



ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT

PROPOSED CONSTRUCTION OF MOGOIYWET WATER PAN SUB-PROJECT AT MOGOIYWET VILLAGE PLOT No. KER/KONGOTIK/662, LONGISA WARD, BOMET EAST SUB COUNTY, BOMET COUNTY

GPS: Latitude 0.821626 S; Longitude 35.364208

PROJECT PROPONENT:

**COUNTY PROJECT COORDINATOR,
THE KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)
BOMET COUNTY.**

FUNDED BY:

THE WORLD BANK GROUP



APRIL, 2021

CERTIFICATION

This Environmental and Social Impact Assessment report is submitted on behalf of the Kenya Climate Smart Agriculture Project (KCSAP) County Project Coordinating Unit under funding from the World Bank Group for the proposed construction of Mogoiywet Water pan, Longisa Ward, Bomet East Sub-County, within Bomet County. To my knowledge, all information contained in this report is accurate and a true representation of all the findings relating to the project.

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FOR AND ON BEHALF OF MOGOIYWET WATER PAN SUB-PROEJCT

ACKNOWLEDGEMENT

The Kenya Climate Smart Agriculture Project Bomet County Project Coordinating Unit (CPCU) acknowledges the work of many individuals and institutions that provided the content and analysis for this Environmental and Social Impact Assessment Project Report for the proposed construction of Mogoiywet Water Pan Sub-project.

The Unit is thankful to the World Bank Group and the government of Kenya for considering Bomet County to be one of the implementing counties and for reviewing the report to ensure that it meets the standards. The unit is also grateful to the National Project Coordinating Unit for their guidance in the ESIA project report review process. Our gratitude goes more specifically to Dr. Gilbert Muthee, NPCU-ESS Specialist and Ms. Jane Ngugi for their role in review and invaluable input into the draft report. The unit also appreciates the whole World Bank ESIA review team for their time and guidance throughout the ESIA process for the views and the suggestions they made. In this regard we would like to specifically acknowledge the contributions made by Dr. Robert M. Ochieng and Joseph Misati Akuma.

I also thank the CPCU Panel of Experts led by Eng. Leonard Tonui, Water Engineer for their tireless effort in ensuring that the report captures all the issues.

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ABBREVIATIONS /ACRONYMS

BOMWASCO	Bomet water and sanitation company
CESSCO	County Environment and Social Safeguards Compliance Officer
CS- ESMMP	Contractor-Specific Environmental and Social Management Plan
CGB	County Government of Bomet
CIDP	County Integrated Development Plan
COVID-19	Coronavirus disease
CPC	County project Coordinator
CPCU	County Project Coordinating Unit
CSA	Climate Smart Agriculture
CTAC	County Technical Advisory Committee
EHS	Environmental Health and Safety
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and monitoring Plan
ESS	Environment and Social Safeguards
ETo	Evapo-transpiration
FDG	Focused Group Discussion
GBV	Gender Based Violence
GPS	Global Positioning System
KCSAP	Kenya Climate Smart Agriculture Project
KII	Key informant interviews
LULUCF	Land Use and Land Use Change and Forestry
M ³	Cubic meters
NEMA	National Environment Management Authority
NPCU	National Project Coordinating Unit
OHS	Occupational Health and Safety
OP	Operational Policies
PCR	Physical Cultural Resources
PDO	Project Development Objective
PPEs	Personal Protective Equipment
PMC	Project Management Committee
ROW	Public Right of Way
SAIC	Social Accountability and Integrity Committee
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SOP	Standard Operating Procedures
SMonP	Social Monitoring Plan
STDs	Sexually transmitted diseases
TIMPs	Technologies, Innovations and Management Practices
VMG	Vulnerable and Marginalized Group
WBG	World Bank Group
WHO	World Health Organization
WRMA	Water Resource Management Authority
WRUA	Water Resource Users Association

EXECUTIVE SUMMARY

The Kenya Climate Smart Agriculture Project (KCSAP) is a World Bank Group funded project. The overall objective of the project is "to increase agricultural productivity and build resilience to climate change risks in targeted smallholder farming and pastoral communities in the county, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response" through utilization of Climate-Smart Agriculture (CSA) and technologies, innovations and management practices (TIMPs). The Proposed Mogoiywet water pan is located in Longisa Ward of Bomet East Sub-County. The sub-project entails excavation of 15,000m³ water pan, laying of a 3.8 km pipeline for small-scale irrigation for high value horticultural crops and livestock. The project targets 1564 beneficiaries comprising of 766 males and 798 females. The GPS coordinates of the proposed site are Latitude 0.821626 S; Longitude 35.364208. The public land covers an area of 2.5 hectares.

