



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
SUMMARY PROJECT REPORT FOR THE PROPOSED PROMOTION
OF AFRICAN LEAFY VEGETABLES PRODUCTION UNDER SMALL-
SCALE IRRIGATION IN MWICHEMO VILLAGE, IDAKHO NORTH
WARD, MUTAHO LOCATION, KAKAMEGA SOUTH SUB-COUNTY,
KAKAMEGA COUNTY**

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Ministry of Agriculture, Irrigation, Cooperative, Livestock, Veterinary Services and
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Kenya Climate Smart Agriculture Project
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CERTIFICATION

This is to certify that this is an Environmental Social Impact Assessment Project Report (SPR) for the Proposed Promotion of African Leucaena under Small-scale Irrigation at Mwichemo Village in Idakho North Kakamega South Sub-county, Kakamega County (Idakho "N" Project) carried out by NEMA registered EIA/EA experts in accordance with the Environmental Impact Assessment and Co-ordination Act (EMCA) 1999 (Revised 2015) and the Environmental Impact Assessment and Audit Regulations, 2003. We the undersigned hereby certify that the information and particulars given in this report are correct as they were conducted.

FOR THE CONSULTANT, ENVERTEK AFRICA CONSULT LTD

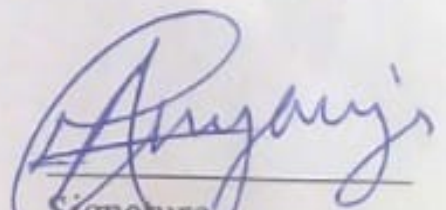
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LIST OF ABBREVIATIONS AND ACRONYMS

%	Percentage
°	Degrees (A unit of measuring latitudes and longitudes)
°C	Degrees Celsius
AIDS	Acquired Immune Deficiency Syndrome
ALVs	African Leafy Vegetables
Cap.	Refers to ‘chapter’ in the Laws of Kenya
CDE	County Director of Environment
C-ESMP	Construction Environmental and Social Management Plan
COVID-19	Corona Virus Disease
EA(s)	Environmental Audit(s)
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESM&MP	Environmental and Social Management and Monitoring Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FGD(s)	Focused group discussion(s)
GBV	Gender-based Violence
GHG	Green House Gas
GOK	Government of Kenya
GRM	Grievance Redress Mechanism
Ha	Hectare(s) (A unit of measuring land area)
HIV	Human Immuno-deficiency Virus
IEC	Information Education Communication
KCSAP	Kenya Climate Smart Agriculture Project
KEBS	Kenya Bureau of Standards
KES	Kenya shilling(s) (a unit of measuring currency in Kenya)
KFS	Kenya Forest Service
M/m	Metre(s) (A unit of measuring length)
MOALF	Ministry of Agriculture, Livestock and Fisheries
NEMA	National Environment Management Authority
No.	Number
NO ₃	Nitrate
OHS	Occupational Health and Safety
OSHA	Occupational Health and Safety Act
P. O.	Post Office
PAPs	Project Affected Persons
pH	Potential of hydrogen (a measure of acidic or basic)
PLWD	People Living with Disabilities
PPE	Personal Protective Equipment
PSEA	Prevention of Sexual Exploitation and Abuse
Reg. No.	Registration number
SEA	Sexual Exploitation and abuse

SH	Sexual Harassment
SHG	Self-Help Group
SOPs	Standard Operating Procedures
SPR	Summary Project Report
STIs	Sexually Transmitted Infections
TOR	Terms of Reference
TV	Television
VMGs	Vulnerable Marginalized Groups
WB	World Bank
WHO	World Health Organization
WRA	Water Resources Authority
WUA	Water Users Association

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.

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

Environmental Audit (EA): The systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing in conservation or preservation of the environment.

ESIA: 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 social management plan of that specific project and sound environmental management practices.

ESMP: 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.

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.

Proponent/Developer: Means a person proposing or executing a project which is subjected to an EIA or undertaking an activity specified in the second schedule of EMCA, 1999 (Revised 2015). In this document the Proponent is Abaochenje Self-Help Group.

Scoping: Is the process of determining the content and extent of the matters that should be covered in the environmental information to be submitted to a competent 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 an Act of Parliament of Kenya or under its Regulations.

Waste: Includes any matter whether liquid, solid, gaseous or radioactive, which is discharged, emitted or disposed in the environmental in such a volume composition or manner likely to cause an alteration of the environment.

EXECUTIVE SUMMARY

This document is an Environmental and Social Impact Assessment (ESIA) Summary Project Report (SPR) for the Proposed African Leafy Vegetables Production under Small-scale Irrigation Project in Mwichemo village, Idakho North Ward, Mutaho Location, Ikolomani Sub-county, Kakamega County. The project will entail small-scale irrigation of African Leafy Vegetables (ALVs) using surface water pumped into a reservoir and will be implemented by Abaochenje Self Help Group (SHG). The main objective of the project is to contribute towards reducing poverty and improving food security among the Abaochenje community through improved irrigated horticultural production resulting in increased agricultural outputs and farm incomes. The proposed project will benefit Abaochenje SHG and the entire community including about 31,847 people translating to 13,259 men and 18,588 women and among them 500 vulnerable marginalized groups (VMGs) such as youths, poor, widows/widowers, orphans, People Living with Disabilities (PLWD) and those infected with and/or affected by Human Immuno-deficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) i.e. 200 men and 300 women.

This assessment was carried out between November 2020 and March 2021. It involved screening to ascertain the environmental sensitivity of the proposed site and its surroundings in relation to the planned activities; site visits to physically inspect and document existing facilities at the site and natural and socio-economic features of importance; scoping in order to narrow down to the most critical environmental and social issues requiring detailed evaluation; public participation in order to collect the views of the stakeholders on the proposed project; and desktop studies.

The envisaged works entails harnessing water from Mulabi stream to a raised reservoir from where it will flow by gravity to reach out to the African Leafy Vegetables (ALVs) plots. A weir will be constructed at the point of intake on Mulabi stream in order to increase the level and volume of water for ease of uptake. A relevant solar pump will be installed at the weir so that it can pump water up into the reservoir. The farming areas consist of 5 No. blocks each with its own hydram for delivery of irrigation water and an open field drip irrigation system for the individual plots. A pit latrine will be constructed at the site for use by workers and visitors.

Public participation was done through a meeting with the community and members of Abaochenje Self-Help Group (SHG) at the site where 36 people (27 men and 9 women) including the proposed project beneficiaries especially members of Abaochenje Self-Help Group (SHG) and the area residents; the immediate neighbours of the proposed site; and Vulnerable and Marginalized Groups (VMGs) especially women, youths and people living with disabilities attended; and administration of questionnaires to 7 randomly selected area residents. Consultations were also done with representatives from various departments at the Ministry of Agriculture including the Kakamega County’s Kenya Climate Smart Agriculture Project (KCSAP) Coordinator, value chain heads and County Director of Irrigation; representatives from Kakamega County National Environment Management Authority (NEMA) office; and the Environmental and Social Impact Assessment (ESIA) experts. From the public consultation process, it was evident that the people have no objection with the proposed project at the proposed site. The Proponent promised to ensure that the contractor(s) give priority to the community members when recruiting the site workers.

The anticipated positive impacts of the proposed project include creation of employment opportunities, improved environmental conditions through establishment of plant cover, creation of demand for locally available materials, increased production of vegetables,

improved aesthetics, and an opportunity for capacity building of the community members. The anticipated negative impacts include encroachment into the riparian areas, destruction of flora and habitats for fauna, soil erosion and siltation, solid wastes including excavated soil, excessive usage of materials, fires, noise and vibrations, excessive extraction and usage of water, increased demand on electricity and fuel, waste water, environmental pollution, and increased traffic. The social impacts include gender-based violence and sexual harassment (GBV/SH), child abuse, sexual exploitation and abuse (SEA) by the project workers against community members, risk of increased incidences of HIV/AIDS and sexually transmitted infections (STIs), risk increased spread of COVID-19, and grievances/conflicts. Mitigation measures, related costs and the responsible persons have been proposed in the Environmental and Social Management and Monitoring Plan (ESM&MP) for each potential negative impact to include capacity building, emergency preparedness and evacuation procedures for emergencies in the case of safety and health risks; safe use of agro-chemicals and integrated pest management practices; and reforestation and afforestation of affected areas after completion of the construction works.

The proposed project cost is estimated to be KES 40,083,000.00. The Environmental and Social Management and Monitoring Plan (ESM&MP) will be implemented at a total cost of KES 3,621,560.00. The contractor will implement the Environmental and Social Management and Monitoring Plan (ESM&MP) during construction phase while the Proponent will implement Environmental and Social Management and Monitoring Plan (ESM&MP) during the operation phase.

The report concludes that if all the suggested mitigation measures and the above recommendations as indicated in the proposed environmental and social management and monitoring plans are implemented, then the proposed project will not adversely impact on the environment.

1 INTRODUCTION

1.1 Background

The Kenya Climate Smart Agriculture Project (KCSAP) is a World Bank (WB)-funded project that seeks to sustainably increase agricultural productivity, enhance resilience to climate change risks and reduction in Green House Gas (GHG) emissions. The Kenya Climate Smart Agriculture Project office in collaboration with County Government of Kakamega wishes to promote African Leafy Vegetables (ALVs) production under Small-scale irrigation in Mwichemo village, Idakho North Ward, Mutaho Location, Ikolomani Sub-county, Kakamega County. The project will entail small-scale irrigation of ALVs using surface water pumped into a reservoir and will be implemented by the Abaochenje Self-Help Group (SHG) that consists of 77 people (35 men and 42 women) the direct beneficiaries are 936 men and 624 Women. The project will be implemented on a 2.5-acre piece of land (Plot No. Kakamega/Shikulu/117) that lies on Latitude 0.234710° N and Longitude 34.650680° E. The main objective of the project is to contribute towards reducing poverty and improving food security among the Abaochenje community through improved irrigated horticultural production resulting in increased agricultural outputs and farm incomes.

The specific objectives are:

To strengthen farmers' organization through the formation and development of a strong Water Users Association (WUA) to coordinate farmers' participation during planning, implementation and production phases of the project.

To upgrade irrigation technology from bucket fed to pump fed system in order to increase area under irrigation of ALVs and facilitate commercial irrigated horticultural production in the area and third, to enhance the capacity of farmers (water users) including VMGs in horticultural and water management practices for increased production of ALVs for both household consumption and sale.

The project will benefit both the group members and the entire Mwichemo community that neighbours the proposed project site. The total number of direct beneficiaries are 1,560 among them are 936 men and 624 women. The larger beneficiaries will include about 31,847 people: 13,259 men and 18,588 women and among them 500 vulnerable marginalized groups (VMGs) such as youths, poor, widows/widowers, orphans, PLWD and HIV/AIDS affected/infected i.e. 200 men and 300 women. This is in line with KCSAP's objective of increasing agricultural productivity and enhancing resilience to climate change risks such as drought. There will be an all year-round supply and availability of ALVs in the community through irrigated agriculture.

1.2 Justification of the project

The proposed project will contribute to increased food production in the area. It will also increase capacity of VMGs to participate in various agricultural value chains. There will be improved productivity per unit area and increased income per household. Good agricultural practices to be promoted by the project will result in protection of the catchment area and

reduced soil erosion. According to the project proposal, the following factors favour the development of the proposed project at the proposed site:

- a) Existence of a good irrigation potential site which is endorsed with abundant good quality water from Mulabi stream and good land with black clay soils which normally have high fertility and productivity and hence favour commercial farming;
- b) Accessibility to markets (Kakamega, Kisumu and Bungoma towns) through road;
- c) Many farmers in the area are already engaged in irrigated horticultural production;
- d) Demand for project development in the area to improve the lives of the community came from the intended beneficiaries through a formal request;
- e) Stability of the existing small self-help groups are positive indicators for a stable WUA needed to manage the project; and
- f) Land holdings are of average sizes which can be effectively and profitably used to sustain commercial irrigated agricultural production.

1.3 Rationale for the Environmental and Social Impact Assessment process

1.3.1 Justification of the ESIA and the need for the SPR

The proposed project is categorized as a Medium-Risk Project under 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), (Revised 2015)]. The proposed project falls under the category described as “Agriculture and related activities” as it focuses on medium-scale agriculture not exceeding one hundred hectares. The proposed project on the basis of its potential to pose both environmental and social impacts require undertaking of an ESIA before it is implemented in accordance to Section 31 (3) (a) (i) and (ii), of the Environmental (Impact Assessment and Audit) Regulations, 2003. The SPR was as a result of the recommendation of the County Director Environment (CDE) based on the screening report and also because NEMA Public Notice on ESIA and Legal Notice No. 31 which identifies the proposed project as Low risk, thus requiring only a Summary Project Report (SPR). The main purpose of the SPR is to assist the Proponent, NEMA and all other stakeholders in understanding the proposed project and its potential environmental consequences and thus provide a basis for making informed decisions on the project.

1.3.2 Objectives of the ESIA SPR

The following are the main objectives of the ESIA SPR:

- a) To comply with EMCA, 1999 (Cap. 387) (Amendment 2015);
- b) To identify and assess the likely negative and positive environmental and social impacts that would arise with the implementation of the proposed project;
- c) To identify and plan for measures for the mitigation of the identified impacts; and
- d) To provide a basis for decision-making to reviewers, the Authority and all other stakeholders.

