likuyani Block 1 to facilitate the conservation of the forest biodiversity by creating incentives that allow public and community participation. This will promote the conservation of the whole environment and particularly Turbo Forest Reserve.

4.2.2 National Environmental Policy, 2012

Integration of environmental conservation and economic activities in the development process is a key policy statement in this policy paper. Throughout the proposed project life cycle, the Proponent and the people will conserve the environment.

Throughout the proposed project life cycle, the Proponent and the people will conserve the environment through planting of trees especially rehabilitation of Turbo Forest Reserve.

4.2.3 National Policy on Gender and Development, 2000

This policy provides a legitimate point of reference for addressing gender inequalities at all levels of government and by all stakeholders. It further provided an avenue for gender mainstreaming across all sectors to generate efficient and equitable development outcomes.

The proposed project has involved all stakeholders across gender lines including women, men and youths. The Proponent will ensure that issues pertaining to gender inequalities are well addressed through sensitization meetings with the beneficiaries.

4.3 Kakamega County CIDP II (2018 – 2022)

Kakamega County CIDP II (2018 – 2022) is a plan that was prepared through a consultative process by Kakamega County as a guide development over a five-year period beginning 2018 and ending 2022.

The proposed project is supported by CGK through its Ministry of Lands, Housing, Urban Areas & Physical Planning.

4.4 Institutional and administrative framework

4.4.1 National Environmental Management Authority

EMCA, 1999 (Cap. 387) (Amendment 2015) provides for establishment of NEMA as the principal agency responsible for coordination, monitoring and supervision of environmental issues in Kenya. NEMA too has a cross-sectorial mandate to oversee the conduct of environmental assessments and audits through issuance of guidelines, regulations and registration of environmental practitioners. It reviews and approves reports for environmental assessments and audits in consultation with any relevant lead agencies.

NEMA enforces environmental legislations through the Department of Compliance and Enforcement, which is responsible for ensuring that projects comply with the various environmental regulations and standards. NEMA has appointed environmental inspectors whose powers and duties are listed out under section 117 of EMCA, 1999 (Cap. 387) (Amendment 2015). The environmental inspector may also issue an improvement notice requiring an operator to cease any activity deleterious to the environment, which is contrary to the Act. NEMA has power, to prosecute environmental offenders and offences committed under the Act and may earn the offender fines and prison sentences. NEMA works with the county environment departments and committees at the county level in undertaking inspection, monitoring and compliance enforcement.

NEMA will review and approve this EIA report. County environment officers represent NEMA at the county level and are responsible for monitoring environmental protection or regulatory compliance at the county level. In this regard, Kakamega County NEMA office is expected to monitor regulatory compliance of the proposed project throughout its life cycle.

4.4.2 Environmental liaison units in other institutions with environmental management mandates in Kenya

NEMA is linked to sectorial lead agencies, private organizations and educational institutions through their environmental liaison units. These institutions include county environment departments, parastatals, learning institutions, NGOs and CBOs among others and are charged with implementation of environmental programmes and integration of environmental concerns in sectorial policies, plans and programs. Consequently, they monitor investment programmes at their respective sectorial levels.

Relevant environmental liaison units are stakeholders in the proposed project and will have input into the EIA process.

4.5 Laws, regulations and codes of Kenya with relevance to the proposed project

4.5.1 The Constitution of Kenya, 2010

This is the sovereign law in Kenya. The constitution acknowledges the people of Kenya's respect for the environment, which is our heritage in its preamble. It also points out our determination to sustain it for the benefit of future generations. This is sustainability of the environment. Environmental provisions are included in:

- Cap. 4 on Rights and Fundamental Freedoms
- Cap. 5 on Environment and Natural Resources
- Cap. 10 on Judicial Authority and Legal System
- Fourth Schedule on Distribution of functions between National and County Governments
- Fifth Schedule on Legislation to be enacted by Parliament

Section 23 (3) states that all state organs and all public officers have the duty to address the needs of vulnerable groups within society, including women, older members of society, persons with disabilities, children, youth, members of minority or marginalized communities, and members of ethnic, religious or cultural communities. Section 56 states that the state shall put in place affirmative action programmes designed to ensure that minorities and marginalized groups:

- a) Participate and are represented in governance and other spheres of life.
- b) Are provided special opportunities in educational and economic fields.
- c) Are provided special opportunities for access to employment.
- d) Develop their cultural values, languages and practices; and
- e) Have reasonable access to water, health services and infrastructure.

Chapter 5, Part 2 has the following provisions on Environment and Natural Resources

- Article 69 – Obligations in respect of the environment
- Article 70 – Enforcement of environmental rights
- Article 72 – Legislation relating to the environment

Article 42 states that, “Every person has a right to a clean and healthy environment, which includes the right to:

- a) Have the environment protected for the benefit of the present & future generations through legislative & other measures, particularly those contemplated in Article 69; and
- b) Have the obligations relating to the environment fulfilled under Article 70

The Proponent is committed to protecting the environment throughout the project life cycle. In recognition of the provisions to protect minorities and marginalized groups, women, youths and person living with disabilities participated and are represented in the proposed project.

4.5.2 Environmental Management and Coordination Act, 1999 (Cap. 387) (Amendment 2015)

Sub-section 3 (1) of the Act 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 respect of this, this report provides recommendations on best environmental management practices in Seregeya Likuyani Block 1 in order to ensure sustainable development.

Subject to sub-section 54 (2), without prejudice to sub-section (1), the Authority may/ will, in consultation with the relevant lead agencies (KFS), issue guidelines and prescribe measures for the management and protection of any area of environmental significance declared to be a protected natural environment area under this section.

Section 58 (1) of the Act states that, “Notwithstanding any approval, permit or license granted under this Act or any other law in force in Kenya, any person, being a proponent of a project, shall before any financing, commencing, proceeding with, carrying out, executing or conducting or causing to be financed, commenced, proceeded with, carried out, executed or conducted by another person any undertaking specified in the Second Schedule to this Act, submit a project report to the Authority, in the prescribed form, giving the prescribed information and which shall be accompanied by the prescribed fee”. This fee is determined by the Authority.