Section 58 of Environmental Management and Coordination Act (EMCA), Cap 378 requires a project proponent to prepare and submit an environmental and social impact assessment report in the form prescribed by the Authority before financing and executing any project which might have impacts on the environment. The World Bank Group as the lending institution also has policy requirements and procedures for various categories of environmental and social assessment referred to as World Bank Operational Policies. In light of this therefore, project proponent approached and contracted registered NEMA experts to carry out an environmental and social impact assessment (ESIA) for the project in accordance with the requirements of the Act and the World Bank Group conditions.

An environmental and social screening identified the sub-project as among those requiring environmental and social impact assessment under schedule 2 of EMCA, Cap 387 and World Bank Group Operational policies. This was followed by environmental and social scoping that provided the key environmental and social issues. The undertaking of the ESIA involved data collection and review of existing documents to identify the nature of the proposed activities. The data collection was done through discussions with managers and design engineers as well as interviews with neighbors alongside field observations, administration of questionnaires and interviews. The first consultation was with the proponent on 23rd December, 2019 and was attended by 7 people; 6 males and 1 female (refer to Annex 1; Minutes and attendance list and Annex 2; Terms of Reference). Consultations with the community was held on 28th January, 2020 and was attended by 21 participants; 11 male and 10 females (Refer to Annex 3: Public baraza Minutes and Attendance List). The community members who attended the consultative Barazas were from the neighbouring villages of Masare, Nokirwet, Kongebebet, Kimugul,

Ndamichonik, Kakawet, Cheboin, Segerot and Kamebwo. This process finally culminated in the preparation of this report.

The issues that were raised by the community include solid waste generation, social ills such as gender-based violence, spread of sexually transmitted diseases such as HIV/AIDS, pressure on the resources as a result of influx from immigrants, noise and vibration and work place safety risks. All these issues were addressed in the Environmental and Social Management and Monitoring plan (ESMMP). (Refer to Table 5).

This report covers the baseline environmental and social conditions of the project area; description of the proposed project; provisions of the relevant environmental and social laws and policies; public consultation undertaken for identification and discussion of any potential adverse environmental and social impacts from the proposed project; and appropriate mitigation measures, and an Environmental and Social Management and Monitoring Plan outline.

Review of the relevant policies, legal and institutional frameworks was carried out. This included the World Bank Operational Policies and relevant international treaties and conventions.

Stakeholder Consultations entailed people likely to be affected by the project who included women, Vulnerable and Marginalized Groups (VMGs). The consultant identified the stakeholders to the proposed water pan site. Consultation with the stakeholders took place on 23rd September, 2020. Stakeholders' consultation involved people who have an interest in the sub project either as individuals or as representatives of a group. The key stakeholders comprised CPCU team (4), Mogoiywet PMC representative (1), the Departments of Water (1), Water and Water Resources Authority (1), WRUA (1), VMG Rep (1), Water PMC Rep (1), Lands (1), Department of Livestock (1) and Public Health (1) and the Consultant team (2). The issues raised by the stakeholders, issues of integration of good land use practices, efficient use of the water, soil erosion, timely implementation of the project, demarcation of the public land, availing of water for handwashing as part of COVID-19 containment measure and integration of fruit trees in conservation activities. The issues were also addressed in the ESMMP. Physical inspection of the site and surrounding areas was also undertaken.

The positive impacts identified include; creation of temporary employment during construction and access to sustainable water, resulting to poverty alleviation. The negative impacts were

identified as; habitat destruction and loss of biodiversity; interference with stream flow which might affect downstream communities; sedimentation, noise and vibration, slope destabilization, waste generation, health risks and disasters, water borne diseases and insecurity.

An ESMMP detailing the mitigation measures and monitoring has been prepared. The main proposed mitigation measures include minimizing land clearing; rehabilitation of degraded areas; minimal construction work during rainy season; ensuring that water retention in the pan is controlled to ensure that adequate reserve is left to flow downstream for users, maintain daytime working hours between 8am to 7pm; use of well-conditioned and maintained equipment including vehicles with some noise suppression equipment (e.g. mufflers, noise baffles) and keeping them intact and in working order; use top soil to do landscaping and the subsoil to compact the embankment as per the design of the water pan; prepare site specific waste disposal plan; install waste disposal receptacles and signs strategically within the construction camps; provide training and do awareness creation on maintaining clean environment; provide adequate toilets and efficient sewer system within construction camps; and 3 R s (reduce, reuse, recycle) and ensure that there is a first aid kit on standby to handle potential minor injuries, ensure proper signage is in place, equip workers with PPEs among other mitigation measures. The identified implementers of the ESMMP are the community and the contractor awarded the contract.

This ESMMP will form part of the contract for the contractor who will be awarded the works and it is estimated that its implementation and monitoring will take up to 15% (approximately KES. 1,854,000/=) of the total budget estimated at KES. 12 Million. In conclusion, the construction and operation of the water pan will bring positive impacts in the project area including mitigating climate change impact in terms of increased accessibility to water during periods of drought, poverty alleviation and creation of temporary employment. However, the negative impacts will need to be mitigated as indicated in ESMMP. Our recommendation is that the project be allowed to proceed on condition that the mitigation measures outlined in the ESMMP are adhered to and the project be licensed by NEMA after going through the necessary processes.