1.3.3 Terms of Reference and scope for the Environmental and Social Impact Assessment

Terms of Reference (TOR) outlining the expectations of the ESIA were documented by the Proponent and the ESIA team in accordance with the requirements of the Environmental (Impact Assessment and Audit) Regulations, 2003 in order to lay a basis for the assessment. The following were done to achieve the TOR:

- a) Described the location of the proposed project especially the physical area that may be affected by the project's activities.
- b) Identified and described the materials to be used, products and by-products, including wastes to be generated in all phases and the methods of their disposal.
- c) Undertook a public participation and consultation process in order to obtain views and comments from interested and affected persons.
- d) Identified and evaluated the environmental, economic and socio-cultural impacts of the proposed project to the local community and the nation in general.
- e) Identified mitigation measures to the identified impacts in order to ensure the health and safety of the workers, and neighboring communities throughout the project cycle.
- f) Developed comprehensive environmental and social management and monitoring plans for the proposed project covering all its phases upon which all mitigation/enhancement measures will be carried out.
- g) Developed this SPR and necessary soft and six hard copies for submission to NEMA. Submission will also be done online to the NEMA portal.

1.4 Assessment methodology and limitations

This assessment was carried out between November 2020 and March 2021 in accordance with the procedure outlined in the Environmental (Impact Assessment and Audit) Regulations, 2003. It involved:

- a) Screening: The site of the proposed project, the environmental sensitivity of the areas surrounding the proposed site, the activities of the proposed project, the nature of community and expected social issues as a result of the proposed project were evaluated to confirm whether or not it fell within a category that requires an ESIA before commencement and the level of ESIA that it would be subjected to. A screening checklist for the proposed project is attached (Appendix II).
- b) Site visits to physically inspect and document existing facilities at the site and natural and socio-economic features of importance.
- c) Scoping: The ESIA team accompanied by officials from KCSAP Kakamega County conducted a reconnaissance survey at the site. This survey was done in order to narrow down to the most critical environmental and social issues requiring detailed evaluation.
- d) Public participation: This was done through a meeting with members of Abaochenje SHG and other beneficiaries including the neighboring residents where a total of 36 people attended; and administration of questionnaires to randomly selected area residents. There were consultations with representatives from KCSAP Kakamega,

NEMA Kakamega, and officials of Abaochenje SHG. The major issues addressed during public participation included social and economic benefits of the proposed project and other perceived and expected impacts of the project. The filled-in questionnaires from the interviews are attached (Appendix VII). The lists of attendance and the minutes of the public meeting are also attached (Appendices IV and Appendix VI) respectively.

- e) Desktop studies: The ESIA team reviewed documents related to the proposed project including the proposal by the community among other documents in order to understand the project background and its context.

The main limitation to the assessment was lack of existing adequate and reliable information that left the team with no option but to rely on responses from stakeholders and the Abaochenje SHG members. The consultant has evaluated information obtained within the limits of the established scope of work.

1.5 Organization of report chapters

In the Summary Project Report there are seven chapters, Chapter one is an introductory, Chapter two gives a highlight on the nature of the proposed project while chapter three describes the nature of the project. Public Participation and Stakeholder Consultations is covered in Chapter four, Potential Impacts and Mitigation Measures are described in Chapter five. Environmental and Social Management and Monitoring Plan (ESM&MP) is covered in chapter six and Finally Chapter seven provide the conclusion and Recommendations. The last page of the report covers references and annexes

2 NATURE OF THE PROPOSED PROJECT

2.1 Introduction

The Proposed project was identified through a series of meetings involving the local leadership, County and National government officials, the community and other stakeholders. This involved various site visits to the area and assessment of the community felt needs. The proposed project cost is estimated to be KES 40,083,000.00. The construction is expected to commence after approval by the authorities and will take about 8 months. The proposed project will benefit Abaochenje SHG and the entire community including about 31,847 people translating to 13,259 men and 18,588 women. There are 1560 direct beneficiaries (936 men and 624 women). Among all the beneficiaries (direct and indirect) are 500 vulnerable marginalized groups (VMGs) such as youths, poor, widows/widowers, orphans, PLWD and HIV/AIDS affected/infected i.e. 200 men and 300 women. The project implementation will not displace any person or facility in the community.

2.2 Project design

The source of water (Mulabi stream) is located in the deep valleys at an elevation of 1,394.0 m above sea level. Mulabi stream is one of the two tributaries of a larger stream called Ishianda. A weir will be constructed at the point of intake on the stream in order to increase the level and volume of water for ease of uptake. A relevant solar pump will be installed at the weir so that it can pump water up over a 26.0 m delivery lift (vertical rise) into the reservoir (masonry tank) to be constructed at a strategic high ground (1,420.0 m above sea level) at the site so that it can then flow by gravity to the farming areas. The farming areas consist of 5 No. blocks. Each of the blocks will have an own hydram for delivery of irrigation water and an open field drip irrigation system for the individual plots. Power for pumping will be supplied by 110 No. solar panels each of 300W thus providing a total of 33.0kW.

The scheme will basically have 1 No. intake and rising main line to collect water from the source to the reservoir, 5 No. block lines constructed at respective off-take points each to supply water to its respective block in the scheme, and group lines constructed at respective off-take points to supply water to individual plots. Off-take points and inspection chambers will be constructed at specific points along the irrigation pipelines. The purpose of the inspection chambers will be to make it easy for maintenance of the pipelines. The detailed project design is attached (Appendix X). The site layout is presented in Figure 1.

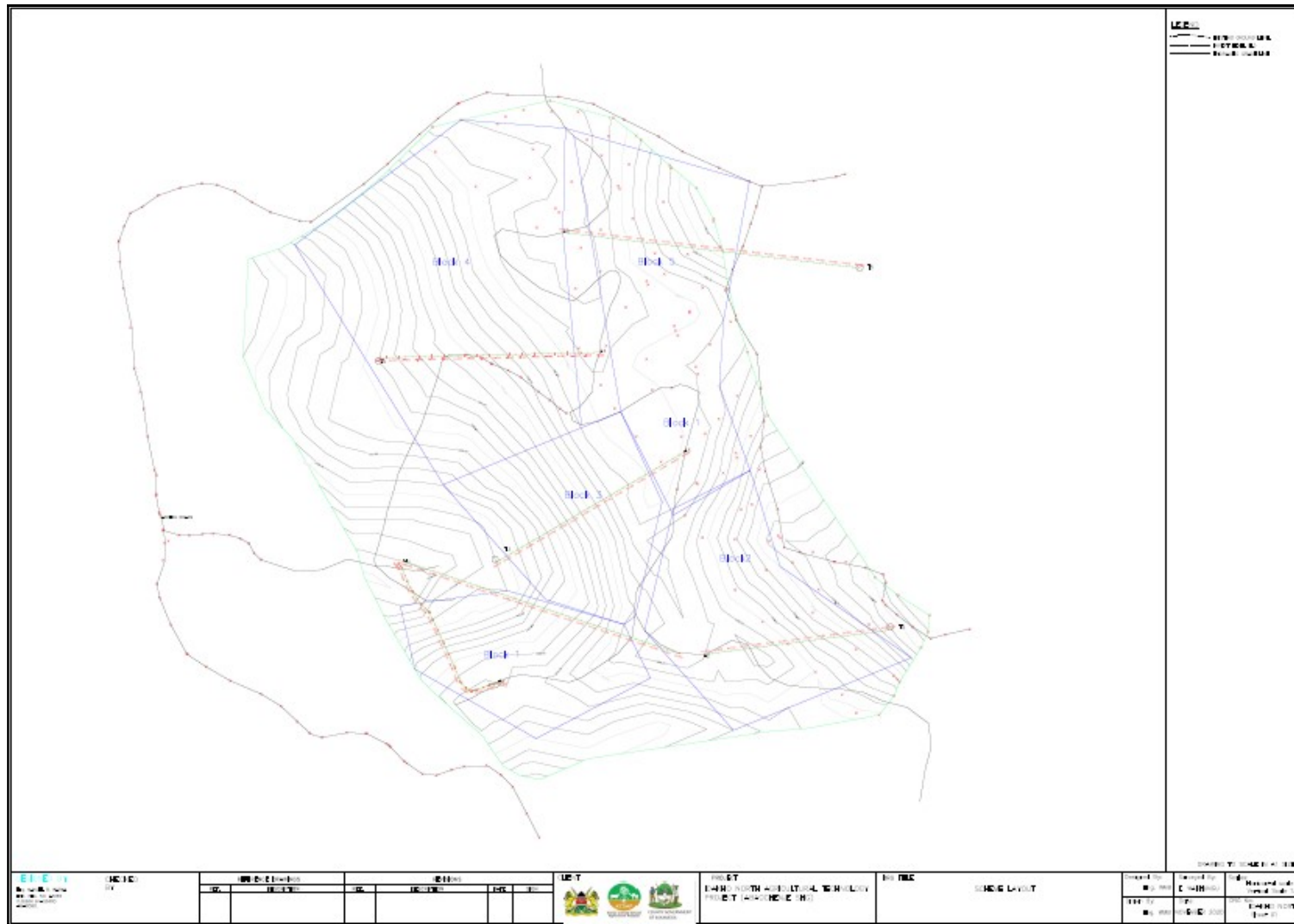


Figure 1: Scheme layout of the proposed Idakho “N” Project

2.3 Technology and machines to be used

The contractor(s) shall employ modern and best building technologies that meet the local and international standards to include a concrete mixer, a plate compactor, a power vibrator and a welding machine. Hand tools especially *jembes*, wheelbarrows, and spades shall also be used.

2.4 Material input, sources and impacts associated with their use

The proposed activities will use materials that conform to Kenya Bureau of Standards (KEBS) requirements for quality and reduction of any potential impacts on the environment and users.. The sources of construction materials though not established during the undertaking of the ESIA will be both local and external.

2.5 Summary of proposed project activities

The proposed project has three main overlapping phases i.e. construction, operation and decommissioning phases. The construction activities will include excavations; fencing of the project site; construction of the weir and installation of the uptake point; installation of a piping system as the irrigation water distribution network, hydrants and off-take points; construction of inspection chambers; construction of a masonry master tank as a reservoir for irrigation water; establishment of demo plots and soil conservation structures; construction of a pump house, a caretaker's sentry room, a pit latrine, an office, a cold room for the ALVs and a screen house for hardening clean planting materials for tissue culture bananas; installation of electricity; and establishment of a greenhouse for tomato production. The operation activities will include cultivation of ALVs, irrigation, management of demo plots and soil conservation structures, control of the flow of irrigation water, handling and sale of ALVs, and repair and maintenance of the irrigation system. A pit latrine will be constructed at the site for use by workers and visitors.

3 LOCATION OF THE PROPOSED PROJECT

3.1 Introduction

The proposed site is found in Mwichemo village, Idakho North Ward, Mutaho Location, Ikolomani Sub-county, and Kakamega County, Kenya. Figure 2 shows location of the project site on the Kakamega County map. Figure 3 presents google earth map location of the proposed project area.

3.2 Location and land ownership

The development will be undertaken on a 2.5-acre piece of land owned by the Abaochenje SHG and will benefit another 20 acres owned by group members and other residents within the project area. A copy of the Title Deed is attached (Appendix I).

3.3 Proposed site and its neighbourhood

The proposed parcel of land is fenced with barbed wire reinforced with wooden poles. The site is undeveloped and is rich in indigenous vegetation, mainly short grasses, forbs and some scattered trees and shrubs (Plate 3.1). Some of the plants at the proposed site include *Lantana camara*, *Tithonia diversifolia*, *Markhamia lutea*, *Bischofia javonica* and *Spathodea nilotica*. The soils at the proposed site are sandy-loams with medium acidity. The soils are generally fertile but require improvement in organic matter through addition of manure. The manure will also improve nitrogen and water holding capacity. A copy of the soil analysis report for the proposed site is attached (Appendix III). The general slope of the area rises to the ranges of 30 – 40 %.

The main sanitary facilities within the homesteads are pit latrines. The neighbouring land to the South comprises of a sugar plantation and farm forest. The increasing population within the area poses environmental and social challenges in the area in regard to increased pressure on land resource and food insecurity that may result to encroachment into wetlands for agricultural production. This may affect water availability. Ikolomani Sub-county has no gazetted forests and most of land is under crops and farm forests.