Section 68 (3) states that, “The owner of the premises or the operator of a project for which an environmental impact assessment project/ study report has been made shall keep accurate records and make annual reports to the Authority describing how far the project conforms in operation with the statements made in the environmental impact assessment project/ study report submitted under section 58 (2).”

The Proponent is carrying out this ESIA in order to comply with sections 58 to 67 and 138 of the Act. The Proponent shall keep records of environmental issues, relevant licenses and permits and shall avail them to the Authority when necessary to prove compliance.

4.5.3 Forest Conservation and Management Act, 2016

This is an Act of Parliament 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.

4.5.3.1 Provisions relating to variation of forest boundaries and revocation of public forests

In accordance with Sub-section 34 (1) of the Act, any person may petition the National Assembly or the Senate, for the variation of boundaries of a public forest or the revocation of the registration of a public forest or a portion of a public forest.

4.5.3.2 Offences relating to use of forest resources

Under sub-section 52 (1), except under a license or permit or a management agreement issued or entered into under this Act, no person shall, in a public or provisional forest: -

- a) fell, cut, take, burn, injure or remove any forest produce;
- b) be or remain therein between the hours of 7 p.m. and 6 a.m. unless he is using a recognized road or footpath, or is in occupation of a building authorized by the Director, or is taking part in cultural, scientific or recreational activities;
- c) erect any building or livestock enclosure, except where the same is allowed for a prescribed fee;
- d) smoke, where smoking is by notice prohibited, or kindle, carry or throw down any fire, match or other lighted material;
- e) de-pasture livestock, or allow livestock to be therein;
- f) clear, cultivate or break up land for cultivation or for any other purpose;
- g) enter any part thereof which may be closed to any person;
- h) collect any honey or beeswax, or hang on any tree or elsewhere any honey barrel or other receptacle for the purpose of collecting any honey or beeswax, or enter therein for the purpose of collecting honey and beeswax, or be therein with any equipment designed for the purpose of collecting honey or beeswax;
- i) construct any road or path;
- j) set fire to, or assist any person to set fire to, any grass or undergrowth or any forest produce;
- k) possess, bring or introduce any chain saw or logging tools or equipment; and
- l) damage, alter, shift, remove or interfere in any way whatsoever with any beacon, boundary mark, fence notice or notice board.

(2) Any person who contravenes the provisions of subsection (1) of this section commits an offence and is liable on conviction to a fine not exceeding one hundred thousand shillings or to imprisonment for a term not exceeding six months, or to both such fine and imprisonment.

The degazettement of Seregeya Likuyani Block 1 from Turbo Forest Reserve will not change the current ecological status of Turbo Forest Reserve since the area to be degazetted from the forest is already settled by the community. This implies that rare, threatened or endangered species of plants and animals if any were affected long ago. The excision exercise is therefore a legal process to ensure that the communities occupying Seregeya Likuyani Block 1 live in harmony with the forest and the authorities.

4.5.4 Agriculture, Fisheries and Food Authority Act, 2013

This is an Act of Parliament to provide for the consolidation of the laws on the regulation and promotion of agriculture generally, to provide for the establishment of the Agriculture, Fisheries and Food Authority, to make provision for the respective roles of the national and county governments in agriculture excluding livestock and related matters in furtherance of the relevant provisions of the Fourth Schedule to the Constitution and for connected purposes.

Pursuant to sub-section 22 (1), the Cabinet Secretary shall, on the advice of the Authority, and in consultation with the National Land Commission, make general rules for the preservation, utilization and development of agricultural land and aquatic resources, either in Kenya generally or in any particular part thereof.

Subject to sub-section 22 (2) (b), without prejudice to the generality of sub-section (1), rules made there under may prescribe the manner in which occupiers shall farm their land in accordance with the rules of good husbandry: and will according to sub-section 22 (2) (d) advise on the kinds of crops which may be grown on land.

If Seregeya Likuyani Block 1 is excised from Turbo Forest Reserve and legally changed into an agricultural and settlement area, it will not be exception to the provisions of this Act.

4.5.5 Land Control Act (Cap. 302) (Revised Edition 2012)

This is an Act of Parliament to provide for controlling transactions in agricultural land.

If Seregeya Likuyani Block 1 is excised from Turbo Forest Reserve and legally changed into an agricultural and settlement area, it will not be exception to the provisions of this Act especially provisions under part IV on Control of Dealings in Agricultural Land stated under Sub-section 6 (1). These are:

- a) The sale, transfer, lease, mortgage, exchange, partition or other disposal of or dealing with any agricultural land which is situated within a land control area;
- b) The division of any such agricultural land into two or more parcels to be held under separate titles, other than the division of an area of less than twenty acres into plots in an area to which the Development and Use of Land (Planning) Regulations, 1961 (L.N. 516/ 1961) for the time being apply; and
- c) The issue, sale, transfer, mortgage or any other disposal of or dealing with any share in a private company or co-operative society, which for the time being owns agricultural land situated within a land control area.

4.5.6 Land Act, 2012

This is an Act of Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes.

Section 9 of the Act has provisions relating to Conversion of Land. The Act states under Section 9 (1) that any land may be converted from one category to another in accordance with the provisions of this Act or any other written law. This Act allows for conversion of any land from one category to another subject to public needs or in the interest of defense, public safety, public order, public morality, public health, or land use planning.

Section 9 (3) states that any substantial transaction involving the conversion of public land to private land shall require approval by the National Assembly or County Assembly as the case may be.

Part VI of the Act has provisions relating to Settlement Programmes. Section 32 (1) states that where the national or county government has identified public land for establishment of a settlement scheme, they shall request the Commission (National Land Commission) to reserve the land to the Board for implementation of a settlement scheme in accordance with section 134 of the Act. This Act gives permission to the national and county governments to identify land and set it for settlement of its citizens.

The degazettement of Seregeya Likuyani Block 1 from Turbo Forest Reserve require conversion of forestland into a settlement scheme. All the procedures and processes of degazettement are provide for in the Act.