CHAPTER ONE

1. INTRODUCTION

1.1.BACKGROUND INFORMATION

The County Project Coordinating Unit (CPCU) herein referred to as the proponent is implementing the ‘Kenya Climate Smart Agriculture Project’ (KCSAP), with support from the World Bank, to address drought related vulnerabilities in the agriculture sector in Bomet County. The KCSAP Project Development Objective is "to increase agricultural productivity and build resilience to climate change risks in targeted smallholder farming and pastoral communities in the county, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response" through utilization of Climate-Smart Agriculture (CSA), and Technologies, Innovations and Management Practices (TIMPs).

The project has five key components:

- i. Up scaling climate-smart agricultural practices;
- ii. Strengthening climate-smart agricultural research and seed systems;
- iii. Supporting agro-weather, market, climate, and advisory services;
- iv. Project coordination and management; and
- v. Contingency emergency response.

Bomet County covers an area of 2037.4 km² and lies between latitudes 0° 29' and 1° 03' South and between longitudes 35° 05' and 35° 35' East. It is bordered by four counties, namely: Kericho to the North, Nyamira to the West, Narok to the East and South East and Nakuru to the North-East

The KCSAP project is being implemented in three sub-counties in Bomet i.e. Bomet East, Sotik and Konoin (Figure 1). The Proposed Mogoiywet water pan site is in Longisa Ward of Bomet East. The GPS coordinates of the proposed site are Latitude 0.821626 S; Longitude 35.364208.

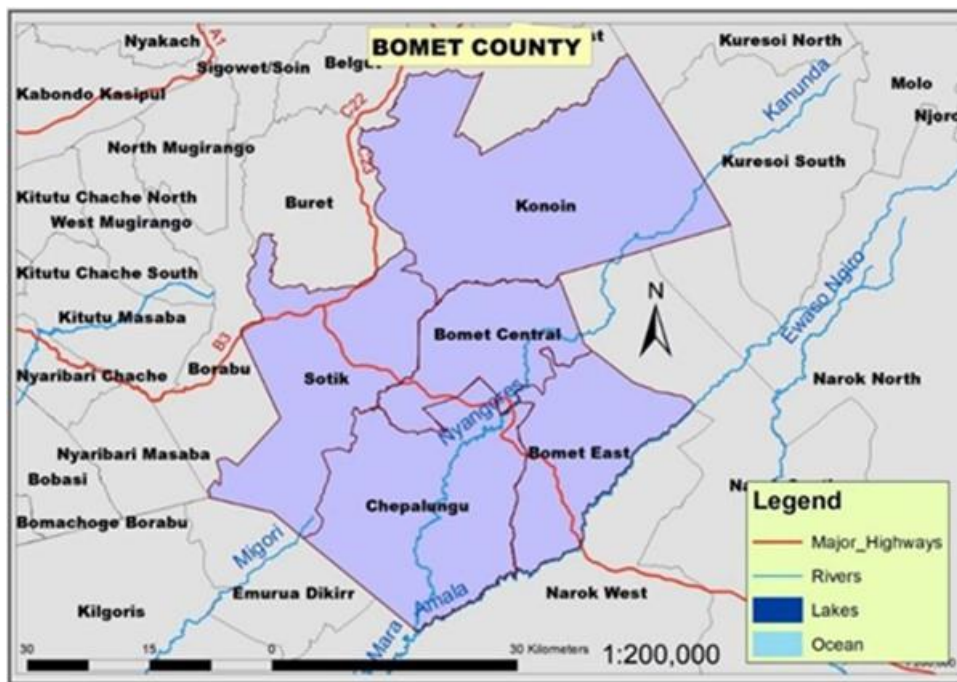


Figure 1: Map of Bomet County showing the sub-counties

1.2. PROJECT PROPOSAL STATEMENT

The proponent submitted their proposal for consideration because the lower parts of Bomet East Sub-County are generally drier compared to other parts of the county and is particularly more water stressed than the rest of the county. None of the nine water supply schemes run by Bomet Water and Sanitation Company (BOMWASCO) serves this area. The community therefore depend on shallow water pans which are few and far apart and water harvesting from roof catchments which are not sustainable. This is therefore the main consideration in choosing the site for the project. Successful implementation of the project will go a long way in mitigating the weather vagaries the community face every year (Refer to Annex 4; Sub-Project Proposal and Annex 5; Project Designs).