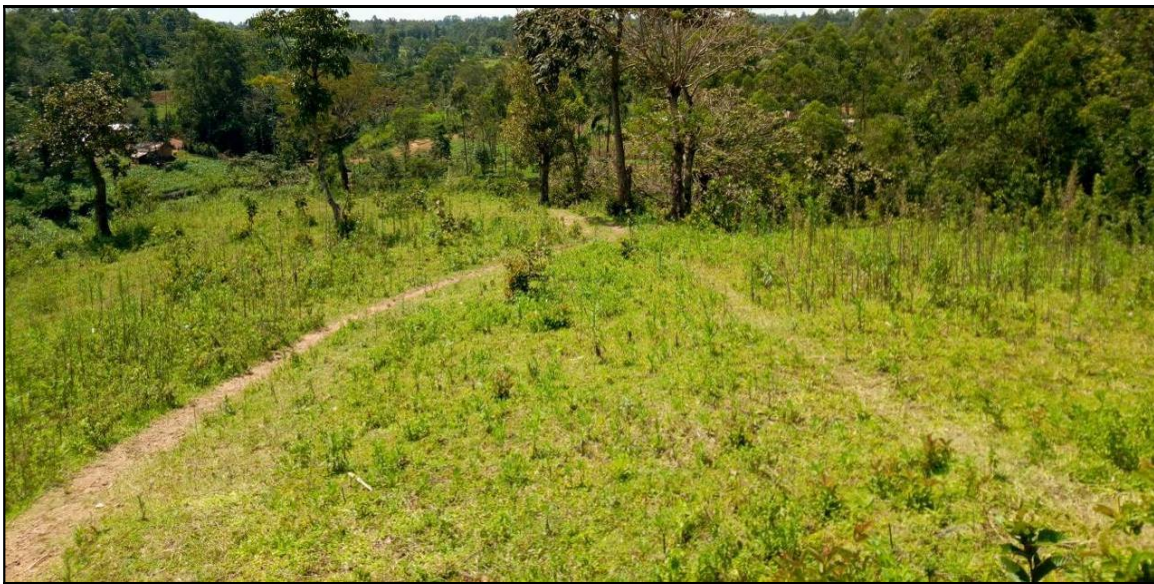


Plate 3.1: The proposed project site for the demo plots



Plate 3.2: A homestead and cultivated parcels of land to the North of the proposed site

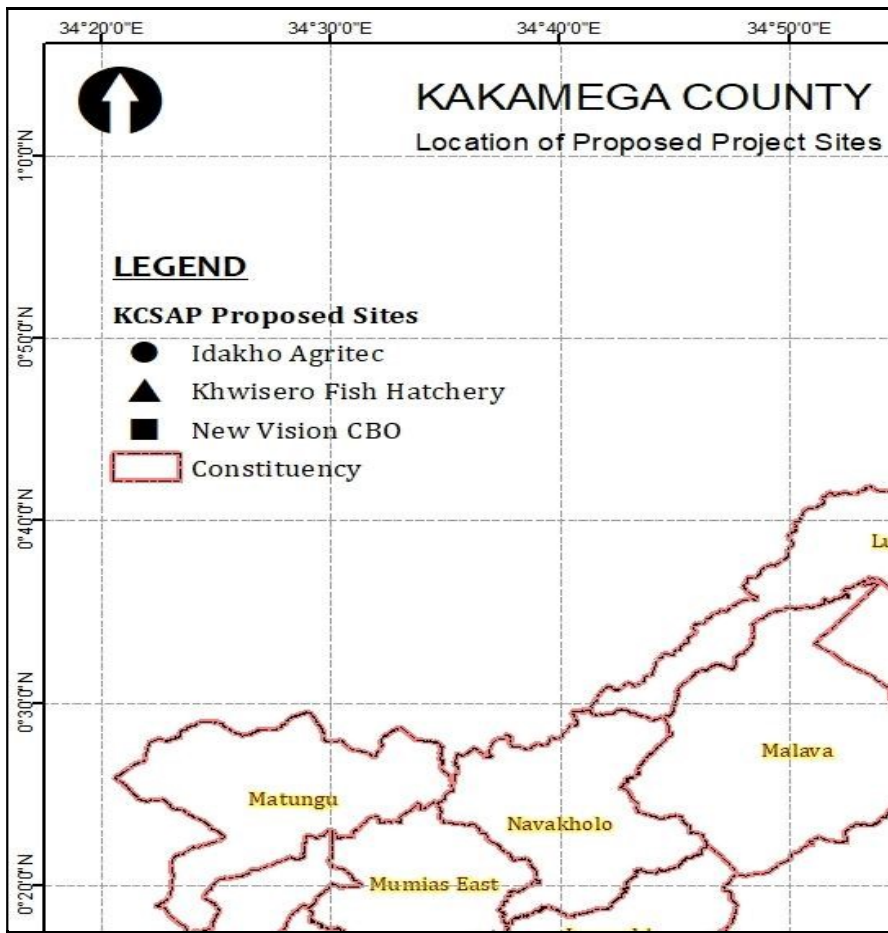


Figure 2: Location of the proposed site on the Kakamega County Map



Figure 3: The position of the proposed site for the proposed Idakho "N" Project
Source: Google Maps (2020)

4 PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

4.1 Introduction

Members of the public are supposed to participate and get involved because the project being carried out will affect them. 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 project.

4.2 Objectives of public participation

This public participation was conducted 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.

4.3 Methodology for public participation

This public participation was done through a meeting with the community and members of Abaochenje SHG at the site on Monday, March 1, 2021 where 36 people (27 men and 9 women) including the ESIA/EA experts attended (Plate 4.1). The list of attendance and the minutes are attached (Appendices IV and VI) respectively. The ESIA team then administered questionnaires to 7 randomly selected. The filled questionnaire forms are attached (Appendix VII).



Plate 3.3: Participants at the public participation meeting

4.4 Summary of comments from public participation and how they were responded to

The main issues recommendations and responses during the public participation included:

- a) Fear of contracting COVID-19: Members raised concern whether they will be provided with PPE.

The Proponent promised to take all necessary precautions to ensure that the project staff, workers and visitors will not be predisposed to risks of contracting COVID-19. The Proponent added that they will provide appropriate PPE to all workers who will be working in areas which will present threatening conditions.

- b) Reduction of grazing land as a result of the proposed project.
Although the proposed site is currently used as a grazing field by the community, the members of the community considered the benefits that will come with the proposed project and unanimously agreed that the benefits of the proposed project outweighed the negative impact of reducing grazing land.
- c) Provision of employment opportunities.
The people were optimistic that the proposed project will create some job opportunities. They urged the Proponent to instruct the contractor(s) to consider area residents when offering some of the job opportunities at the site including fencing and masonry works among others.
- d) Increased food production through irrigated farming.
There will be enhance food security in the area due to mass production of ALVs. Thus, the vegetables will be readily available in the area. In addition, the women were happy that as a result of irrigation, vegetables will be available all-year-round and therefore the distance that they travel to the markets in search of vegetables will be reduced and they will now have more time dedicated to other productive activities. The people were happy that consumption of indigenous vegetables will ensure the nutritional levels are met and hence an improvement in health.
- e) Ownership and sustainability:
It was noted by stakeholders that previous projects in the area have not been sustainable as there was low involvement of all stakeholders, across all stages of projects. This consequently led to the project activities being abandoned at the end of the project life.
It was therefore indicated that the project should ensure that all relevant stakeholders are adequately engaged in the project for maximum output.
- f) Child labour
The people were concerned that some of the people will engage children in hard jobs at the farm. It was noted that the local administration and the community members will work together to ensure that children under the age of 18 years attend school hence cases of child working in farms during school days should not be anticipated or allowed.
- g) The proposed project will strengthen family cohesion.
The men were particularly happy that since vegetable farming is commonly done by the women, their wives will be able to save substantial amount of money from the ALVs business and use it to meet some of their family needs including fees for the children. This will lead to improved relationship between spouses. One of the men emphasized his trust that women will be responsible for managing finances from the farm produce and therefore he was sure that there will be no conflicts between spouses over control of income from the ALVs.
- h) Increased households' income and improved social economic status among the households in the community.
The members were hopeful that by selling the vegetables, farmers and households will earn income and build capital for starting other income generating activities such as poultry farming. They requested to be capacity built on matters of sustainable land management, agribusiness and tree nursery establishment.

5 ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

5.1 Introduction

The proposed project will result in both positive and negative environmental and social health impacts. These impacts have been discussed and enhancement and mitigation measures provided in regard to all phases of the proposed project cycle; construction, operational and decommissioning. The negative impacts will be minimal and will only last for the time of construction phase, with a few lasting for a long time during the operation phase.

5.2 Anticipated environmental and social impacts during the pre-construction/preparatory phase

The pre-construction phase includes creating a strategic plan for the project; creating a design; securing permits, licenses or entitlements; and gathering the labor and resources required for construction. The main impacts during the preparatory phase will include movement of survey and assessment teams which will result in increased traffic in the area and loss of privacy of neighbors to the site.

Mitigation measure

Minimize trips to the site and subsequently moving into the area in large groups that can scare the area residents and jeopardize their privacy.

Create awareness and engage the communities so that they are well informed in advance.

5.3 Anticipated environmental and social impacts during the construction phase

5.3.1 Anticipated positive environmental impacts during the construction phase

The anticipated positive impacts during the construction phase include the following:

5.3.1.1 Improved environmental conditions through plant cover

Plant cover establishment including agroforestry are some of the activities associated with the proposed project. This will help in improving the environmental conditions of the area.

Enhancement measures

The Abaochenje SHG in collaboration with the local administration will facilitate the community in planting trees at their farms.

5.3.1.2 Creation of employment opportunities

It is estimated that 30 % of the project cost will be or has been reflected in employment of professional services and labour. These includes professional services of environmental experts, land surveyors, agriculturists, engineers and skilled and unskilled labour for about 20 – 30 people. Indirect employment will be created where suppliers of foodstuffs and other goods and products will gain income by supplying their services and products to the construction site.

Enhancement measures

- a) The Proponent will consider the area resident for most of the job opportunities at the site including masons, plumbers, casual labour etc.
- b) The Proponent will ensure that the contractor(s) do not discriminate some of the community members or other persons based on gender, skin colour, and relationship with the members of Abaochenje SHG etc. when offering job opportunities at the site.

5.3.1.3 Demand for locally available materials

It is estimated that 70 % of the project's cost will be used in the procurement of materials. This includes building stones, sand, steel and cement among others. The supply of these materials

translates into boosting both the local and national economy. The multiplier' effect of this project also translates into increased revenue to the county and national governments in terms of tax and other service charges.

Enhancement measures

The Proponent must ensure that as part of the contracting agreements the contractors are advised to procure most of the construction materials from the suppliers within the local community.

5.3.2 Anticipated negative environmental impacts during the construction phase

The anticipated negative impacts during the construction phase include the following:

5.3.2.1 Encroachment into riparian areas

The project construction activities have the potential of spilling into the riparian areas neighboring the proposed site especially on Ishianda stream and its tributaries.

Mitigation measures

- a) Demarcate the project area to be affected by the construction activities in order to prevent unnecessary entry into riparian areas.
- b) Fence the project site to prevent interactions with the external environment including the riparian area.

5.3.2.2 Impacts on flora and fauna

The impacts on vegetation and soil will be born from removal and disturbance of vegetation, movement of people and machinery, excavation and compaction. Most of these impacts are short-lived and localized. Plants at the proposed site will be cleared to pave way for the construction activities and when creating access roads and sites for storage of construction materials. Excavation just like clearance of vegetation alters and/or destroys habitats of organisms.

Mitigation measures

Vegetation removal and disturbance are unavoidable during the construction phase. It is however important to restrict any flora and fauna removal and disturbance to the actual project area to avoid spill-over effects to neighboring areas and that the same are restored by:

- a) Demarcating the project area to be affected by the construction works.
- b) Avoiding or minimizing clearing of vegetation particularly of indigenous trees at the proposed site and only clearing them where necessary.
- c) Re-establishing vegetation in some parts of the disturbed areas through implementation of a well-designed landscaping programme by planting of appropriate plants.

5.3.2.3 Excavated soil as solid waste

If excess soil is not properly disposed, it results into nuisance as solid wastes, dust and silt.

Mitigation measures

- a) Utilize the excavated soil at the site to adjust levels.
- b) Excess soil could be used in filling road potholes among many other uses.
- c) Part of the topsoil excavated from the proposed site can be re-spread in areas to be landscaped within and/or outside the proposed site or farmlands outside the proposed site.

5.3.2.4 Impacts on soil and water resources

The excavation works will expose the soil resulting to soil erosion and siltation of the streams especially Mulabi stream because of its proximity to the proposed site. They will also result into loose soil which is prone to both water and wind erosion. Loosening of soil interferes with soil structure. When water penetration into the soil is interfered with, surface run-off during the rainy season is enhanced resulting into soil erosion and siltation.

Mitigation measures

- a) Create terraces across the slope in the vegetable fields to reduce run-off velocity and increase infiltration of storm water into the soil.
- b) Rip off compacted areas in areas where compaction will have adversely affected after construction to allow aeration of soil and ease infiltration of water into the soil.
- c) Consult the ward agricultural office to ensure that only the right fertilizers, seeds and chemicals are used in the vegetable farms.

5.3.2.5 Excessive usage of consumable materials

The proposed project will require significant amounts of materials. Fuel will be consumed indirectly through machines. The overall environmental impacts become significant if the amounts required are large.

Mitigation measures

- a) Evaluate the project and quantify material requirements to ensure that the design optimizes the use of materials and minimizes wastage.
- b) Ensure some of the material for use in construction such as building blocks are taken for testing and approval at the Public Works offices before they are used for construction.
- c) Properly plan for the transportation of materials to ensure that products of fossil fuels (diesel and petrol) are not excessively consumed.

5.3.2.6 Noise and vibrations

.The proposed site is found in a residential area and, therefore, high vibrations can weaken adjacent buildings resulting into cracking of their walls. Construction noise and vibrations are short-term impacts.

Mitigation measures

- a) Minimize the impacts of temporary noise and vibration by:

- i) Posting notices at the site to inform people of construction activities, time and day.
- ii) Providing ear protective devices to workers and visitors in noisy environments to prevent high frequency noise emitted by the high frequency machines.
- iii) Planning the construction work to take place only during the day when the neighbours are also at work and maintaining reasonable working hours of not more than 8 hours within any 24-hours working duration so as to reduce the number of complaints concerning noise from the workers and neighbours. Workers will work in shifts.