4.5.7 Public Roads and Roads of Access Act (Cap. 399)

An Act of Parliament to provide roads of public travel and access to public.

The creation of access roads within Seregeya Likuyani Block 1 will be in accordance with the provisions of this Act.

4.5.8 Physical and Land-use Planning Act, 2019

An Act of Parliament to make provision for the planning, use, regulation and development of land and for connected purposes. Development at Seregeya Likuyani Block 1 shall follow the provisions of this Act, which includes the objectives stated under Part IV on Development Control, Sub-section 55 (1). These objectives are to

- a) To ensure orderly physical and land use development;
- b) To ensure optimal land use;
- c) To ensure the proper execution and implementation of approved physical and land use development plans;
- d) To protect and conserve the environment;
- e) To promote public safety and health;
- f) To promote public participation in physical and land use development decision-making;
- g) To ensure orderly and planned building development, planning, design, construction, operation and maintenance; and
- h) To promote the safeguarding of national security.

The Proponent will abide by all the regulations issued by the Physical Planning Department of Kakamega County.

4.5.9 County Governments Act, 2012

This Act gives effect to chapter eleven of the Constitution of Kenya to provide for county governments powers, functions and responsibilities to deliver services and for connected purposes.

The proposed site is found in Kakamega County. The Proponent will abide by all laws, rules, regulations, guidelines and requirements by the CGK.

4.5.10 Urban Areas and Cities Act, 2011

This Act of Parliament gave effect to Article 184 of the Constitution by partly providing for the governance and management of urban areas and cities including the participation of all residents. Subject to subsection (3) of the Act, it came into operation after the first elections held under the Constitution.

The carrying out of activities within Seregeya Likuyani Block 1 Township will be in accordance with the provisions of this Act.

4.5.11 Public Health (Prevention, Control and Suppression of COVID-19) Rules, 2020

In adherence to the GOK guidelines for the prevention, control and suppression of COVID-19, the following was observed:

- a) All persons wore masks in public to control the spread of the pandemic.
- b) Hand washing was strictly observed regularly.
- c) All persons involved in face-to-face discussions regarding the proposed project including those who attended the project meetings wore masks and observed social distancing of at least 1.5 m in order to reduce the risk of COVID-19 spreading.
- d) During consultations in public and private offices and households, alcohol-based hand sanitizers were used to sanitize hands, surfaces and materials to deter the spread of germs and illnesses causing virus before and after leaving the office or household.

The Proponent shall continue to ensure that these guidelines are always adhered to whenever there is a gathering of two or more people.

4.6 International guidelines and standards

4.6.1 Equator Principles

The Equator Principles are a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects and are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. In order to facilitate potential access to funding for the project there is need to consider the Equator Principles and environmental and social risk management as part of the ESIA process. The Equator Principles require that projects conduct an ESIA process in compliance with the WB Performance Standards.

This ESIA is carried out in compliance with the Equator Principles.

4.6.2 World Bank (WB) Safeguard Policies

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. One of the objectives of the ESIA study is, therefore, to ensure that the project is compliant with international safeguard policies, in order to attract WB financing. These Performance Standards are:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

Performance Standard 1 is triggered by the proposed project. The project requires an ESIA to identify environmental and social risks and impacts and to provide a basis for the management of environmental and social performance during project planning and in all the project phases.

- Performance Standard 2: Labour and Working Conditions

Performance Standard 2 is not triggered by the proposed project. The proposed project will employ workers in all its phases. The requirements of this standard will therefore apply throughout the project cycle. The management adhere to the applicable laws and regulations on labour and working conditions.

- Performance Standard 3: Resource Efficiency and Pollution Prevention

Performance Standard 3 is not triggered by the proposed project.

- Performance Standard 4: Community Health, Safety, and Security

Performance Standard 4 is triggered by the proposed project. The project may expose local communities to increased risks and adverse impacts related to traffic accidents, spread of communicable diseases, or interactions with other people. The ESIA assessed the existing and project-induced risks to community health, safety and security and will provided necessary mitigation measures.

- Performance Standard 5: Land Acquisition and Involuntary Resettlement

Performance Standard 5 is not triggered by the proposed project since no persons will be displaces as a result of the proposed project.

- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Performance Standard 6 is triggered by the proposed project. During the ESIA, baseline information was collected and predicted impacts were rated according to significance/magnitude and the mitigation hierarchy will be applied as appropriate.

- Performance Standard 7: Indigenous Peoples

Performance Standard 7 is not triggered by the proposed project since the project area has no indigenous communities.

- Performance Standard 8: Cultural Heritage.

Performance Standard 8 is not triggered by the proposed project since no archaeological sites have been recorded in the project area and there are no artefacts on the proposed development site.

4.6.3 Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests

The subject of forests is related to the entire range of environmental and development issues and opportunities, including the right to socio-economic development on a sustainable basis. The guiding objective of these principles is to contribute to the management, conservation and sustainable development of forests and to provide for their multiple and complementary functions and uses.

As stated by these principles, GOK is of value to local communities and to the environment as a whole.

4.6.4 UN Framework Convention on Climate Change (UNFCCC)

This convention defines climate change as change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods.

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Kenya is a committed party to the convention and therefore must strive to mitigate climate change by applying all possible measures outlined under the Commitment of Parties to the Convention.

4.6.5 Rio Declaration on Environment and Development (1992)

Principle No. 10 of the declaration underscored that, “Environmental issues are best handled with participation of all concerned citizens at all the relevant levels. At the national level, each individual shall have appropriate access to information concerning environment that is held by public authorities. All states shall encourage and facilitate public participation by making such information widely available.

The Proponent encouraged and facilitated public participation for the proposed excision exercise. Public comments will be treated with utmost consideration.

5. PUBLIC CONSULTATIONS AND DISCLOSURES

5.1 Introduction

Public participation is a prerequisite to decision-making in ESIA. Reference is made to Section 17 of the Environmental (Impact Assessment and Audit) Regulations, 2003, which states that the proponent shall in consultation with the authority, seek the views of persons who may be affected by the projects. The role of public consultation and involvement in ESIA process is to assure the quality, comprehensiveness and effectiveness of the assessment and ensure that the public views are adequately taken into consideration in decision-making process.