1.3.METHODOLOGY OF THE ESIA REPORT

The methodology used in conducting this ESIA consisted of the following:

1.3.1. Environmental and social Screening

Environmental and social screening that was carried out to determine whether an ESIA is necessary for this project and at what level of evaluation. This took into consideration the requirements of the Environmental Management and Coordination Act (EMCA), 1999 (Revised 2015), and specifically the second schedule of the Act. From the screening process, it was identified that this project will cause significant but reversible environmental and social impacts (Refer to Annex 6; Screening Checklist).

1.3.2. Consultation meeting with the proponent

One consultation meeting was conducted between the proponent and ESIA experts on 23 December, 2019. The purpose of the meeting was to gather information, to present the Terms of Reference (TOR) to the Experts and to acquire the required documents for desktop review from the proponent.

1.3.3. Environmental and social Scoping

The scoping, focus was on the significant environmental and social impacts that were categorized into physical, biological and social-economic aspects. The said impacts were also classified as immediate or long-term.

1.3.4. Desktop Study

This involved review of the existing documents to include the water pan design and drawing, EISA relevant policy, legal and institutional frameworks. Documents containing climatic, demographic and hydro geological data for Bomet County were also relied upon.

1.3.5. Field site visits

This was meant for physical inspections of the site characteristics of the environmental and socio-economic status of the surrounding areas of the proposed subproject location so as to determine the anticipated impacts. The purpose of the field site visits was to; Obtain available and relevant information and data from the local public offices including Agriculture, Livestock, water, environment, public health, social development and the Local administration; Evaluate the environmental setting around the proposed project site; Observation focused on topography, land cover, flora and fauna, climate, hydrology of the area and public amenities among others; Evaluate social, economic and cultural setting in the entire project area and Undertake a comprehensive consultative public participation exercise to a large section of the affected persons as well as stakeholders.

1.3.6. Public participation

Publicity for public participation was done through local administration and posters which were placed at strategic points. The purpose of public participation was to ensure public involvement, consultation and to foster project ownership. The process helped to disclose the project components to the community for them to understand what the project entails and formed a useful component for information gathering, understanding and establishing likely impacts of sub-projects as required by law. The

beneficiary community had a chance to give their views in terms of potential benefits and adverse effect which have been incorporated in this report.

1.3.7. Individual Questionnaires

This involved the use of a list of questions filled in by the local stakeholders and the beneficiary community members in the project area. The purpose was to get their views on the project in terms of benefits, potential negative impacts and possible solutions and whether they felt the project should be implemented or not.

1.3.8. Stakeholder consultation

A stakeholder meeting of all those people and institutions who have an interest in the successful design, implementation and sustainability of the project was held. The objective of stakeholder consultation was to enable the project proponent to better respond to different stakeholders' needs. The identified stakeholders included Water Resources Authority (WRA), County Department of Water, Water Resources Users Association, County Department of Environment, Department of Lands, Department of Livestock and Department of Public Health. (Refer to Annex 7 for the minutes and the attendance list.)

1.3.9. Key informant interviews

Key informants interviewed included: Water Officer, Agriculture, Livestock, and Veterinary Officers for Bomet East, the local administration; Ward Administrator Longisa Ward, Chief Cheboin Location, one member of Mogoiywet Water pan sub project management committee, KCSAP CESSCO and Coordinator. A total of 10 key informant interviews were administered; 9 government officers and 1 from the beneficiary community. The aim of the interviews was to; understand the implementation of Mogoiywet water subproject in the area and to collect views on the potential impacts of the project and ways of addressing the adverse effects. (See Annex 8; Key informant Interview Questionnaires).

1.3.10. Reporting

The reporting and documentation followed the format provided by NEMA (through both EMCA, 1999 and the Environmental Social Impact Assessment and Audit regulations-legal Notice No.101 of 2003) and World Bank policy guidelines on social and environmental safeguards. The proponent was continually informed throughout the period of report preparation to ensure that they were aware of the issues raised and the recommendations that were likely to be made regarding the best practices to mitigate the identified environmental and social impacts.

1.4. JUSTIFICATION

The persistent water scarcity for irrigation and livestock watering occasioned by frequent droughts in Mogoiywet area compelled the community to sit together and develop a proposal for the pan to be excavated, expanded and other auxiliary works done for sustainable use and for economic benefits (irrigation/Livestock watering). The area is ideal for commercialization of dairy production and high value horticultural crops. This will make use of the nearby Youth Farmers Market which is growing to become a major busy horticultural produce outlet to clients both from within and outside the County but shortage of water has been a major impediment especially during dry spells. Mogoiywet water pan which was once serving as a source of water but became completely silted up with time and sitting on a public land measuring 2.5 acres suitable for establishment of a water pan was identified to excavated in order to address the water shortage. Public participation was done at Longisa town and the project was prioritized in the CIDP.

The proposal was received, reviewed and approved by the County Technical Advisory Committee (CTAC). Upon approval the project was subjected to screening as per the World Bank Group's environmental safeguard policies. This therefore necessitated the development of this ESIA report.