5.3.2.7 Water usage

During the construction phase, both the workers and the construction works will use water in cleaning, in the concrete mixing and in curing cemented surfaces.. The increased water-use may lead to acute shortages and become a source of conflicts with other members of the community...

Mitigation measures

- a) Ensure that the intake point on Mulabi stream is not a fish/aquatic life breeding area and process of obstructing does not interfere with the stream ecosystem.
- b) Water will be collected in tanks in order to ensure continuous supply of water to user points and minimize acute shortages.
- c) The Proponent will install a meter at the intake point on Mulabi stream for ease of monitoring of water intake into the scheme
- d) Manage water-use by providing every supply pipe with an approved stop tap.

5.3.2.8 Use of energy (electricity and fuel)

During construction, electricity may be required to run machines such as drills, soil compactors and welding machines. Fuel will be required to run generators and construction vehicles. Improper handling of electricity may lead to shocks, electrocution and damage to electrical appliances. On the other hand, fuels are usually inflammable and could result in fires. Fuel leaks and spills can cause fire explosions leading to destruction of property, injuries and deaths..

Mitigation measures

Possible options for minimization of energy include:

- a) Consider installing alternative energy sources such as solar panels not only for power back-up but also to reduce dependency on electricity.
- b) Switch off all energy using equipment when they are not in use.
- c) Regularly check the working of energy-using equipment to ensure that there are no faults that could lead to high energy-consumption.

5.3.2.9 Solid wastes

During the construction phase, construction wastes including excess excavated soil and removed plant material are the main sources of solid wastes. Solid wastes can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts on animal health or be a potential source of disease pathogens or form breeding grounds for: disease causing vectors such as mosquitoes; rats; cockroaches and lice and other

vermin leading to increase in incidence of associated diseases. Some waste materials especially the plastics are not biodegradable hence may cause long-term injurious effects to the environment.

Mitigation measures

The contractor(s) will be responsible for efficient management of solid waste generated by the project during its construction or repair and maintenance while the Proponent will be responsible during the operation phase. In this regard:

- a) Provide bins for separate collection of wastes into appropriate sorts such as recyclable and non-recyclable and label the collection bins.
- b) Where possible material considered as waste may be re-used or recycled or be given to who may consider them useful for others uses.
- c) Advise contractors and workers to order materials according to needs to reduce waste.
- d) Maintain and repair equipment rather than replacing it to reduce waste.
- e) Put in place an efficient, regular and appropriate waste collection and disposal scheme that will prevent the accumulation of wastes at collection areas.

5.3.2.10 Increased traffic flow

During construction, there will be an influx of traffic to and from the proposed site. These will include vehicles used in facilitating the construction work and people seeking employment opportunities, workers, managers, environmental inspectors and suppliers of foodstuffs to the construction workers. Though increased traffic during construction is a short-term impact, it has the effect of causing congestion on the road which may subsequently results in accidents on the roads.

Mitigation measures

- a) Properly plan for the transportation of materials to ensure that vehicles are optimally filled to reduce the number of trips done or the number of vehicles on the road.
- b) Place clear signage at the gate to alert drivers to be cautious about the construction and to look out for entering and/or exiting vehicles.
- c) Create a parking space and provide adequate space for turning of vehicles at the gate in order to give drivers enough room to maneuver in and out of the site.

5.3.2.11 Wastewater

A lot of wastewater is expected to come from cleaning areas. Wastewater has associated problems when it leaks into the environment. Such problems include poor sanitation, nuisance and associated diarrhea diseases. Poor surface drain management may lead to blockage of drains which in turn could result in flooding and unsanitary conditions within the neighbourhood.

Mitigation measure

Create drains for wastewater and direct them into existing storm drains.

5.3.2.12 Exhaust fumes and dust

Limited air pollution will occur mainly due to fugitive emissions from vehicles and machines and dust generation from various construction activities. Particulate matter pollution is likely to occur during the site clearance, excavation, and loading and transportation construction materials. The construction workers and the people in the neighbourhood are the main receptors of exhaust fumes and dust.

Mitigation measures

- a) Ensure vehicles only use designated access routes.
- b) Sensitize drivers to stick to prescribed speed limits.
- c) Ensure proper repair and maintenance of vehicles and equipment to minimize exhaust gases.
- d) Provide workers with dust masks to mitigate.

5.3.3 Anticipated social and health impacts during the construction phase

5.3.3.1 Sexual Exploitation and Abuse by project workers against community members

This impact refers to SEA committed by project staff against communities and represents a risk at all stages of the project, especially when employees and community members are not clear about prohibitions against SEA in the project.

Mitigation measures

- a) Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).
- b) The SEA action plan will include how the project will ensure necessary steps are in place for:
 - i) Prevention of SEA: including Code of Conducts and ongoing sensitization of staff on responsibilities related to the Code of Conducts and consequences of non-compliance; project-level Information Education Communication (IEC) materials.
 - ii) Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management.
 - iii) Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard grievance redress mechanism (GRM); mainstreaming of prevention of sexual exploitation and abuse (PSEA) awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights.
 - iv) Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and

disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.

5.3.3.2 Gender-based violence and sexual harassment (GBV/SH)

This impact is triggered during project construction phase when the contractor(s) fail to comply with the following provisions:

- a) Gender Inclusivity requirements in hiring of workers and entire project management as required by Gender Policy 2011 and 2/3 gender rule; and
- b) Failure to protect human risk areas associated with, disadvantaged groups, interfering with participation rights, and interfering with labour rights.

Mitigation measures

- a) Ensure clear human resources policy against sexual harassment that is aligned with national law.
- b) Integrate provisions related to sexual harassment in the employee Code of Conduct.
- c) Ensure appointed human resources personnel to manage reports of sexual harassment according to policy.
- d) The contractor(s) shall require employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from SEA.
- e) The contractor(s) will implement provisions that ensure that GBV at the community level is not triggered by the project, including:
 - i) Effective and on-going community engagement and consultation, particularly with women and girls.
 - ii) Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc.
- f) The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment.
- g) The contractor will ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.

5.3.3.3 Child abuse

Children within the project area will be exposed to risks associated with interaction between them and project workers. This includes child labour and sexual abuse which coherently leads to teenage pregnancies and exposure to communicable diseases such as HIV/AIDS.

Mitigation measures

- a) The contractor will develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project.
- b) All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behavior.
- c) Children under the age of 18 years will not be hired on site as provided by Child Rights Act (Amendment Bill) 2014.

- d) Refrain from hiring children for domestic or other labour, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- e) Comply with all relevant local legislation, including labour laws in relation to child labour specifically provisions of Kenya's Employment Act, 2007 (Cap. 226) Part VII on protection of children against exploitation.

5.3.3.4 Risk of increased incidences of HIV/AIDS and STIs

The influx of people may bring communicable diseases to the project area, including STIs, or the incoming workers may be exposed to diseases to which they have low resistance. This can result in an additional burden on local health facilities and resources. Local health and rescue facilities may also be overwhelmed and/or ill-equipped to address the industrial accidents that can occur in a large construction site.

Mitigation measures

- a) Contractor(s) to sensitize workers and community members on HIV/AIDS awareness and other communicable diseases to be instituted and implemented as part of the contractor's Health and Safety Management Plan to be enforced by the Supervising Engineer. This will involve periodic HIV/AIDS and other communicable diseases Awareness Workshops for Contractor's Staff.
- b) Controlled access to contractor's workforce camps by outsiders.
- c) Contractor(s) to provide standard quality condoms at the construction site during the construction period.

5.3.3.5 Risk of increased spread of COVID-19 at work sites

During project execution (civil works), large numbers of workers will be required to assemble together in meetings, toolbox talks and even at work sites; varied number of workforce including suppliers of material and services are also expected to come in from various places in the country which may be COVID-19 hot spots; and interaction of workers with the project host community will happen as workers find accommodation close to work sites, and/or return to their homes after works. The potential for the spread of any infectious disease like COVID-19 by projects is high. There is also the risk that the project may experience large numbers of its workforce becoming ill and will need to consider how they will receive treatment, and whether this will impact on local healthcare services including the project host community.

Mitigation measures

- a) The contractor(s) shall put in place measures to prevent and manage the spread of the COVID-19.
- b) The contractor(s) will develop Standard Operating Procedures (SOPs) for managing the spread of COVID-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilization. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions.
- c) Provide relevant PPE for all project personnel and ensure that they use them appropriately.
- d) The project shall put in place means to support rapid testing of suspected workers for COVID-19.

- e) Avoid concentrating of more than 15 persons or workers at one location. Where more than one person are gathered, maintain social distancing at least 2 meters. All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid COVID-19 screening which may include temperature check and other vital signs.
- f) Install handwashing facilities with adequate running water and soap or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used.
- g) Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of workstations, doorknobs.

5.3.3.6 Grievances/conflicts

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, physical harm, and nuisance from construction activities;
- c) Health and safety risks;
- d) Socially unacceptable project staff relations with the communities and other stakeholders;
- e) Conflicts over water sources; and
- f) Pollution and other environmental related impacts.

Mitigation measures

The following are possible mitigation measures to manage grievances:

- a) Establish a GRM for the proposed project;
- b) Seek to establish amicable relationships with stakeholders and manage the impact of the project activities on affected communities;
- c) 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;
- d) Ensure the grievance redress mechanism is available to the affected community members and stakeholders at no cost;
- e) 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;
- f) 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
- g) 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.

5.3.3.7 Anticipated impacts related to occupational and public/community safety and health

There are three main types of occupational health and safety hazards that may be of concern. These are physical, chemical and biological. Potential physical hazards will include noise and accidents. Chemical hazards will involve exposure to harmful gases and chemicals by inhalation, ingestion and skin contact. Biological hazards involve exposure to pathogenic organisms which may cause diseases. Specific areas of concern include fire hazards, noise and vibrations, congestion, body contact, failure to observe social distancing thus exposing other people to COVID-19, poor sanitation, gender-based violence, sexual harassment and accidents at the site. Poor sanitation could result from presence of potential environmental pollutants at the site including wastewater, decomposing solid wastes, dust and exhaust emissions. Accidents including cuts, pricks and bruises; electrocution from naked electrical cables; falling in uncovered holes and/or trenches and from raised places and suffocation from lack of oxygen in confined spaces. Accidents could result from lack of supervision and job training, improper handling of machinery and hand tools and inappropriate carrying out of tasks.

Mitigation measures

Mitigation options to some of the impacts have been discussed. Additional mitigation measures to other impacts are:

- a) Supervise all works at the site e.g. plumbing, masonry, etc.
- b) Support all structures under construction.
- c) Keep all passages clear at all times.
- d) Adopt proper working procedures and when working with chemicals, machines and equipment.
- e) Remove all soil, boulders, and other heavy materials from the edges of excavations.
- f) Fence the construction sites for protection, privacy, reduction of trespass and theft, and control of entry by straying animals and therefore avoid conflicts between people at the site and the people in the neighborhood.
- g) Ensure that trained first aid personnel are always available on site to handle emergencies.
- h) Put in place an appropriate emergency response plan including having emergency contacts (such as ambulance, fire tender and police) conspicuously displayed.
- i) Have a fully equipped First Aid Kit (containing a first aid manual and is equipped with sterile adhesive bandages, safety pins, cleansing agent/soap, latex gloves; sterile gauze pads triangular bandages, non-prescription drugs, scissors, tweezers and antiseptic amongst others) at the site at all times.
- j) Dispose wastes from the site regularly and ensure high standards of cleanliness of all waste collection and disposal facilities.
- k) Construct washrooms at the site and always keep them clean.
- l) Ensure employee welfare including provision of free or subsidized medical attendance if injured on work, making provisions for leaves and offs, and operation of shorter-shift period for workers in highly polluted working areas.
- m) Ensure high standards of construction as recommended in the approved structural designs and regular maintenance to increase the life of the structures at the site.
- n) Provide appropriate PPE including face masks, goggles, scarfs, boots and overalls among other protective clothing to all workers and people at the site and sensitize them to use them whenever they are in environments that warrant the use of such PPE especially in all situations where the body and skin are potentially exposed to hazards

such as chemicals, harmful dusts, highly infectious wastes, sharp objects, burns and extreme temperature and/or when working in areas that present threatening experiences.

- o) Post notices at the site to alert the people within or outside the site of the construction and any repair works and the need to be aware of falling objects and other potentially dangerous things and spots at the site and to warn them of potential consequences of their actions.

5.4 Anticipated environmental and social impacts during the operation phase

5.4.1 Anticipated positive environmental impacts during the operation phase

The anticipated positive impacts during the operation phase include the following:

5.4.1.1 Employment generation

During operation phase, people will be employed to work at the site including security officers, cleaners, managers, marketing persons, engineers, among others. The income to be earned will be used for the betterment of peoples' lives and families thus improving their living standards. Indirect employment will be realized through sale of ALVs.

5.4.1.2 Increased production of vegetables

There will be increased production of vegetables and other foods due to creation of a vegetable irrigation scheme. The scheme will provide vegetable for sale across all the markets both locally and in other regions outside the area. This will boost the farmers' livelihood and will foster development in the area. This means that the prices of vegetables will go down and malnutrition cases will reduce as a result of consuming highly nutritious vegetables. There will be increased transport of farm produce to the markets hence creating employment and income to the motor bike riders the "boda boda riders"

5.4.1.3 Improved aesthetics

Spill-off infrastructure development will entail drainage improvements, well managed farms as well as an improvement to the general aesthetic of the area. This will add to improved development of the local area.