5.2 Methodology

This was done through:

- a) Interviews with officials from CGK, KFS, NYS, Kenya Police etc.
- b) Public meetings with the area residents. A public participation meeting on July 16, 2020 at St. Columban's Primary School, Turbo (Plate 5.1). Participants in the meeting were drawn from Seregeya Likuyani Block 1 and comprised of people who carry the people's voices including women, men, and youth representatives; religious and administrative leaders.





Plates 5.1 (a and b): Participants at the public participation meeting at St. Columban’s Primary School, Turbo



Plate 5.2: Participants after the public participation meeting at St. Columban’s Primary School, Turbo



Plate 5.3: The EIA/ EA consultants addressing participants at the public participation meeting at St. Columban’s Primary School, Turbo



Plate 5.4: One of the key stakeholders addressing participants at the public participation meeting at St. Columban’s Primary School, Turbo

c) Consultations between CGK and the Ministry of Environment and Forestry.

Sub-section 5.3 presents a summary of the comments from the various stakeholders engaged during the public participation. The detailed findings are attached on this report.

5.3 Summary of findings

The people appreciated that they had a chance to participate in decision-making process concerning the proposed undertaking. Below are some of the major comments from the members of the public.

- a) The Ministry of Lands and Settlement approved the establishment of the development of a market (Seregeya Likuyani Block 1 Township). The PDP and reference letters confirming this approval are attached.
- b) The people said that the infrastructure of the area (roads etc.) need to be developed so that the community ceases to interfere with the forest through encroachment.
- c) The people lamented that their limited land rights in the area have made their lives difficult since they are always conflicting with the KFS officers when burying their dead at their homes in the area.

6. ANALYSIS OF PROPOSED PROJECT ALTERNATIVES

6.1 Introduction

The purpose of this section is to examine feasible alternatives to the proposed excision exercise. The benefits of excision will be considered against any potential environmental cost. The general principle involved in identifying alternative option(s) to a proposal is to ensure that the option chosen would result in optimal social, environmental and capital benefits not only for the community or proponent, but also for the environment and other stakeholders in the area. This section is a requirement by the Authority and is critical in consideration of the ideal development with minimal environmental disturbance. Feasible land-use options are compared in terms of cost and benefit criteria: environmental impacts, social acceptability, economics (including productivity of land-use) and design feasibility.

6.2 “No-action” alternative

6.2.1 Assessment

The selection of the “No-action” alternative would mean that the proposed excision of the settlement schemes will not take place. Thus, the sites are retained in their existing forms. If this alternative is selected, no major changes will take place. The Vision 2030 development blue print proposes that the country must attain 10 % forest cover by the year 2030. Excising part of the forestland would mean that achieving 10 % forest cover by the year 2030 will not be achieved. Therefore, the “No-action” option is a key step in achieving 10 % forest cover by the year 2030. However, the current theoretical forest cover includes the area of land under the settlement schemes that in practice is not under forest vegetation but under settlement, farms and other developments. This option may be based on the principles that the proposed:

- a) Sites to be excised from the forest are environmentally sensitive. For instance having one or more threatened, rare, endangered, endemic or key stone plant or animal species or any other flora or fauna that is considered for preservation under an Act of Parliament;
- b) Sites to be excised from the forest are found in an archaeological or historical site or are found to have a historically or archaeologically important material;
- c) Excision exercise will have severe implications on the environment if implemented;
- d) Sites to be excised from the forest are found on land parcels that had not been allocated to the community at the time of resettlement; and/ or
- e) Excision exercise will be an impediment to any other development in the area.

6.2.2 Findings

- a) There are no threatened, rare, endangered, endemic or key stone plant or animal species or any other flora or fauna that is considered for preservation under an Act of Parliament within the settlement schemes;
- b) There are no physical, biological, cultural and socio-economic features of concern within the settlement schemes.

- c) The excision exercise will not entail altering/ modification of the ecological status and functions of the forest since it will not include removal of large tracts of vegetation, cutting down of trees or destruction of habitats and hence will not have serious implications on the environment.
- d) The proposed excision exercise will not be an impediment to any other development in the area since settlement has already taken place in the settlement schemes. The only remaining thing is the variation of the forest boundaries to exclude the area with the settlement schemes and issuance of title deeds to these people.

6.2.3 Implications

- a) The genuine settlers living in the area would receive the option with bitterness. These people have nowhere else to stay. This is likely to result in:
 - i) More destruction and encroachment into the forest by the settlers due to denied rights to own land; and
 - ii) Rebellion and demonstrations from the settlers demanding justice since they have been staying in the area for decades of years.

6.3 Relocation alternative

6.3.1 Assessment

This option implies proposal transfer, which could mean looking for one or more alternative sites outside the forest ecosystem and resettling the people thereat. This could possibly imply that CGK buys land from a different place outside the area and resettles there those people from Seregeya Likuyani Block 1. This option may be based on the principles that the proposed:

- a) Sites to be excised from the forest just as in the ‘No-action’ option, are environmentally sensitive or are found in an archaeological or historical sites or are found to have a historically or archaeologically important material;
- b) Excision will be an impediment to other planned developments in the area;
- c) Excision of will have severe implications on the environment; and/ or
- d) Sites to be excised from the forest are found on land parcels that had not been allocated to the community at the time of resettlement.

6.3.2 Findings

- a) Apart from the forest, there are no other physical, biological, cultural and socio-economic features of exceptional concern within the settlement schemes.
- b) As found out with the “relocation” alternative, the excision will not have serious implications on the environment.
- c) The proposed excision exercise will not be an impediment to any other development in the area.
- d) The people living in Seregeya Likuyani Block 1 have letters of allotment allowing them to stay in the area.

- e) CGK does not have an alternative land of appropriate size for resettling these people. About 255 families were resettled on the 460 acres of land. Such empty land is not available anywhere in Kakamega County for resettling these people.