The main objective of carrying out the Environmental and Social Impact Assessment (ESIA) is to evaluate the Project likely impacts on the environment. One of the key purpose of the ESIA is to assist in ensuring environmentally and socially sound management of the Project during its entire lifecycle.

The description of the existing conditions of the local environment provides a comprehensive data collection and analysis of the baseline conditions at the Project site. The baseline data permits the identification of the main socio- environmental factors that might be associated with the project activities. The interaction between the project activities and the environmental and social baseline conditions of the ecosystem at the project site is at the core of the ESIA. The ESIA is designed to forecast the positive and negative effects that may occur to the receiving environment. The early identification of impacts that may occur in the area leads to a reduction of the risk of future adverse environmental effects, and permits the proposal of mitigation measures to avoid, reduce or remediate significant adverse effects. The ESIA also acknowledges potential socio-economic impacts, and predicts the effect on people and communities occurring as a result of the project.

1.5. THE SCOPE FOR THE ESIA REPORT

The terms of reference for undertaking this ESIA were:

- i. To review existing policy, legal and institutional framework on environmental and social management and planning
- ii. To collect and collate baseline information on the proposed project.
- iii. To conduct interviews through community participatory processes and seek out information from opinion leaders and stakeholders in the area
- iv. To identify and assess positive and negative impacts of the proposed project
- v. To identify and analyze project alternatives and designs
- vi. To develop mitigation measures for the identified negative impacts
- vii. To design an environmental and social Management plan (including monitoring) and monitoring framework for the environmental and social impacts of the project.

1.6. WORK STATEMENT

The work statement is as detailed in Table 1 below.

Table 1: Scope of works

	Item	Details
1.	Introduction	Construction of Mogoiywet water pan to achieve a volume of 15,000 m ³
2.	Purpose of the project	Watering cattle and small irrigation of horticultural crops.
3.	Scope of work	i.Desilting ii.Construction of embankment and spill way iii.Cattle troughs iv.Bathrooms and toilets v.Community water points
4.	Project Location	Mogoiywet village Longisa Ward Bomet County
5.	Land ownership	The project is to be constructed on a plot which is designated as public land.
6.	Tasks	Contractor to do the scope of works above Contractor to supervise CPCU to facilitate
7.	Milestones	<ul style="list-style-type: none">• Handing over of site to contractor• Contractor to complete all scope of works as per BQ
8.	Deliverables	<ul style="list-style-type: none">• Site selection report• Drawings and design• Approval of ESIA report• Tendering• Construction• Commissioning

	Item	Details
9.	Testing	Test pipelines and commission
10.	Requirements	<ul style="list-style-type: none"> • Funds • Contractor • Technical staff
11.	Payment	After completion
12.	Inspection and acceptance	To be done before preparation of certificate of completion

1.7.HEALTH IMPACTS – COVID-19

The review of this ESIA is undertaken during the COVID-19 pandemic outbreak. The preparation of the ESIA including the relevant consultations have been undertaken in strict compliance with guidelines for infection prevention and control in the country. Additionally, specific mitigation measures have been introduced to prevent the spread of the pandemic during the construction period. Moreover, consultations required as part of the mitigation measures, such as during training on environmental and social issues, also pose a risk of infection to communities. For this reason, the risk of contracting the virus during consultations will be avoided, minimized and mitigated with specific measures to ensure national requirements on social distancing and recommendations on how to minimize contact are adhered to.

1.8.ORGANIZATION OF CHAPTERS

Chapter one of the report gives the project background focusing on a brief history of the proposed project site, the project area, the proposed project objectives; both in the short and long run; and how they are linked to the overall objectives.

Chapter two presents the project description including sub-project title, funding, project cost, and implementation time frame.

Chapter three captures the national laws policies in terms of policy framework, legal framework, administrative framework and regulatory framework and the World Bank Group environmental and social policies.

Chapter four dwells on the baseline information giving the present environmental and social conditions; description of the project site, ecological zoning as well as the state of the environment and its surroundings.

Chapter five is on community/ Stakeholder Consultations: these were undertaken to determine how the project will affect the local people / various stakeholders.

Chapter six dwells on identification of Environmental and social Impacts and categorizing them into positive and negative impacts, direct and indirect impacts, as well as immediate and long term impacts.

Chapter seven analyses the alternatives to the proposed project; that involved a description of the potential alternatives and identifying alternatives that would achieve the same objectives.

Chapter eight dwells on Environmental and Social Management Plan (ESMMP); proposing measures towards mitigating, preventing or reducing significant negative impacts to acceptable levels,

Chapter nine is on development of an Environmental and Social Monitoring Plan which will be used in monitoring the implementation of the mitigation measures and the impacts of the project during construction and operational phases, and

Chapter ten concludes and makes the necessary recommendations pertaining to the proposed development.