5.4.2 Anticipated negative environmental impacts during the operation phase

The anticipated negative impacts during the operation phase include the following:

5.4.2.1 Encroachment into riparian areas

The farming activities have the potential of spilling into the riparian areas neighbouring the proposed site especially on Ishianda stream and its tributaries. It is likely that farmers whose farms neighbour the streams will cultivate the area considered as riparian. The cultivation of the ALVs has the potential of affecting the banks of Ishianda stream and its tributaries and polluting the water. The streams will be affected through cultivation in the areas considered as riparian areas and subsequently resulting in damage to the streams through siltation and pollution with soil.

Mitigation measures

- a) Sensitize the community on the dangers of farming in the riparian areas.
- b) Do not cultivate the area considered as the riparian zone of Ishianda stream and its tributaries.
- c) Plant water friendly trees in consultation with WRA, KFS and the ministry of Agriculture within the riparian zone.
- d) Formulation of by-laws on protection of water.

5.4.2.2 Environmental pollution

The use of fertilizers and chemical sprays in the ALV fields and greenhouse may contaminate soil and subsequently the natural water systems.

Mitigation measures

- a) Consult the Department of Agriculture at the County Government of Kakamega to ensure use of right chemicals and fertilizers and their right quantities.
- b) Ensure frequent water quality monitoring to determine the level of pollution and contamination.
- c) Always test soil to determine the right fertilizers for use in the crop fields.
- d) Encourage soil and water conservation practices such as afforestation, agro-forestry programmes, terracing, grass planting etc.
- e) Public education and sensitization to create awareness and sensitivity towards environmental management.

5.4.2.3 Use of energy (electricity and fuel)

During operation, electricity will be used for precision weighing scale among other equipment that will be used for value addition; and to light the site especially in the site offices. The usage of electricity might lead to high bills if measures to ensure conservation are not put in place.

Mitigation measures

- a) Possible options for minimizing energy consumption include:
 - i) Switching off all energy using equipment when they are not in use.
 - ii) Regularly checking the working of energy-using equipment to ensure that there are no faults that could lead to high energy-consumption.
- b) Monitor electricity consumption by checking the electricity meter at least once per month to ensure that it is working properly.

5.4.2.4 Water usage

During operation, water will be used for irrigation of the ALV plots and where necessary in preparation of meals by the project staff. The increased water-use may lead to acute shortages and become a source of conflicts with other members of the community.

Mitigation measures

- a) Provide polite notices to use water wisely at water end-user points.
- b) Regularly maintain plumbing fixtures and water piping to avoid losses due to leakages.

5.4.2.5 Solid wastes

During operation, solid wastes will include used masks, food waste, plant stalks and waste packaging material.

Mitigation measures

- a) Provide bins for separate collection of wastes into appropriate sorts such as recyclable and non-recyclable, general wastes and infectious wastes e.g. used masks and label the collection bins appropriately.
- b) Where possible material considered as waste may be re-used or recycled or be given to who consider them useful for others uses.
- c) Order materials according to needs to reduce waste.
- d) Maintain and repair equipment rather than replacing it to reduce waste.
- e) Regularly collect solid wastes and dispose them to prevent accumulation at collection areas.
- f) Cover the solid waste collection areas to minimize invasion by pests and rodents or other animals.
- g) Create a compost pit/heap where all biodegradable wastes can be converted into manure for use in the ALV plots.

5.4.2.6 Fire

Fire damage is unpredictable given that the proposed project will not involve a lot of flammable materials. However, if appropriate measures are not put in place, a fire outbreak can accidentally occur and cause damage to property and even lead to death.

Mitigation measures

- a) Declare places with flammable construction materials as "NO SMOKING ZONES" and display conspicuous notices of the same.
- b) Train workers and the management on emergency (fire) preparedness and management.
- c) Provide fire extinguishers at the site e.g. at the site office etc.
- d) Keep inflammable materials in a designated safe place

5.4.3 Anticipated health and social impacts during the operation phase**5.4.3.1 Sexual Exploitation and Abuse by project workers against community members**

This impact refers to SEA committed by project staff against communities and represents a risk at all stages of the project, especially when employees and community members are not clear about prohibitions against SEA in the project.

Mitigation measures

- a) Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the

World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).

- b) The SEA action plan will include how the project will ensure necessary steps are in place for:
- i) Prevention of SEA: including Code of Conducts and ongoing sensitization of staff on responsibilities related to the Code of Conducts and consequences of non-compliance; project-level IEC materials.
 - ii) Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms; written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management.
 - iii) Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights.

5.4.3.2 Gender based violence and sexual harassment (GBV/SH)

This impact is triggered during project operation phase when the Proponent or project management fail to comply with the following provisions:

- a) Gender Inclusivity requirements in hiring of workers and entire project management as required by Gender Policy 2011 and 2/3 gender rule; and
- b) Failure to protect human risk areas associated with, disadvantaged groups, interfering with participation rights, and interfering with labour rights.

Mitigation measures

- a) Integrate provisions related to sexual harassment in the employee Code of Conduct.
- b) Ensure all employees and any personnel thereof engaged in the project implementation to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse.
- c) Implement provisions that ensure that GBV at the community level is not triggered by the project, including:
 - i) Effective and on-going community engagement and consultation, particularly with women and girls.
 - ii) Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; etc.
- d) Ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.

5.4.3.3 Child abuse

Children within the project area will be exposed to risks associated with interaction between them and project staff. This includes child labour and sexual abuse which coherently leads to teenage pregnancies and exposure to communicable diseases such as HIV/AIDS.

Mitigation measures

- a) The Proponent will develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project.
- b) All staff must sign, committing themselves towards protecting children, a contract which clearly defines what is and is not acceptable behaviour.
- c) Children under the age of 18 years will not be hired at the site as provided by Child Rights Act (Amendment Bill) 2014.
- d) Refrain from hiring children for domestic or other labour, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- e) Comply with all relevant local legislation, including labour laws in relation to child labour specifically provisions of Kenya's Employment Act, 2007 (Cap. 226) Part VII on protection of children against exploitation.

5.4.3.4 Risk of Increased incidences of HIV/AIDS and STIs

The influx of people may bring communicable diseases to the project area, including STIs, or the incoming workers may be exposed to diseases to which they have low resistance. This can result in an additional burden on local health facilities and resources. Local health and rescue facilities may also be overwhelmed and/or ill-equipped to address the industrial accidents that can occur in a large construction site.

Mitigation measures

- a) Sensitize workers and community members on HIV/AIDS awareness and other communicable diseases. This will involve periodic HIV/AIDS and other communicable diseases Awareness Workshops for the project staff.
- b) Controlled access to private offices and working places by outsiders.
- c) Provide standard quality condoms at the site at all times.

5.4.3.5 Risk of increased spread of COVID-19

During project operation, there will be a lot of interactions among different people at the site. The potential for the spread of any infectious disease like COVID-19 is high. There is also the risk that the project may experience large numbers of its workforce becoming ill and will need to consider how they will receive treatment, and whether this will impact on local healthcare services including the project host community.

Mitigation measures

- a) The Proponent will develop a SOPs for managing the spread of COVID-19 during project operation. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions.

- b) Mandatory provision and use of appropriate PPE shall be required for all project personnel.
- c) Avoid concentrating of more than 15 persons or workers at one location. Where more than one person are gathered, maintain social distancing at least 2 meters. All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid COVID-19 screening which may include temperature check and other vital signs.
- d) Install handwashing facilities with adequate running water and soap or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used.
- e) Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of workstations, doorknobs.

5.4.3.6 Grievances/conflicts

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

- a) Health and safety risks;
- b) Socially unacceptable project staff relations with the communities and other stakeholders;
- c) Conflicts over water sources; and
- d) Pollution and other environmental related impacts.

Mitigation measures

The following are possible mitigation measures to manage grievances:

- a) Establish a GRM for the proposed project;
- b) Seek to establish amicable relationships with stakeholders and manage the impact of the project activities on affected communities;
- c) 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;
- d) 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;
- 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;
- f) Ensure the grievance redress mechanism is available to the affected community members and stakeholders at no cost; and

5.4.3.7 Anticipated impacts related to occupational and public/community safety and health

During operation phase the likely impacts related to Occupational Health and Safety hazards are: Chemical hazards through exposure to harmful gases and chemicals by inhalation, ingestion and skin contact. Biological hazards involve exposure to pathogenic organisms which may cause diseases.. Accidents including cuts, pricks and bruises; electrocution from naked

electrical cables; falling in uncovered holes and/or trenches and from raised places and suffocation from lack of oxygen in confined spaces.

Mitigation measures

Mitigation options to some of the impacts have been discussed. Additional mitigation measures to other impacts are:

- a) Keep all passages clear at all times.
- b) Adopt proper working procedures and when working with chemicals, fertilizers, machines and equipment.
- c) Maintain the fence at the site for protection, privacy, reduction of trespass and theft, and control of entry by straying animals and therefore avoid conflicts between people at the site and the people in the neighborhood.
- d) Ensure that trained first aid personnel are always available on site to handle emergencies.
- e) Have a fully equipped First Aid Kit (containing a first aid manual and is equipped with sterile adhesive bandages, safety pins, cleansing agent/soap, latex gloves; sterile gauze pads triangular bandages, non-prescription drugs, scissors, tweezers and antiseptic amongst others) at the site at all times.
- f) Put in place an appropriate emergency response plan including having emergency contacts (such as ambulance, fire tender and police) conspicuously displayed.
- g) Dispose wastes from the site regularly and ensure high standards of cleanliness of all waste collection and disposal facilities.
- h) Wash hands with soap and water before and after handling vegetables to avoid contamination.
- i) Harvest vegetables only when there is ready market to avoid/minimize spoilage.
- j) Always clean the ALVs cold room whenever stock of ALVs is cleared.
- k) Keep the washrooms clean at all times.
- l) Conduct regular maintenance of the proposed site and facilities thereat to increase the life of the proposed project.
- m) Provide appropriate PPE including face masks, goggles, scarfs, boots and overalls among other protective clothing to all workers and people at the site and sensitize them to use them whenever they are in environments that warrant the use of such PPE especially in all situations where the body and skin are potentially exposed to hazards such as chemicals, harmful dusts, highly infectious wastes, sharp objects, burns and extreme temperature and/or when working in areas that present threatening experiences.
- n) Control waterborne diseases by conducting regular maintenance of pipes and taps to fix leakages and prevent underground leakages which contaminates water; ensuring sanitation at the site; regularly conducting chemical and bacteriological quality of the water to ascertain its suitability for consumption; and treating water before drinking using approved home-based treatment methods such as filtration using life-straw, boiling and use of chemicals such as chlorine-based preparations.

5.5 Anticipated environmental and social impacts during the decommissioning phase

It is expected that the proposed development will be used for many years to come. However, decommissioning could be in the form of permanent withdrawal from the site or change of use of the site.

Mitigation measures

- a) The following shall be adhered to during the decommissioning process:
 - i) Keep all passages clear at all times.
 - ii) Ensure that trained first aid personnel are always available on site to handle emergencies.
 - iii) Have a fully equipped First Aid Kit (containing a first aid manual and is equipped with sterile adhesive bandages, safety pins, cleansing agent/soap, latex gloves; sterile gauze pads triangular bandages, non-prescription drugs, scissors, tweezers and antiseptic amongst others) at the site at all times.
 - iv) Put in place an appropriate emergency response plan including having emergency contacts (such as ambulance, fire tender and police) conspicuously displayed.
 - v) Provide appropriate PPE
 - vi) Dispose wastes from the site regularly and ensure high standards of cleanliness of all waste collection and disposal facilities.

6 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

The environmental and social management and monitoring plan (ESM&MP) sets out, in general, the mitigation and monitoring measures and institutional arrangements to address adverse environmental and social impacts. It also includes the estimated costs for each strategy. Environmental audits (EAs) are conducted to establish if project implementation has complied with established environmental management standards. EAs will be conducted annually and will be based on the ESMP&MP. EA reports will be submitted to the Authority for review and further advice.