6.3.3 Implications

- a) As in the ‘no-action’ alternative, the owner would be at a loss in terms of financial commitments already made in designing and planning for the excision exercise.
- b) It might take a very long time looking for, finding a similar sized land outside the county and completing all official transactions relating to change of land ownership and/ or change of use. At the same time, there is also no guarantee that such land would be available and if available, its cost might be beyond affordable means for CGK.
- c) The processes of designing and planning will have to start over again. This means that CGK will have to undergo an extra expense in designing and planning for another resettlement.

6.4 Alternative land-uses

6.4.1 Assessment

The option will allow the CGK and KFS to explore alternative land uses for Seregeya Likuyani Block 1. This may involve first excising the settlement schemes from the forest and using the land for other use. People have already settled on Seregeya Likuyani Block 1 and, therefore, considering an alternative use for the block will be uphill task as the people are likely to rebel this move. Alternatively, the settlement schemes may not be excised from the forest but restored or rehabilitated to forest status that is a more controversial decision that will require looking for an alternative land for resettling these people.

6.5 The proposed excision exercise as described in the ESIA report

The impacts and mitigation measures for this alternative are discussed in detail throughout this report. The positive impacts have also been identified. The advantages of this alternative are as follows:

- a) People are already settled in Seregeya Likuyani Block 1. Resettling these people somewhere else will break the social grouping that has already been formed. At the same time, these people are likely to rebel resettlement to another place.
- b) The excision exercise will not entail altering/ modification of the ecological status and functions of the forest since it will not include removal of large tracts of vegetation, cutting down of trees or destruction of habitats. Trees were cleared long ago when these people were being resettled.
- c) There are no threatened, rare, endangered, endemic or key stone species of plants or animals or any other flora or fauna that is considered for preservation under an Act of Parliament within the settlement schemes and there are no physical, biological, cultural and socio-economic features of concern within the settlement schemes.

7. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION/ ENHANCEMENT MEASURES

7.1 Introduction

The environmental baseline information collected and the project characteristics discussed form the basis for impact identification and evaluation. Assessment of impacts depends on the nature and magnitude of the activities being undertaken as well as the type of environmental control measures that are envisaged as part of the project proposal. The impacts that are expected to arise from the proposed project could be termed either as positive or negative, direct or indirect, short-term or long-term, temporary or permanent depending on their nature, area of coverage and their duration in the environment. Impacts were identified and discussed in all phases of the proposed project cycle i.e. planning and implementation. Most impact mitigation have already been proactively addressed in the project activities, legal and regulatory framework and by the public participation process while others will be undertaken through considered incorporation in the implementation of the project as guided by the mitigation measures and the EMP. The impacts were determined based on ground-truthing observations, stakeholder engagements, professional judgment, technical realities based on the project socio-economic baseline.

7.2 Socio-economic benefits

- a) The excision will allow the community members have full land ownership rights.
- b) Subject to rights to own land and upon proper sensitization on rights of access to land and the forest, the community members will have a renewed sense of belonging and will therefore, make the community respect authorities and understand, appreciate and embrace the need to conserve the forest.
- c) Proper demarcation of community land for social amenities, individual farms, forest boundaries and access roads within Seregeya Likuyani Block 1 will define boundaries of access to and use of forest resources and will reduce conflicts among members of the communities alongside helping conserve the forest.
- d) Socio-economic development will be enhanced in the area. Currently, most settlers and other potential developers fear installing structural developments in the area due to due poorly defined rights to own land. This is likely to increase population in the area.
- e) Spillover infrastructure development will entail creation of access roads, business facilities, drainage improvements as well as an improvement to the general aesthetic of the area due to organized establishment of facilities. This will attract new residents in the area.
- f) Government and social facilities including a market a, schools and churches will be established.
- g) Haphazard development will be minimized.

7.3 Potential adverse impacts

The adverse impacts from the proposed project are discussed below.

7.3.1 Involuntary relocation

7.3.1.1 Assessment

It is not possible to state whether the settlers were willing to leave their original places into their new places in Seregeya Likuyani Block 1. However, the relocation could have been more of induced with limited possibilities of the “no-option”. This relocation ended up into mismanagement of the forest by the communities and rebellion to KFS due to one or more of the following:

- a) Loss of or limited land-holding rights;
- b) Loss of privately owned assets that could not be moved including houses or shelter, other structures on land including animal sheds and granaries, gardens, productive assets/ resources such as crops and trees;
- c) Limited access to communal resources and assets such as water collection points;
- d) Loss of or limited access to social services and facilities such as places of worship and schools;
- e) Changes in subsistence/ livelihoods and income-earning capacities;
- f) Increased pressure on existing services and facilities at the new place of settlement;
- g) Changes in movement and socialization patterns; and
- h) Impacts on social groupings and social behaviours.

7.3.1.2 Mitigation

The following are possible mitigation measures to the above effects:

- a) CGK will carry out an assessment and consultations with the affected persons to determine the most appropriate compensation package. Land title deeds/ land holding security is considered the most appropriate compensation.
- b) More social facilities and services should be made available in the settlement area in order to reduce congestion on those existing and cope with the increasing number of people in the area.

7.3.2 Challenges to community forest management after the resettlement

7.3.2.1 Assessment

To understand challenges to forest management after resettlement, we first need to understand the local forest resource-use and management arrangements in the areas of resettlement i.e. Seregeya Likuyani Block 1 and the socio-economic, institutional and environmental conditions in the areas of origin. The settlers originated from different areas. If the excision is approved, a survey will be carried to determine the exact plots of land allocated to the community and social amenities. In addition, access roads will be designated.

7.3.2.2 Mitigation

The following are possible mitigation measures to the above effects:

- a) The community members whose pieces of land border riparian zones are advised to leave the riparian zones intact and uncultivated in order to allow vegetation to regenerate naturally or use appropriate riparian plant species under the guidance of the forest officers to revegetate these areas.
- b) Community local leaders, Turbo CFA, KFS and other leaders in the area are advised to bring together the people in the community and educate them on the importance of conserving the forest and the need for staying together in harmony. Sensitization should focus on open and closed rights to access forest resources such as timber, firewood, charcoal, honey, spices, fruits and medicinal plants.
- c) Members of the community are advised to join the local CFA i.e. Turbo CFA so that a common agreement can be reached upon between KFS and the community on the joint management of the forest subject to the provisions of the Forest Conservation and Management Act, 2016. The community will through the CFA establish tree nurseries for reforestation programmes to rehabilitate annihilated areas and will establish other community-based conservation practices that will bring harmony and enhance conservation of the environment.