CHAPTER TWO

2. PROJECT DESCRIPTION

2.1. INTRODUCTION

Table 2 below gives the project description summary.

Table 2: Project description summary

PROPONENT	Kenya Climate Smart Agriculture Project (KCSAP).
Project title	Proposed construction of Mogoiywet water pan
Location	Longisa Ward, Bomet East Sub County - Bomet County
Funding	World Bank Group
Project cost	KES. 12 million
Implementation time frame	18 months

2.2.LOCATION SITE AND OWNERSHIP

The project is located in Longisa ward, Bomet East sub-county, Bomet County. The GPS coordinates are as shown in Figure 2 below.



Figure 2: Google map showing the specific location of the project site

From the land search documents that were obtained from Bomet Lands registry, the proposed location is public land registered as KERICHO/KONGOTIK/662 and is designated for the purpose of a water pan (Refer to Annex 9; Certificate of Official Search). Available information from the community indicate that there was once a water pan on the same site but which silted up over time.

Plate 1 below show the status of the proposed site of Mogoiywet water pan prior to construction and the current water flowing as at January 2020.



Plate 1: The proposed site as it is currently looking

2.3.OBJECTIVES AND ACTIVITIES

The objectives of the proposed water pan are as follows;

- To alleviate water scarcity by harnessing surface run off and conserve water for use in livestock watering, irrigation and domestic use.
- Reduce incidences of human and livestock diseases.
- To increase resilience to climate change risks by adopting water efficiency technologies.
- To increase food and nutritional security.
- To reduce time wasting in collecting water from far and utilize the time by engaging in other economic activities especially by women.
- Increase dairy production and acreage under high value crops irrigated.

Project activities

- Community mobilization
- Tendering process to private contractor
- Environment and Social Impact Assessment
- Registration and training of project management committees
- Clearing of project site
- Monitoring and evaluation exercise
- Planning, surveying and design
- Mobilization of plant equipment to site
- Clearing of the project site

- Excavation of the pan
- Installation of pipe works, water pans, irrigation infrastructure, bath and cattle troughs
- Formation of operation and maintenance committee
- Fencing of the project site
- Project handing over

2.4.PROJECT DESIGN

a) Design considerations

While sitting the water pan, the following are some of the considerations that were put in place: Minimising the likelihood of contamination from industrial, agricultural, livestock or human pollution; Minimising direct livestock, wildlife and human access to the reservoir; Providing water drawing facilities (e.g. water kiosk) so that domestic users can obtain the water without having to enter the reservoir area; the impact of additional livestock watering on the rangeland; The reliability of the water supply; Detailed analysis of the topography to determine whether the reservoir water can be used by gravity supply or whether a pumped supply system is required; Irrigation efficiency, in general, more water efficient irrigation techniques should be employed to maximize the productive use of the stored water; Type of soils, soils must be suitable for long term irrigated farming; and Suitability of the water quality for irrigation. The topography of the site allows for construction of a water pan as surface flow from the catchment is all directed to this point.

b) Design Details

The design capacity of the water pan is 15,000m³ and will comprise of the following components;

- a) Embankment
- b) Draw off mast
- c) Spill way
- d) Silt Trap
- e) Fencing
- f) Communal water point
- g) Cattle trough
- h) Toilets and bathrooms
- i) Pipe work
- j) Conservation activities

c) Design bench marks

- i. The area of the pan is approximately 1.5 acres or 0.63 ha. with a perimeter wall of approximately 180 meters.
- ii. The downstream and upstream embankments shall be controlled not to exceed 1:3 and 1:2.5 respectively. Protective grass shall be planted on the embankment and downstream slope to strengthen the slope and guard against erosion possibilities.
- iii. Strict supervision shall be required to attain the levels in accordance with the drawings and allow reasonable increase in embankment height to allow post construction settlement without effects on the freeboard.
- iv. Slope along outflow channel not more than 0.5% to prevent unforeseen flows and anticipated sills as well as hand placed rip –rap on the inflow.
- v. Bush clearing and initial preparation needs proper workmanship especially removal of tree stumps and grass before setting the core trench.
- vi. The piping to the cattle trough and draw-off pipe for irrigation water should be done not to allow possible seepage through the core trench.
- vii. To avoid soil erosion, the spillway will be excavated in the original soil (in situ) avoiding loose backfill of the embankment or any backfill wall.

2.5. REGULATORY REQUIREMENTS

The Water Resources Management Rules, 2007 prescribes requirements should be followed by proponents of water projects. The rules require that a proponent of water project must do the following;

- Submit a duly completed and signed Water Permit Application to WRMA, including form WRMA 001A and 001C;
- Pay the appropriate permit assessment fee which is dependent on the class of the permit application;
- Commission at his/her own cost a Dam Design Report carried out by a Qualified Water Resource Professional as set out in Section 57 of the WRM Rules (2007);
- Commission at his/her own cost an Environmental Impact Assessment (EIA) in accordance with the Environmental Management and Coordination Act 1999;
- Register the proposed project with the National Construction Authority within 30 days after awarding of the contract (NCA Regulations, 2014).