Table 6.1: Proposed environmental and social management and monitoring plan (ESM&MP) for the proposed project

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Pre-construction phase					
Increased traffic and loss of privacy of neighbours	Minimize trips to the site and subsequently moving into the area in large groups that can scare the area residents and jeopardize their privacy	Proponent and KCSAP	Prior to construction	Reported cases No. of trips to the site No. of meetings at the site No. of vehicles to the site	–
Technical specifications	Review and appraise technical designs and project documents by a panel of experts	Proponent and KCSAP	Prior to construction	Detailed design that is easy to interpret	50,000
Total for preconstruction phase					50,000
Construction phase					
Encroachment into riparian areas	Sensitize the community on the dangers of farming in the riparian areas Fence the project site/rehabilitate the existing fence to prevent interactions with the external environment including the riparian area	Contractor/site engineer	Monthly inspections	Fenced site Size of riparian area interfered with Number of riparian-friendly trees planted in the riparian areas Number of sensitization meetings conducted	680,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Excess excavated soil	Utilize the excavated soil at the site to adjust levels Use excess soil in filling road potholes or for other uses Re-spread part of the excavated topsoil in areas for plant establishment within and/or outside the proposed site or farmlands outside the proposed site	Contractor/site engineer	Regular inspections	Amount of soil left at the end of construction	–
Loss of flora and fauna	Avoid or minimize clearing of vegetation particularly of indigenous trees at the proposed site and only clear them where necessary Re-establish vegetation through implementation of a well-designed landscaping programme	Contractor/site engineer	Survey of plant cover	Percentage of plant cover State of riparian area	50,000
Excessive use of electricity and fuel	Sensitize the workers on energy and fuel saving e.g. the need to switch off all electricity and fuel using equipment when they are not in use by posting polite notices of the same Monitor electricity consumption by checking the electricity meter at least once per month to ensure that it is working properly Promote usage of energy friendly sources of energy e.g solar	Contractor	Regular checking of electricity meter	Amount of electricity used	5,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Compaction and increased storm flow	Construct interconnected open drains as a measure to control movement of surface run-off in adherence to the Public Works specifications Rip off compacted areas after construction to allow aeration of soil and ease infiltration Reduce unnecessary vehicular and machinery movements	Contractor/site engineer	Assessment of storm flow during heavy storms	Volumes of storm flow over the site	50,000
Sanitary inconveniences	Construct suitable pit latrines and label them for ladies and gentlemen Clean the pit latrines everyday	Contractor	Regular inspection	Number and state of sanitary facilities	333,560
Excessive usage of consumable materials	Evaluate and plan for the project to ensure that the design optimizes the use of construction materials Purchase construction materials incrementally to avoid excess materials being left behind Recycle and re-use some construction materials Ensure some of the material for use in construction such as building blocks/bricks are taken for testing and approval at the Public Works offices before they are used for construction	Contractor	Regular inspections	Amount of wasted materials and materials left behind	50,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Incidents and accidents	<p>Report any incidents and accidents using prescribed forms obtainable from the OHS Office</p> <p>Conduct a safety education and training</p> <p>Prepare emergency contingency plans and preparedness and evacuation procedures</p> <p>Have on site stocked First Aid Kits which are easily accessible</p> <p>Have on-site persons trained and certified in first aid</p> <p>Prepare a for emergency response</p> <p>Maintain an accident/incident register at the site</p>	Contractor	Weekly assessments to ensure compliance with occupational health and safety management	Number of incidents and accidents at the site	50,000
Noise and vibrations	<p>Post notices at the site to inform people of construction activities, time and day</p> <p>Provide appropriate PPE e.g. ear protective devices to workers and visitors in noisy environments</p> <p>Plan the construction works to take place only during the day when the neighbours are also at work and maintain reasonable working hours of not more than 8 hours within any 24-hours working duration</p> <p>Sensitizing drivers and machine operators to switch off their engines while they are not in use especially when offloading and loading materials and to avoid hooting especially when passing near noise-sensitive areas</p>	Contractor	Inspection and supervision Laboratory testing when necessary	Number of complaints from neighbours Number of incidences/cases when noise exceed the prescribed thresholds	70,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Solid wastes	<p>Contract a licensed waste handler to collect and dispose-off solid wastes from the site regularly to prevent them from piling at the site</p> <p>Sensitize the workers on waste management including the need to use materials without wastage, recycling options, reuse</p> <p>Order materials according to needs to reduce waste</p> <p>Remove from site and/or recycle/re-use at and/or away from site all machinery, equipment, structures and partitions that will not have been used up</p>	Contractor	Weekly inspections	<ul style="list-style-type: none"> Amounts and categories of solid wastes at the site Reported cases of nuisance as a result of unmanaged solid wastes Number of waste bins installed Number of workers/beneficiaries sensitized on waste management 	50,000
SEA by project workers against community members	Develop and implement a SEA Action Plan with an Accountability and Response Framework as part of the construction ESMP in accordance with the World Bank’s Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018)	Contractor, Supervising Engineer and Consultant GBV Expert	Weekly audits to confirm compliance with SEA Action Plan	Number of cases of SEA	50,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Child abuse and/or child labour	<p>Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya's Employment Act, 2007 (Cap. 226) Part VII on protection of children against exploitation</p> <p>Develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project</p> <p>Ensure all staff and workers sign, committing themselves towards protecting children as part of their contracts which clearly defines what is and is not acceptable behavior</p> <p>Do not hire children/persons under the age of 18 years at site as provided by Child Rights Act (Amendment Bill) 2014</p>	Contractor, Supervising Engineer and Stakeholder Engagement Expert	Monthly audits to confirm compliance with child protection measures outlined in the project documents	Number of cases of child abuse	50,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Risk of increased HIV/AIDS and STIs	<p>Sensitize workers and community members on HIV/AIDS and STIs, and create awareness on other communicable diseases as part of the Contractor’s Health and Safety Management Plan to be enforced by the Supervising Engineer</p> <p>Ensure periodic HIV/AIDS and STIs, and other communicable diseases awareness workshops for project staff and workers</p> <p>Enforce controlled access to Contractor’s Workforce Camps by outsiders</p> <p>Provide standard quality condoms at the construction site during the construction period</p>	Contractor	Monthly sensitization meetings	Rate at which dispensed condoms are used/picked	100,000
Risk of spread of COVID-19	<p>Put in place measures to prevent and manage the spread of the COVID-19</p> <p>Develop SOPs for managing the spread of COVID-19 during project execution in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions</p> <p>Provide and enforce and use of appropriate PPE by project personnel</p> <p>Avoid concentrating of more than 15 persons at one location and where more than one persons are gathered, maintain social distancing at least 2 meters</p>	Contractor, Supervising Engineer, Communications Expert and Stakeholder Engagement Expert	Weekly audits to confirm compliance with Government of Kenya directives for prevention of the spread of COVID-19	Number of reported cases of COVID-19 from among construction staff and people interacting with the construction staff	250,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
GBV/SH	<p>Develop a human resources policy against sexual harassment that is aligned with national law</p> <p>Develop a Code of Conduct with specific provisions on protection from sexual exploitation and abuse and ensure employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with it</p> <p>Create awareness on the dangers associated with GBV/SH and the need to take precautions against them</p> <p>Establish a GRM</p>	Contractor	Weekly audits to confirm compliance with policies against sexual harassment and Code of Conduct	Number of cases of GBV/SH	70,000
Sub-total for construction phase					1,910,560
Operation phase					
Sanitary conveniences	Clean the pit latrines whenever they get dirtied	Abaochenje SHG	Daily inspections	Status of sanitary facilities	50,000
Excessive usage and/or wastage of water	<p>Provide polite notices to use water wisely at water end-user points</p> <p>Regularly check and maintain plumbing fixtures and water pipes in order to prevent leakages that leads to wastage of water</p>	Abaochenje SHG	Weekly inspections	<p>Number of polite notices on wise use of water</p> <p>Amount of water used</p>	15,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Excessive use of electricity and fuel	<p>Sensitize the project staff on wise use and management of electricity and fuel e.g. switching off all electricity and fuel using equipment when they are not in use</p> <p>Regularly check the working of electricity and fuel using equipment to ensure that there are no faults that could lead to high electricity and fuel consumption</p> <p>Monitor electricity consumption by checking the electricity meter at least once per month to ensure that it is working properly</p>	Abaochenje SHG	Regular checking of electricity meter	Amount of electricity used	5,000
Encroachment into riparian areas (Ishianda stream and its tributaries)	<p>Sensitize the community on the dangers of farming in the riparian areas</p> <p>Do not cultivate the area considered as the riparian zone of Ishianda stream and its tributaries</p> <p>Plant water friendly trees in consultation with WRA, KFS and MOALF within the riparian zone</p> <p>Formulation of by-laws on protection of water</p>	Abaochenje SHG County department of environment	Monthly inspections	<p>Number of riparian-friendly trees planted in the riparian areas</p> <p>Size of riparian area interfered with</p> <p>Number of sensitization meetings conducted</p>	70,000
Property damage and injuries to workers	<p>Insure the property as per statutory requirements (comprehensive or third party and workman's compensation)</p> <p>Provide workers with PPEs</p>	Abaochenje SHG	Inspections	Availability of insurance policies	50,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Environmental pollution	<p>Consult the Department of Agriculture at the County Government of Kakamega to ensure use of right chemicals and fertilizers and their right quantities</p> <p>Ensure frequent soil and water quality monitoring to determine the level of pollution and contamination</p> <p>Advice farmers to test soil to determine the right fertilizers for use in the crop fields</p> <p>Encourage soil and water conservation practices such as afforestation, agro-forestry programmes, terracing, grass planting etc.</p> <p>Read and follow the manufacturer’s instructions on the labels of the fertilizers, seeds and chemicals</p> <p>Encourage use of integrated pest management practices</p>	Abaochenje SHG	Laboratory testing for levels of pH, BOD, SS, DO, COD, TSS, TSP, NO ₃ ⁻ , PO ₄ ³⁻ , and NH ₃ and fecal coliforms where applicable in soils from the fields and water in upstream and downstream areas	Measures/levels of tested parameters as compared with accepted levels or baseline levels Amount of silt deposits at the stream	200,000
Fire	<p>Declare places with flammable construction materials as “NO SMOKING ZONES” and display conspicuous notices of the same</p> <p>Train workers and the management on emergency (fire) preparedness and management</p> <p>Provide/install fire extinguishers at the site e.g. at the site office etc.</p>	Abaochenje SHG	Weekly fire risk assessments	<p>Amount of flammable materials at the site</p> <p>Number and types of fire suppression equipment and management measures in place</p> <p>State of fire suppression equipment</p>	10,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Solid wastes	<p>Provide bins for separate collection of wastes into appropriate sorts such as recyclable and non-recyclable, general wastes and infectious wastes e.g. used masks and label the collection bins appropriately</p> <p>Where possible re-use or recycle or give to people who may consider useful, material that may be considered as waste</p> <p>Maintain and repair equipment rather than replacing it to reduce waste</p> <p>Regularly collect solid wastes and dispose them to prevent accumulation at collection areas</p> <p>Cover the solid waste collection areas to minimize invasion by pests and rodents or other animals</p> <p>Create a compost pit/heap where all biodegradable wastes can be converted into manure for use in the ALV plots</p>	Abaochenje SHG	Weekly inspections	<ul style="list-style-type: none"> Amounts and categories of solid wastes at the site Reported cases of nuisance as a result of unmanaged solid wastes Number of waste bins installed Number of workers/beneficiaries sensitized on waste management 	10,000
Covid 19	Develop SOPs for managing the spread of COVID-19 during project execution in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions	SHG	Weekly audits to confirm compliance	Number of reported cases of COVID-19	150,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
GBV/SH	<p>Develop a human resources policy against sexual harassment that is aligned with national law</p> <p>Develop a Code of Conduct with specific provisions on protection from sexual exploitation and abuse and ensure that all employees and any personnel thereof engaged in the project operation individually sign and comply with it</p> <p>Create awareness on the dangers associated with GBV/SH and the need to take precautions against them</p> <p>Establish a grievance redress mechanism</p>	Abaochenje SHG Consultant GBV expert	Weekly audits to confirm compliance with policies against sexual harassment and Code of Conduct	Number of cases of GBV/SH	100,000
SEA by project workers against community members	Develop and implement a SEA Action Plan with an Accountability and Response Framework as part of the operation ESMP in accordance with the World Bank’s Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018)	Consultant GBV Expert and Abaochenje SHG	Weekly audits to confirm compliance with SEA Action Plan	Number of cases of SEA	50,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Child abuse and/or child labour	<p>Comply with all relevant local legislation, including labor laws in relation to child labor specifically provisions of Kenya’s Employment Act, 2007 (Cap. 226) Part VII on protection of children against exploitation</p> <p>Develop and implement a Children Protection Strategy that will ensure minors are protected against negative impacts associated with the project</p> <p>Ensure all staff and workers sign, committing themselves towards protecting children as part of their contracts which clearly defines what is and is not acceptable behavior</p> <p>Do not hire children/persons under the age of 18 years at site as provided by Child Rights Act (Amendment Bill) 2014</p>	Stakeholder Engagement Expert and Abaochenje SHG	Monthly audits to confirm compliance with child protection measures outlined in the project documents	Number of cases of child abuse	50,000
Risk of increased HIV/AIDS and STIs	<p>Sensitize workers and community members on HIV/AIDS and STIs, and create awareness on other communicable diseases as part of the project Health and Safety Management Plan</p> <p>Ensure periodic HIV/AIDS and STIs, and other communicable diseases awareness workshops for project staff and workers</p> <p>Enforce controlled access to private offices and working sites by outsiders</p> <p>Provide standard quality condoms at the site at all times</p>	Public Health Officer and Abaochenje SHG	Monthly sensitization meetings	Rate at which dispensed condoms are used/picked	100,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
Sub-total for operation phase					660,000
Decommissioning phase					
Solid wastes	<p>Use of an integrated solid waste management system (recycling, reuse, combustion and sanitary land filling)</p> <p>Remove from site and/or recycle/re-use at and/or away from site all machinery, equipment, structures and partitions that will not have been used up</p> <p>Ensure source separation and collection of wastes into recyclable and non-recyclable wastes by installation of double waste collection bins at each collection point</p> <p>Hire licensed waste handlers to collect and dispose-off the wastes</p>	Contractor	Site inspections	<p>Amounts and categories of solid wastes at the site</p> <p>Reported cases of nuisance as a result of unmanaged solid wastes</p> <p>Number of waste bins installed</p> <p>Number of workers/beneficiaries sensitized on waste management</p>	100,000
Incidents and accidents	<p>Report any incidents and accidents using prescribed forms obtainable from the OHS Office</p> <p>Conduct a safety education and training</p> <p>Prepare emergency contingency plans and preparedness and evacuation procedures</p> <p>Have on site stocked First Aid Kits which are easily accessible</p> <p>Have on-site persons trained and certified in first aid</p> <p>Maintain an accident/incident register at the site</p>	Contractor	Weekly assessments to ensure compliance with occupational health and safety management	Number of incidents and accidents at the site	30,000