7.3.3 Loss of forest land and natural resources

7.3.3.1 Assessment

Conversion of forestland into settlement land has far-reaching adverse impacts on the ecological functions and interactions in the forest ecosystem. On conversion of forestland to settlement, vegetation is cleared to pave way for establishment of settlement facilities and to create land for farming. With the removal and/ or death of fauna/ plants:

- (a) There is loss of valuable food and shelter for animals whose life is depended on these plants for shelter and food leading to their eventual death and/ or displacement;
- (b) Soil erosion and siltation are aggravated; and
- (c) There is alteration and/ or destruction of habitats of some animals.

This is exactly what happened at Seregeya Likuyani Block 1. Though the settlement area still under forestland, there are none or limited traces of original forest trees. The area is currently under homesteads with permanent, semi-permanent and temporary structures and farmlands for cultivation. St. Columban's Primary School, churches, government facilities including a police station and NYS, and access roads have already been established in these areas.

7.3.3.2 Mitigation

The following are possible mitigation measures to the above effects:

- a) Properly demarcate the forestland to differentiate it from agricultural/ community land and enforce laws governing access to and use of forest resources.
- b) Re-establish vegetation in farms, riparian areas and in annihilated areas within the forest through implementation of well-designed landscaping, afforestation and reforestation programmes by planting of appropriate plants.

7.3.4 Post-excision establishment of social and physical infrastructure

7.3.4.1 Assessment

If the proposed excision is approved, several structures including roads and buildings will be established on both private (settlement area) and public pieces of land (Seregeya Likuyani Block 1 Township or market centre). If not properly planned and managed, the establishment of these structures may be associated with a number of impacts including the following:

- a) Clearance of vegetation to pave way for the establishment of structures;
- b) Excavations when creating foundations for the structures;
- c) Soil compaction as a result of movement of machinery and people;
- d) Extraction and/ or usage of materials;
- e) Fire hazards;
- f) Increased traffic flow in the area;
- g) Use of resources such as water, electricity, fuel and manpower;
- h) Noise and vibrations;
- i) Solid wastes and waste water (liquid wastes);
- j) Sewerage;
- k) Compromised sanitation and nuisance;
- l) Increased storm flow across the area as a result of vegetation clearance, building roofs, and increased ground surface sealing; and
- m) Impacts related to occupational and public health and safety

7.3.4.2 Mitigation

The following are possible mitigation measures to the above effects:

- a) Involve/ consult appropriate professional personnel incorporating environmental experts, engineers, physical planners, public works officers, architects, and public health officers among others when planning to establish these structures;
- b) Conduct screening and prepare environmental assessment reports and submit them to the Authority for further advice and/ or approval before establishing projects listed under the Second Schedule of EMCA, 1999 (Cap. 387) (Amendment 2015) and take necessary precautions and mitigation measures as outlined in these reports to avoid disturbance to the neighbourhood by way of dust, visual impact, odour, noise and disruption of movement;
- c) Demarcate the project area to be affected by the respective projects/ structures in order to prevent their effects from spilling over to other areas;
- d) Do not tamper with existing natural storm drains;
- e) Provide workers with appropriate protective equipment;
- f) Carry out construction works in such a way that minimal disturbance is caused to the surrounding environment;
- g) Carry out construction works in accordance with the requirements and to the satisfaction of CGK laws;

- h) Re-establishing vegetation in some or part of the disturbed areas through implementation of a well-designed landscaping programme; and
- i) Establish storm drainages, sanitary facilities (pit latrines and septic tanks or a public sewer system) in accordance with advice from relevant professionals.

7.3.5 Increased traffic flow

7.3.5.1 Assessment

During the project implementation, there will be an influx of traffic to and from the area. These will include vehicles and people especially CGK staff, land surveyors etc. Though increased traffic will be a short-term impact, it has the effect of causing congestion on the road, which may subsequently results in accidents on the roads.

7.3.5.2 Mitigation

The following are possible mitigation measures to the above effects:

- a) Properly plan the activities to reduce the number of trips done or the number of vehicles on the road.
- b) Inform the area residents of the planned surveys in advance so that they can be prepared for them.

7.3.6 Increase in spread of sexually transmitted diseases

7.3.6.1 Assessment

There is likely to be an increased in incidences of sexually transmitted diseases including HIV/ AIDS as a result of the interaction of the project team and the area residents. The Proponent will work closely with health Agencies in order to come with a comprehensive control programmes for HIV/ AIDs and other STDs. This impact will be high due to an increase in people from other areas and associated flow of income.

7.3.6.2 Mitigation

The following are possible mitigation measures to minimize the spread of STDs, HIV and AIDS and other diseases:

- a) Develop STDS, HIV and AIDs control measures such as provision of condom dispensers in places, which are accessible by all people e.g. at CGK offices.
- b) Create awareness of STDs, HIV and AIDS among workers through posters.
- c) Recruit the biggest workforce from the area so that the area residents can always return to their homes.
- d) Ensure that all people at the site have appropriate PPE.

7.3.7 Spread of Corona Virus Disease 2019 (COVID-19)

7.3.7.1 Assessment

The WHO declared Corona Virus Disease in 2019. During the project, large numbers of people including the project team and the community will be interacting both at the site and outside the site and, therefore, the potential for its COVID-19 is high. This infectious disease is spread through contact when droplets of the virus move from an infected person to another person. The Government of Kenya (GOK) issued a number of guidelines to prevent the spread of COVID-19.