Once the WRMA has issued an Authorisation to Construct, the proponent must:

- Commission at his/her own cost a Qualified Contractor;
- Commission at his/her own cost a Qualified Water Resource Professional to supervise

construction;

- Ensure that the construction is inspected at the milestones stated in the Authorisation to Construct;
- Ensure all risks (including third party) liability coverage for the duration of the construction work;
- Apply for an extension to the Authorisation to construct in the event that the works are not completed within the allotted time.
- Once the works are complete the proponent must submit a Completion Certificate (WRMA Form 008) to WRMA. This will provoke a final inspection by WRMA, and on satisfactory completion, WRMA will issue a Water Permit.

2.6. WATER BUDGET DATA FOR THE PROPOSED PROJECT

To calculate the water demand budget, the RELMA Manual “*Water from ponds, dams and pans*” (Lindqvist A.K, 2005) recommendation for initial calculations for small scale reservoirs was used. Table 3 below gives the approximate calculation using the provided baseline information. Considering the water pan design capacity of 15,000 cubic metres, the results indicate that the water in the pan can last for close to 428 days which is equivalent to 1 year and 2 months.

Table 3: Estimated water demand budget for mogoiywet water pan

Item	Population	Consumption Rate (litres/day)	Total (litres/day)
People	1564	20	31280
Camels	0	15	0
Cattle	1200	15	18000
Sheep/Goats	400	3.5	1400
Donkeys	50	15	750
Irrigation (20 litre buckets/day)	1564	20	31280
Other		+10% (seepage and evaporation losses)	3128
Total (Litres/day)			34,408
Total (cubic meters/day) Divide total litre by 1,000)			34.41
Design capacity of the water pan (cubic meters)			15,000
Approximate No. of days the water in the pan can last without replenishment			428

CHAPTER THREE

3. LEGAL, INSTITUTIONAL AND POLICY FRAMEWORK

3.1. INTRODUCTION

Environmental and Social Impact Assessment is an instrument for environmental and social management and development control. It is now expected that development projects must be economically viable, socially acceptable and environmentally sound. It is a condition of the Kenya Government and the World Bank Group for developers to conduct Environmental and Social Impact Assessment (ESIA) on the development Projects.

According to Sections 58 and 138 of the Environmental Management and Coordination Act (EMCA) No. 8 of 1999 and Section 3 of the Environmental (Impact Assessment and Audit) Regulations, 2003 (Legal Notice No.101), construction of such a water pan require an Environmental and social Impact Assessment project report prepared and submitted to the National Environment Management Authority (NEMA) for review and eventual licensing before the development commences. This was necessary as many forms of developmental activities cause damage to the environment and hence the greatest challenge today is to maintain sustainable development without interfering with the environment.

The Constitution of Kenya 2010 has also given the environment the audience it deserves by having various Articles on the environment. Most basic is the right of every Kenyan citizen to a clean and healthy environment as stated in Chapter 4 of the Bill of Rights Article 42 which also includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures particularly those contemplated in article 69, which states in part that Article 69. (1) that *The state shall-(f) establish systems of environmental impact assessment, environmental audit and monitoring of the environment.*

Environmental and social Impact Assessment (ESIA) study is a methodology used to identify the actual and probable impacts of projects and programs on the environment and to recommend alternatives and mitigation measures. The assessment is required at all stages of project development with a view to ensuring environmentally sustainable development for both existing and proposed public and private sector development ventures. The national ESIA regulations were issued in accordance with the provision of the Environmental Management and Coordination Act - (EMCA 1999). This ESIA study takes into consideration the following policy and legal instruments.

3.2. NATIONAL POLICY GUIDELINES

3.2.1. Vision 2030

The economic, social and political pillars of Kenya Vision 2030 are anchored on among others enhanced equity and wealth creation opportunities for the poor for improved livelihoods; The 2030 Vision aspires provide water for expanded agricultural productivity.

As per the goals of vision 2030, the project's objective should be geared towards improving the livelihoods of the benefiting communities.

3.2.2. National Environment Policy, 2014

The policy statement under infrastructure development and environment commits that the Government will ensure Strategic Environment Assessment (SEA), Environmental Impact Assessment, Social Impact Assessment and Public participation in the planning and approval of infrastructural projects; develop and implement environmental-friendly national infrastructural development strategy and action plan; and ensure that periodic Environmental Audits are carried out for all infrastructural projects.

ESIA identifies and recommends mitigation measures for identified impacts, thus contributing to sound management of the environment as required by this policy.