Environmental and social impact	Recommended mitigation/enhancement measures	Responsible party	Means and/or frequency of verification	Performance Monitoring Indicator	Estimated cost (KES)
SEA by project workers against community members	Develop and implement a SEA Action Plan with an Accountability and Response Framework as part of the decommissioning ESMP in accordance with the World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018)	Contractor and Consultant GBV Expert	Weekly audits to confirm compliance with SEA Action Plan	Number of cases of SEA	30,000
GBV/SH	Develop a Code of Conduct with specific provisions on protection from sexual exploitation and abuse and ensure employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with it Create awareness on the dangers associated with GBV/SH and the need to take precautions against them Establish a GRM	Contractor	Weekly audits to confirm compliance with policies against sexual harassment and Code of Conduct	Number of cases of GBV/SH	20,000
Covid 19	Develop SOPs for managing the spread of COVID-19 during project execution in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions	SHG	Weekly audits to confirm compliance	Number of reported cases of COVID-19	150,000
Sub-total for decommissioning phase					180,000
Total cost of ESMP implementation					3,621,560

7 CONCLUSION AND RECOMMENDATIONS

7.3 Conclusion

The proposed development will have numerous positive impacts as has been outlined in this report. The negative environmental impacts that will result from establishment of the project will be mitigated with the options provided for in this report. The report concludes that if all the suggested mitigation measures and the above recommendations as indicated in the proposed environmental and social management and monitoring plans are implemented, then the proposed project will not adversely impact on the environment. It is also clear that the Proponent has actively involved the key neighbourhood stakeholders and these stakeholders did not object the development. The project has sufficient public support.

7.4 Recommendations

The management is to comprehensively implement the recommendations below in order to improve on their level of compliance.

- a) Strict adherence to legal requirements in respect to use of PPEs will be required in order to avoid potential negative impact of the works to operating staff and the clients/customers.
- b) High standards of construction and regular maintenance practices are strongly recommended to increase the life of the project.
- c) Ensure record keeping and documentation are appropriately carried out to assist in building of self-auditing capacity.
- d) The development should be undertaken since it will ensure accessibility of the area residents to fresh African leafy vegetables.
- e) Environmental auditing of the facility will be carried out annually to report and comment environmental performance/compliance.
- f) Due the emergence and spread of Covid-19 globally, all the personnel are advised to abide by the GOK, Covid-19 safety measures: hand washing and sanitization, wearing of masks in public, avoiding crowds, social distancing and seeking medical assistance when one feels sick or depicts signs and symptoms of Covid-19.


REFERENCES

- Architectural design drawings for the proposed project obtained from the proponent
CIDP. County Integrated Development Plan, 2017-2022
- GOK (1999). Kenya Gazette Supplement Acts 2000, Environmental Management and Coordination Act, 1999 (Cap. 387) (Amendment 2015), NCLR, Nairobi.
- GOK (1999). Kenya Gazette Supplement Acts, Sessional Paper No. 6 of 1999 on Environment and Development, NCLR, Nairobi
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- GOK (2001). Kenya Gazette Supplement Acts, Children Act, 2001, NCLR, Nairobi.
- GOK (2003). Kenya Gazette Supplement Acts, Environmental (Impact Assessment and Audit) Regulations 2003, NCLR, Nairobi.
- GOK (2006). Kenya Gazette Supplement Acts, Environmental Management and Coordination (Waste Management) Regulations, 2006, NCLR, Nairobi
- GOK (2006). Kenya Gazette Supplement Acts, HIV and AIDS Prevention and Control Act, 2006, NCLR, Nairobi.
- GOK (2006). Kenya Gazette Supplement Acts, National Youth Policy, 2006, NCLR, Nairobi.
- GOK (2006). Kenya Gazette Supplement Acts, Sexual Offences Act, 2006, NCLR, Nairobi
- GOK (2007). Kenya Gazette Supplement Acts, Occupational Health and Safety Act, 2007, NCLR, Nairobi
- GOK (2007). Kenya Gazette Supplement Acts, Work Injury Compensation Benefit Act (WIBA), 2007, NCLR, Nairobi
- GOK (2009). Kenya Population Census 2019, Government Printer, Nairobi
- GOK (2010). The Constitution of Kenya, 2010, NCLR, Nairobi

APPENDICES

- I. Copy of Title Deed
- II. Screening check list
- III. Copy of soil analysis report
- IV. List of participants at the public participation
- V. List of county review team members
- VI. Minutes of the public participation meeting
- VII. ESIA public participation comment sheets
- VIII. Photo of community leaders and engineers in the survey process
- IX. Copy of lead expert NEMA EIA/EA license
- X. Detailed project design

Appendix I: Copy Title Deed


REPUBLIC OF KENYA
THE LAND REGISTRATION ACT
(No. 3 of 2012, section 108)
THE REGISTERED LAND ACT
(Chapter 300) (REPEALED)

Title Deed


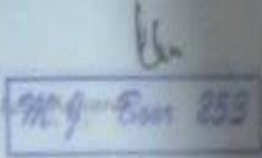
Title Number KAKAMBA/BIKIKULU/117
Approximate Area 0.88A
Registry Map Sheet No 3

This is to certify that AMACHENJE SELF HELP GROUP
P.O. BOX 399 MTERE 3

3 3 3 3

is ~~sex~~ now registered as the absolute proprietor of the land comprised in the above-mentioned title, subject to the entries in the register relating to the land and to such of the overriding interests set out in section 23 of the Land Registration Act (No. 3 of 2012) as may for the time being subsist and affect the land.

GIVEN under my hand and the seal of the
KAKAMBA District Land Registry
this 11TH day of JULY 20 18

Appendix II: Copy of screening check list



ENVIRONMENTAL AND SOCIAL MANAGEMENT SCREENING

ESM projects screening check list (prototype)

(ESM screening process by benefitting communities / Agencies)

Section A: Background information

Name of county	KAKAMEGA
Name of CPCU/ Researcher	SAZOME OKAL
Project location	IKOLOMANI S/COUNTY
Name of CBO/ Institution	ABACHENJE SEL
GPS Location	LAT: 0°23'47.2"
Contact person & cell phone	CHRISTOPHER AMAR
Project name	PROMOTION OF ALYPI SCALE IRRIGA
Estimated cost (kshs)	40,053,000 (G
Approximate size of land area available for the project	2 acres under g group members

Objectives of the project... To increase food production
harnessed water.

→ To increase the capacity of...

SECTION B: ENVIRONMENTAL ISSUES

Will the project:
Create a risk of increased soil erosion?
Create a risk of increased deforestation?
Create a risk of increasing any other soil degradation ?
Affect soil salinity and alkalinity?
Divert the water resource from its natural course / location?
Cause pollution of aquatic ecosystems by sedimentation and Agro-chem spillage, effluents, etc?
Introduce exotic plants or animals?
Involve drainage of wetlands or other permanently flooded areas?
Cause poor water drainage and increase the risk of water-related disease malaria?
Reduce the quantity of water for the downstream users?
Result in the lowering of ground water level or depletion of groundwater
Create waste that could adversely affect local soils, vegetation, rivers and ground water?
Reduce various types of livestock production?
Affect any watershed?
Focus on Biomass / Bio- fuel energy generation?

If the answers to any of the above is 'yes', please include an EMP with

SECTION C: SOCIO-ECONOMIC ISSUES

Will the project:
Displace people from their current settlement?
Interfere with the normal health and safety of the worker / employee
Reduce the employment opportunities for the surrounding community
Reduce settlement (no further area allocated to settlement)?
Reduce income for the local communities?
Increase insecurity due to introduction of the project?
Increase exposure of the community to HIV/AIDS?
Induce conflict?

project shall have storage tanks for irrigation
Main source of water is from 2 rivers

SECTION D: NATURAL HABITATS

Will the project:
Be located within or near environmentally sensitive areas (e.g intact natural for mangroves, wetlands) or threatened species?
Adversely affect environmentally sensitive areas or critical habitats- wetlands, natural forests, rivers, etc)?
Affect the indigenous biodiversity (flora and fauna)?
Cause any loss or degradation of any natural habitats, either directly (through) or indirectly?
Affect the aesthetic quality of the landscape?
Reduce people's access to the pasture, water, public services or other resource depend on?
Increase human-wildlife conflicts?
Agrochemical use
Will the project:
Involve the use of pesticides or other agricultural chemicals, or increase existing
Cause contamination of watercourses by chemicals and pesticides?
Cause contamination of soil by agrochemicals and pesticides?
Experience effluent and / or emissions discharge?
Export produce? Involve annual inspections of the producers and unannounced
Require scheduled chemical applications?
Require chemical application even to areas distant away from the focus?
Require chemical application to be done by vulnerable group (pregnant mother allergic persons, elderly, etc)?
Use irrigation system in its implementation?

If the answers to any of the above is 'yes', please include an EMP with s application

SECTION E: PESTICIDES AND AGRICULTURAL CHEMICALS

⇒ Group is

This questionnaire will be used with the farmers groups for purpose of i

If the answer to the above is 'yes' please consult the IPM that has been prepared for the project.

Section F: VULNERABLES AND MARGINALIZED GROUPS MEET REQUIREMENTS FOR OPERATIONAL POLICIES 4.10

Are there:

People who meet requirements for OP 4.10 living within the boundaries of, or near the project/

Members of these VMGs in the area who could benefit from the project?

VMGs livelihoods to be affected by the micro project?

If the answer to any of the above is 'YES' , please consult the IPM that has been prepared for the project:

✓ **Section G: Land acquisition and access to resources**

Will the project:

Require that land (public / private) be acquired (temporarily or permanently) for development?

Use land that is currently occupied or regularly used for productive purposes (farming, pasture, fishing locations, forests)

Displace individuals, families or businesses?

Result in temporary or permanent loss of crops , fruit trees and pasture land?

Adversely affect small communal cultural property such as funeral and burial sites, groves?

Section H: Proposed action

(i) Summarize the above:	(ii) Guidance
<input type="checkbox"/> All the above answers are 'No' <input checked="" type="checkbox"/> There is at least one 'Yes'	<ul style="list-style-type: none">• If all the above answers are 'No', no further action is required;• If there is at least one 'Yes', a recommended course of action is required.

(iii) Recommended Course of Action

If there is at least one 'Yes', which course of action do you recommend?

- CPCUs and County Director of Environment (CDE) will provide on mitigation measures as outlined in the ESMF; and
- Specific advice is required from CDE and CPCUs regarding the EIA(s) and also in the following area(s)
- All micro-project applications/proposals MUST include a checklist. The KCSAP-CPCU and CDE will review the micro-project applications/proposals and the CDEs will sign off;
- The proposals will then be submitted to NPCU for clearance by communities in the proposed subprojects.

Expert Advice

- The National Government through the Department of Museums and Cultural Heritage and the National Museums of Kenya can assist in identifying and recording monuments and archaeological sites; and
- Micro-project specific ESIA's, if recommended, must be carried out and registered with NEMA and be followed by monitoring and review of conducting an EIA the proponent shall seek views of persons affected by the sub-project. The WB policy set out in OP 4.01 requires disclosure of EIA's conclusions. In public after the approval of the sub-project, the proponent shall report at a public place accessible to project-affected groups;

Appendix III: Copy of soil analysis report



KENYA AGRICULTURAL & LIVESTOCK RESEARCH ORGANIZATION
Soil Laboratory analysis for KCSAP Idakho North, Kakamega County

Promotion of African Leafy Vegetable Production under small-scale Irrigation


No	Texture	pH	Organic Carbon (%)	Total Nitrogen (%)	Avail. P ₂ O ₅ (mg/kg)	Exchangeable cations (mg/kg)		
						Ca	Mg	K
Bukura	Sandy-Loam	6.10	1.97	0.17	129.3	1845	202	95.1
Bukura	Loamy-sand	6.23	0.57	0.09	50.01	3953	186	88.6
Bukura	Sandy-Loam	6.17	1.35	0.50	84.81	3186	104	105

1. **Bukura:** pH is categorized as medium acidic, organic carbon is optimum, total nitrogen low, available phosphorus high, calcium and magnesium are high while potassium is low. The soils are generally fertile but will require an improvement in soil nitrogen and potassium. The texture is Sandy-Loam (79% sand, 12% clay and 9% silt) is not ideal for surface irrigation because of high sand content compared to clay. Alternative methods (sprinkler or drip) can be applied.
2. **Bukura:** pH is categorized as medium acidic, organic carbon and nitrogen are very low, available phosphorus high, calcium and magnesium are high while potassium is low. The soils are generally fertile but will require an improvement in soil organic carbon, nitrogen and potassium. The texture is Loamy-sand (81% sand, 9% clay and 10% silt) is not ideal for surface irrigation because of high sand content compared to clay. Alternative methods (sprinkler or drip) can be applied.
3. **Bukura:** pH is categorized as medium acidic, organic carbon and nitrogen are low, available phosphorus high, calcium and magnesium are high while potassium is low. The soils are generally fertile but will require an improvement in soil organic carbon, nitrogen and potassium. The texture is Sandy-Loam (76% sand, 11% clay and 13% silt) is not ideal for surface irrigation because of high sand content compared to clay. Alternative methods (sprinkler or drip) can be applied.