7.3.7.2 Mitigation

The following measures will help prevent the spread of COVID-19:

- a) Mandatory provision and use of appropriate PPE especially facemasks for all project personnel and visitors.
- b) Maintain a social distance of at least 1.5 m where there are two or more people gathered and avoid crowding people together
- c) Subject all persons getting to the sites to rapid Covid-19 screening i.e. temperature check and other vital signs including getting to record where have recently travelled to
- d) Install handwashing facilities with adequate running water and soap, or sanitizing facilities at the entrance to the sites and to all consultation and meetings venues.
- e) Where possible use only virtual methods of meetings and avoid one-on-one meetings. Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of door knobs, hand rails etc.; and
- f) Where one-on-one meetings cannot be avoided, hold meetings in small groups or FGDs and in adherence to all GOK guidelines in place and subject all the participants strictly observing one meter social distancing, regular hand washing, sanitizing and limited duration.

7.3.8 Social impact – grievances

7.3.8.1 Assessment

Common grievances expected to arise during the proposed project implementation include:

- a) Human and livestock interference with the project;
- b) Negative project impacts which may include disruption of income streams and physical harm.
- c) Health and safety risks;
- d) Socially-unacceptable project staff relations with the communities and other stakeholders;
- e) Conflicts over land allocation as a result of new surveys; and
- f) Pollution and other environmental related impacts.

7.3.8.2 Mitigation

The following are possible mitigation measures to manage grievances:

- a) Seek to establish amicable relationships with stakeholders and manage the impact of the project activities on affected communities;
- b) Put in place a pre-emptive community liaison structure aimed at identifying potential issues arising from project-related impacts and addressing them before they become grievances;
- c) Establish a grievance redress mechanism targeting communities and other project stakeholders but not applicable to commercial and employee-employee relationships, and which will allow stakeholders to easily put forth their concerns relating to the project, implementation and have them addressed in a prompt and respectful manner;
- d) Ensure the grievance redress mechanism is available to the affected community members and stakeholders at no cost;
- e) Address all raised grievances, real or imagined and take reasonable steps to maintain confidentiality of the parties to the mechanism and regardless of the complainants' participation in this process, give a guarantee that the complainant's statutory rights to undertake legal proceedings remain unaffected; and
- f) Educate all project stakeholders on the availability and use of the grievance redress mechanism in a manner that is understandable to all, before, during and after construction of the proposed project.

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING

8.1 Environmental management

This section is intended to provide a concise structure of actions with specific priority levels for the management of the environment in all phases of the proposed project. Environmental management is best achieved by preparation and implementation of an ESMP. The plan ensures that environmental impacts are identified and mitigated by outlining corresponding management strategies that need to be implemented to mitigate potential adverse environmental impacts and assigns responsibility for the implementation of the mitigation measures. All costs are estimates and may change in time and space. As project commencement and scheduling plans are developed and changed, components of the EMP might require amending. The ESMP is generally prepared to ensure that the components of proposed project are operated in accordance with the design, standards and regulations. If the proposed development is implemented without any environmental management options, the total project impact will be on the appreciably adverse side. However, if the environmental management strategies discussed in the ESMP are fully implemented, the adverse impact of the project would be reduced and there will be an overall improvement in the environment.

8.2 Environmental monitoring and audits and record keeping

Environmental monitoring and audits are conducted to establish if project implementation has complied with established environmental management standards. Environmental audits (EAs) are conducted annually beginning twelve months from the date of commissioning of the project to ensure that identified potential negative impacts are mitigated. Follow-up reports are submitted to the Authority in accordance with Section 68 (3) of the EMCA, 1999 (Cap. 387) (Amendment 2015).

Table 8.1: Proposed environmental and social management and monitoring plan

Area of concern	Recommended action	Responsibility	Time frame
Limited land-holding rights	Issue title deed to affected settlers	CGK through the Lands Department to help identify real settlers who were allocated land	Upon approval of excision by KFS and the Parliament of Kenya
Limited access to communal resources and assets	Develop appropriate means of access through demarcation and creation of access roads within the degazetted area	CGK and KFS	Upon approval of excision by KFS and the Parliament of Kenya
	Develop an all-inclusive joint forest management plan between KFS and the community or update the existing management plan to cater for the current issues	Turbo CFA, KFS and the community	Plans should start immediately
Limited access to social services and facilities and increased pressure on existing social services and facilities	Establish and/ or construct all the needed peripheral developments within the degazetted area	Respective departments and ministries within CGK and national government	Upon approval of excision by KFS and the Parliament of Kenya
Changed subsistence/ livelihoods and income-earning capacities	Capacity building of the community members through training and agribusiness opportunities	CGK, the national government and other actors	Plans should start immediately
Changes in movement and socialization patterns and other impacts on social groupings and social behaviours	Sensitization to bring together the people in the community and educate them on need for staying together in harmony	Local leaders and CGK	Plans should start immediately
Loss of forest land forest resources and challenges in forest management	Properly demarcate the forest land to differentiate it from the community land and enforce laws governing access to and use of forest resources	Turbo CFA, CGK, KFS and the community	Upon approval of excision by KFS and the Parliament of Kenya

Area of concern	Recommended action	Responsibility	Time frame
	Re-establish vegetation in farms, riparian areas and in annihilated areas within the forest through implementation of well-designed afforestation and reforestation programmes by planting of appropriate plants	Turbo CFA, CGK, KFS and the community	Plans should start immediately
	Sensitize the community on the importance of conserving the forest and the need for staying together in harmony	Local leaders, CGK, Turbo CFA, KFS and the community	Plans should start immediately
Post-excision establishment of social and physical infrastructure including the re-establishment of Seregeya Likuyani Block 1 Township	Involve/ consult appropriate professional personnel incorporating environmental experts, engineers, physical planners, public works officers, architects, and public health officers among others when planning to establish these structures	CGK and proponents of respective projects	On planning to execute these projects
	Conduct screening and prepare environmental assessment reports for respective projects listed under the Second Schedule of EMCA, 1999 (Cap. 387) (Amendment 2015) and submit them to the Authority for further advice and/ or approval	CGK and proponents of respective projects	On planning to execute these projects
	Demarcate the project area to be affected by the respective projects/ structures in order to prevent their effects from spilling over to other areas	CGK and proponents of respective projects	On planning to execute these projects