The soils are however ideal for vegetable production. Well rotten manure can be added into the soil to help improve on organic matter, nitrogen and water holding capacities.

For any further concerns, feel free to get in touch.

Thank you.


Dr. C. A. Kundu
Soil Scientist

KALRO-Kakamega



KENYA AGRICULTURAL & LIVESTOCK RESEARCH ORGANIZATION

Non-Ruminant Research Institute-Kakamega

P.O. Box 169-50100, KAKAMEGA

Tel. 05620-30031/30039, Fax 05620-31753

Email: kalro.kakamega@kalro.or.ke or dr.c.a.kundu@kalro.or.ke

Appendix IV: List of participants at the public participation

		COUNTY GOVERNMENT OF KAKAMEGA						
		ATTENDANCE SCHEDULE: PUBLIC PARTICIPATION				DATE: 01.03.2021		
SUB PROJECT: PROPRIED PROMOTION OF AFRICAN LEAF VEGETABLE PRODUCTION UNDER SMALL SCALE IRRIGATION								
SUB COUNTY: IKOLOMANI								
WARD: IDAKHO NORTH WARD								
S.No	Name	AGE (TICK)		ID NUMBER	DEPARTMENT/ GROUP	DESIGNATION / POSITION	CONTACT	Sign
		ABOVE 35YRS	BELOW 35YRS					
1	Bar. Tobias A. Ochenje	✓		4369289	ABAOCHEJI SHS	Member	0703841283	<i>[Signature]</i>
2	Christopher Amakha	✓		4827931	ABAOCHEJI S.H.C.	Project chairman Member	0912980579	<i>[Signature]</i>
3	Bonz C. MUNSAYA	✓		0569245	"	Member	0727458973	<i>[Signature]</i>
4	Stanlaus Ayuku	✓		4369235	"	Member	0715310856	<i>[Signature]</i>
5	Christopher MUYETA	✓		8040854	"	member	0740563594	<i>[Signature]</i>
6	Babu MUKABAU	✓		6282321	"	member	0712594425	<i>[Signature]</i>
7	ELIZABETH KHADIGI	✓		5657448	"	Member	0716577174	<i>[Signature]</i>
8	PHENZILA KHA-YOSA		✓	30532355	"	member	0706785995	<i>[Signature]</i>
9	Rita Kasaya	✓			"	Member	0717873941	<i>[Signature]</i>
10	ANIRUKI O. KHAMALA	✓		1917547	"		0711440384	<i>[Signature]</i>
11	AGNES Jonathan	✓		7086922	"	Member	0721628050	<i>[Signature]</i>
12	Viola Namapi		✓		"	member	0722271051	<i>[Signature]</i>

Appendix V: Copy of list of county review team members



KAKAMEGA COUNTY
GOVERNMENT
KENYA CLIMATE SMART
AGRICULTURE PROJECT

LIST OF REVIEW TEAM MEMBERS FOR THE PROPOSED SMALL-SCALE II
IDAKHO NORTH WARD, IKOLOMANI SUB COUNTY

NAME	ID NUMBER	MOBILE NUMBER
GEORGE ONUNGA	13613175	0717403004
SIMON TONUI	11795436	0723838254
DOMINIC OYAYA	8905546	0725351094
MAYANS MUSALO	10430868	0705438689
CAROLYN KAYIKA	21957731	0720650398
EMANUEL WAKHUMBA	4781205	0723760556
MARIA ADHAIYS	10003916	0723998407
SALOME OKALO	21699905	0722574801
WILLIAM ONORA	24714549	0720123110
DAVID J. WAFUA	10530363	0718693408

Appendix VI: Minutes of the public participation meeting

MINUTES OF THE PUBLIC CONSULTATION FORUM FOR THE PROPOSED PROMOTION OF AFRICAN LEAFY VEGETABLES UNDER SMALL-SCALE IRRIGATION BETWEEN 12:00PM-1:30PM ON MONDAY, 1ST MARCH ,2021 AT MWICHEMO VILLAGE, IDAKHO NORTH WARD, IKOLOMANI SUB-COUNTY IN KAKAMEGA COUNTY AT THE PROPOSED SITE

Agenda

- 1) Arrival and registration
- 2) Welcome and introductory remarks
- 3) presentations
- 4) Comments, reactions, questions and responses
- 5) AOB and adjournment

Present

A total of 16 members were present (see the attached list of participants)

Minute 1.0-01/03/2021: Arrival and registration

All present members were asked to register as they arrived at the meeting. The registration process was conducted by Mr. Boaz Mungaya. Mr. Christopher Amakobe chaired the meeting. The participant registration forms are attached below.

Minute 2.0-01/03/2021: Welcome and introductory remark

Mrs. Violet Namayi opened the meeting with a prayer. Mr. Christopher Amakobe who was the coordinator of the meeting thanked the members for attending the meeting. In his opening remarks he mentioned that the project would create job opportunities for skilled and unskilled labour and enhance food security among the households. Mwichemo area will be developed and there would be an improvement in the economy. He welcomed all the present members and thanked them for attending the meeting.

Minute 3.0-01/03/2021: Presentations

William Onura started by introducing himself as an environmental consultant from Envertek Africa Consult Limited based in Kakamega. He said that he was in the meeting acting on behalf of the company. He gave an overview of the ESIA process as required under the Environmental Management and Coordination Act, 1999 (Cap 387) (Amendment 2015). He said that the purpose of the meeting was to collect the views of the people concerning the proposed promotion of ALVs production under small-scale irrigation.

He highlighted both positive and negative impacts anticipated from the proposed project. The positive impacts of the project included: Creation of a vegetable irrigation scheme, improved aesthetics, creation of employment opportunities, enhanced food security among the households

and development in the area. He urged the people to uphold the Covid-19 regulatory measures which include washing of hands, sanitizing, observing social distance and wearing of mask.

He said environmental and social impact assessment (ESIA) is a mandatory exercise by NEMA before any project begins. He explained the need for public consultation in the ESIA process by saying that members of the public are supposed to participate and get involved in ESIA subject to sub-section 17 (1) of the environmental and social 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. He explained that 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. He thanked the people for accepting to participate in decision making regarding development in their area.

Minute 04-01/03/2021: Comments, Reactions, Questions and Responses

- 1) Phenzila Khayosa was happy that the proposed irrigation project will enhance food security. Vegetables will be readily available and the distance travelled to the market will be reduced. This will enable them engage in other activities.
- 2) Agatha Malesi said that through selling of vegetables women will be able to save substantial amount of money and obtain capital to venture into other business e.g. poultry farming She added that they will be able to afford fees for their children
- 3) Christopher Muyeka was in support of the project. He said that the project will lead to increased household income through selling of vegetables In addition to that there will be improved living standards
- 4) Moses Osema said that the proposed project will lead to improved management of natural resources. He added that converting the land to agricultural use will result to improved land management and optimal land use.
- 5) Agatha Malesi said that the project would create job opportunities for the locals. He urged that they should consider giving jobs to women and youth in the community.
- 6) Truphena Amenya was concerned that the project will stop after implementation is done. This is because they had previously experienced abandonment of projects.
- 7) William Onura responded that various key stakeholders were involved in the project. He added that there will be continuous monitoring of the project to ensure sustainability of the project.
- 8) Moses Munala suggested that the irrigation scheme should undergo regular monitoring and maintenance for effective operation.
- 9) Violet Namayi urged the members to uphold Covid-19 regulations in order to curb the spread of Covid-19.
- 10) David Mabinda was concerned that excavation and farming may result into the disturbance of soil profile and structure. He therefore suggested that soil management measures should be observed.
- 11) Grace Anyanje suggested that proper waste management strategies be employed and solid waste management regulations be adhered to.
- 12) William Onura said that minimization of waste generation will be first priority. However, unavoidable waste will be separated at source, recycled and re-used and disposed in sanitary landfills.

13) Moses Munala said that the consumption of indigenous vegetables will promote good health since the vegetables contain high nutritional value.


Minute 05-01/03/2021: AOB and adjournment

There being no more things to discuss about the proposed project Christopher Amakobe thanked the people for attending the meeting. Bella Kerubo also thanked the people of Mwichemo for their participation, comments and views.

Bishop Tobias Ochenje closed the meeting with a prayer.

Minutes prepared by

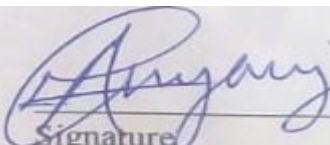
Name: Bella Kerubo

Signature.....

Date...02.03.2021

Approved by:

Name: Christopher Amakobe


Signature.....

..... Date...02.03.2021



Appendix VII: Public participation comment sheets

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PUBLIC PARTICIPATION QUESTIONNAIRE

Members of the public are supposed to participate and get involved in development projects because the projects may affect them in one way or another. Reference is made to section 58 (Environmental Impact Assessment) of the Environmental Management and Coordination Act (EMCA), 1999 and section 17 of the Environmental (Impact Assessment and Audit) Regulations, 2003, where a proponent of a proposed project has to, in consultation with the National Environment Management Authority (NEMA), seek the views of persons who may be affected by the project. The role of public consultation and involvement in EIA 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. In view of this, we request you as a member of the community to give your comments on expected socio-economic, cultural and environmental impacts of the named proposed project.

Name of proposed project: *Proposed African Leafy Vegetables Production under Small Scale Irrigation Project* Owner: *Kenya Climate Smart Agriculture Project (KCSAP)*

P. O. Box: 27 – 50100 Kakamega, Kenya

Location: *Plot No. Kakamega/Shikulu/117 in Mwichemo village, Idakho North Ward in Ikolomai Sub – County, Kakamega County*

1. What is the distance between your home/premises and the proposed project site?
Less than 100 M () Between 100 M and 1,000 M / 1Km () More than 1 Km (d)
2. What positive (good) socio-economic, cultural and environmental impacts do you anticipate during the project construction, operational and decommissioning phases?

Development to the area
improved access

3. What are the negative (bad) socio-economic, cultural and environmental impacts do you anticipate during the project construction, operational and decommissioning phases?

nil

What measures do you think the developer needs to put in place during the during the project construction, operational and decommissioning phases?

nil

4. What is your general opinion on the proposed project?

go ahead

Your name: *Grace Dunga* Passport/ID No: *10550883*

Telephone/mobile phone No.: *072239746* Postal address:

Position/Occupation: *-* Date: *27/05/21*

THANK YOU IN PARTICIPATING IN MAKING OUR ENVIRONMENT CLEAN

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PUBLIC PARTICIPATION
QUESTIONNAIRE

Members of the public are supposed to participate and get involved in development projects because the projects may affect them in one way or another. Reference is made to section 58 (Environmental Impact Assessment) of the Environmental Management and Coordination Act (EMCA), 1999 and section 17 of the Environmental (Impact Assessment and Audit) Regulations, 2003, where a proponent of a proposed project has to, in consultation with the National Environment Management Authority (NEMA), seek the views of persons who may be affected by the project. The role of public consultation and involvement in EIA 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. In view of this, we request you as a member of the community to give your comments on expected socio-economic, cultural and environmental impacts of the named proposed project.

Name of proposed project: *Proposed African Leafy Vegetables Production under Small Scale Irrigation Project* Owner: *Kenya Climate Smart Agriculture Project (KCSAP)*

P. O. Box: 27 – 50100 Kakamega, Kenya

Location: *Plot No. Kakamega/Shikulu/117 in Mwilchemo village, Idakho North Ward in Ikolomal Sub – County, Kakamega County*

1. What is the distance between your home/premises and the proposed project site?

Less than 100 M () Between 100 M and 1,000 M / 1Km (x) More than 1 Km ()

2. What positive (good) socio-economic, cultural and environmental impacts do you anticipate during the project construction, operational and decommissioning phases?

food will be available to the community members

3. What are the negative (bad) socio-economic, cultural and environmental impacts do you anticipate during the project construction, operational and decommissioning phases?

none

What measures do you think the developer needs to put in place during the during the project construction, operational and decommissioning phases?

work together as a community

4. What is your general opinion on the proposed project?

Proceed with project

Your name: *Elizabeth Khachey* Passport/ID No: *5657448*

Telephone/mobile phone No.: *0716577174* Postal address:

Position/Occupation: *Teacher* Date: *01.03.2021*

THANK YOU IN PARTICIPATING IN MAKING OUR ENVIRONMENT CLEAN

Appendix VIII: Photo of community leaders and engineers in the survey process



Community leaders and Abaochenje representatives participating in the survey process with the engineers

Appendix IX: Copy of lead expert NEMA EIA/EA license

FORM 7

(r.15(2))



**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT**

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/13726

Application Reference No: NEMA/EIA/EL/18381

M/S **Prof. Stanley Oluchiri Omuterema**
(individual or firm) of address

P. O. Box 2488 - 50100, Kakamega

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **0125**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **1/18/2021**

Expiry Date: **12/31/2021**

Signature.....

(Seal)
for Director General
The National Environment Management
Authority

P.T.O.



ISO 9001: 2008 Certified