Area of concern	Recommended action	Responsibility	Time frame
	Provide workers with appropriate protective equipment	Proponents of respective projects	When executing these projects
	Re-establishing vegetation in some or part of the disturbed areas through implementation of a well-designed agroforestry and/ or landscaping programme	CGK and proponents of respective projects	Before and after executing these projects
	Establish storm drainages, sanitary facilities (pit latrines and septic tanks or a public sewer system), solid waste management systems and access roads in accordance with advice from relevant professionals	CGK and proponents of respective projects	Before and after executing these projects
	Rehabilitate areas within and outside the respective project sites that will have been adversely affected by these project activities	CGK and proponents of respective projects	After executing these projects
Increased spread of COVID-19	Provide adequate hand washing facilities e.g. soap and water, hand sanitizers, face masks and temperature testers/ meters at the site	CGK and proponents of respective projects	Always
Socially-unacceptable relationships between the project team and the community that may lead to GBV, drug abuse and HIV/ AIDS and STIs transmissions	Create awareness among project team and the community of the dangers of irresponsible and socially-unacceptable relationships through polite notices and verbal advisories	CGK	Before executing the project
Grievances	Establish a grievance redress mechanism	CGK	Before executing the project

Area of concern	Recommended action	Responsibility	Time frame
Non-compliance	Monitor the project activities to ensure that they are implemented in accordance with the recommendations in this report and those provided by NEMA and other authorities	NEMA, KFS and CGK	Throughout the project implementation

9. RECOMMENDATIONS AND CONCLUSION

9.1 Recommendations

The following are the suggested recommendations:

- a) The preparation of a rehabilitation and resettlement action plan that fulfills the aspirations, rights and privileges of the affected people and establishes a basis for good relationships between the people and the environment would be an important step to minimize conflicts at the time of issuing title deeds.
- b) CGK should define the compensation package if any and capacity built the community members through training and agribusiness opportunities.
- c) Bring together the two communities, educate them on need for staying together in harmony, and sensitize them on the importance of conserving the forest and the need for staying together in harmony.
- d) Develop appropriate means of access through demarcation and creation of access roads within the settlement area.
- e) CGK should carry out a needs assessment of the area and establish and/ or construct all needed peripheral developments within the settlement schemes.
- f) The people and other stakeholders including KFS should re-establish vegetation in farms, riparian areas and in annihilated areas within the forest through implementation of well-designed afforestation and reforestation programmes by planting of appropriate plants
- g) Properly demarcate the forestland to differentiate it from the community land and enforce laws governing access to and use of forest resources.
- h) The community under the guidance of KFS should develop an all-inclusive joint forest management plan or update the existing management plan to cater for the current issues. The people are advised to join the CFA and participate in forest management.
- i) If the national government or CGK intends to develop any project within the area upon approval of the proposal or in any area outside the settlement area, environmental assessments must be conducted for the proposed projects and sites in order to provide for an appropriate environmental management system.

9.2 Conclusion

The proposed excision exercise will have numerous positive impacts as has been outlined in this report. The report concludes that if all the suggested recommendations are put in place, the proposed project will not adversely affect the environment and on the lives of the people. The proponent's objective for the degazettement of Seregeya Likuyani Block 1 from Turbo Forest Reserve is to help the people who were settled therein acquire land-holding rights by getting title deeds. It is expected that the proposal will be approved to enable processing of land title deeds, as this will enable the people to acquire land-holding rights. Since the land in question will be outside the forestland, the national government and CGK will initiate a process of development of the area. The people will also confidently establish permanent buildings and other structures in the area and companies and people from within and outside the area are likely to invest in the area. From the foregoing, it is clear that:

- (a) Consultations actively involved the key stakeholders who did not object the proposal;
- (b) The project has sufficient public support;
- (c) KFS has not objected the proposal and has furnished the stakeholders with sufficient information;
- (d) If approved and the people are issued with title deeds, the people are likely to live in harmony with the environment and the KFS authorities; and
- (e) If the proposal is approved and implemented with the proposed mitigation measures, adverse environmental impacts will be mitigated.

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APPENDICES

- 1) Copy of PDP and letters confirming the PDP approval (2019)
- 2) Copy of Resolutions from the ruling of the Environment and Land Court at Eldoret about Turbo Township Community Resettlement on October 23, 2018
- 3) Copy of Cabinet memorandum on the Degazettement of Mautuma Central Settlement Scheme for which Seregeya Likuyani Block 1 is part of (September 27, 2013)
- 4) Copy of Turbo Township community letter to Turbo Forest Conservation Committee chairman (May 26, 2014)
- 5) Copy of Turbo Township community letter to H. E. the Governor, Kakamega County (April 26, 2014)
- 6) Copy of Ministry of Lands confirmation of settlement schemes within forest reserves that require degazettement (March 22, 2006)
- 7) Copy of Residents of Likuyani Seregea letter to the Commissioner of Lands (January 27, 2005)
- 8) Copy of District Forest Office, Turbo, letter to Chief Conservator of Forests on Turbo Forest squatters issue (December 8, 2004)
- 9) Copy of Residents of Likuyani Seregea letter to the Minister for Environment and Natural Resources (October 1, 2004)
- 10) Copy of Commissioner of Lands confirmation of residential, commercial and agricultural plots in Turbo (Lugari) Forest Reserve (June 19, 2002)
- 11) Copy of Lugari County Council letter to the Director of Forests (July 28, 2000)
- 12) Copy of minutes of plot allocation committee meeting held in the District Commissioner's office (July 18, 1999)
- 13) Copies of sample letters of allotment for pieces of land in Seregea Likuyani Block 1
- 14) Copy of minutes of the public participation meeting on July 16, 2020 (Minutes by ESIA consultant i.e. Envertek Africa Concult Limited, minutes by Seregea Likuyani Block 1 Turbo Township, and minutes by CGK)
- 15) Copy of list of attendance at the public participation meeting on July 16, 2020
- 16) Copies of ESIA consultant's and individual experts' current NEMA EIA/ EA expert licenses