3.2.3. The National Environmental Sanitation and Hygiene Policy, 2007

The National Environmental Sanitation and Hygiene Policy is devoted to environmental sanitation and hygiene in Kenya as a major contribution to the dignity, health, welfare, social well-being and prosperity of all Kenyan residents. The policy recognizes that healthy and hygienic behavior and practices begin with the individual. The implementation of the policy will greatly increase the demand for sanitation, hygiene, food safety, improved housing, use of safe drinking water, waste management, and vector control at the household level, and encourage communities to take responsibility for improving the sanitary conditions of their immediate environment.

The ESMMP has provided for availing of adequate sanitary facilities for workers to prevent open defecation. Provision of protective equipment to the construction workers and necessary education on suitable Personal Protective Equipment. It has also provided for enforcement of use of PPEs for all workers to minimize accidents, ESMMP also Integrates strict adherence to

basic rules with regard to protection of public health such as proper hygiene and disease (HIV/AIDS) prevention and occupational safety.

3.2.4. National Gender and Development Policy, 2019

The priority action of the National Gender and Development Policy, 2019 is to enhance compliance to the ‘not more than two thirds’ gender principle in recruitment, appointment and promotion of women and men in all spheres for greater inclusion and visibility among others. *The proponent purposes in the ESMMP to ensure that the “during construction, locals will be engaged and that women will also be hired.*

3.2.5. National Policy for Prevention and Response to Gender Based Violence, 2104

The overall Goal of this National Policy is to accelerate efforts towards the elimination of all forms of GBV in Kenya. The Policy Goal is to be realized as laid out in the key objectives which seek to ensure; a coordinated approach in addressing GBV and effective programming; enhanced enforcement of laws and policies towards GBV prevention and response; increase in access to quality and comprehensive support services across sectors; and improved sustainability of GBV prevention and response interventions.

The proponent to prioritize prevention of GBV as per this policy and promptly respond to any cases as per the laws supporting this policy.

3.2.6. HIV/AIDS Prevention Policy

The vision of this Policy is a facilitating environment where all key populations in Kenya can access HIV prevention and treatment programmes and services. The overall objective of the policy is to enhance access to HIV prevention and treatment programmes and services among key populations in Kenya.

The proponent to ensure throughout all the phases of the project that the workers and the community are accessible to HIV/AIDS prevention programmes and treatment services such as availing of brochures, testing kits and condom dispensers.

3.2.7. The Kenya National Youth Policy, 2016

The National Youth Policy visualizes a society where youth have an equal opportunity as other citizens to realize their fullest potential, productively participating in economic, social, political, cultural and religious life without fear or favour.

The policy is part of the National Government policy commitment for a greater cohesive society, equitable, inclusive and participatory economic and social process for sustainable development. The Policy is anchored on the principle of inclusion, action and tangible outcome.

The contractor to ensure that the youth are hired during the construction phase of the project and actively included in all the other phases of the project.

3.2.8. National Policy on Water Resources Management and Development (1999)

While the National Policy on Water Resources Management and Development (1999) enhances a systematic development of water facilities in all sectors for promotion of the country's socio-economic progress, it also recognizes the by-products of this process as wastewater. It, therefore, calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. This implies that Industrial and commercial development activities should be accompanied by corresponding waste management systems to handle the waste water and other waste emanating there from. The same policy also requires that such projects undergo comprehensive ESIA's that will provide suitable measures to be taken to ensure environmental resources and people's health in the immediate neighbourhood and further downstream are not negatively impacted by the emissions. As a follow-up to this, EMCA, 1999 requires annual environmental audits to be conducted in order to ensure that mitigation measures and other improvements identified during ESIA's are implemented.

In addition, the policy provides for charging levies on waste water on the basis of quantity and quality. The "polluter-pays-principle" applies in which case parties contaminating water are required to meet the appropriate cost of remediation. Consequently, to ensure water quality, the policy provides for establishment of standards to protect water bodies receiving wastewater, a process that is ongoing. The standards and measures to prevent pollution to water resources are provided for in the Environmental Management and Coordination (Water Quality) Regulations, 2006 which is a supplementary legislation to EMCA, 1999.

The provision for a toilet and bathrooms have been factored in the Bill of Quantities of this project. Further, the ESMMP constitutes an element that promotes proper drainage. This will

ensure that pollution of the water resource does take place.

3.3. ENVIRONMENTAL AND SOCIAL LEGAL FRAMEWORK

3.3.1. Constitution of Kenya, 2010

Article 69 (1) (d) of the constitution states that the state shall encourage public participation in the management, protection and conservation of the environment. Article 56 also state that the State shall put in place affirmative action programmes designed to ensure that minorities and marginalised groups— (a) participate and are represented in governance and other spheres of life; (b) are provided special opportunities in educational and economic fields; (c) are provided special opportunities for access to employment; (d) develop their cultural values, languages and practices; and (e) have reasonable access to water, health services and infrastructure.

The proponent in the ESMMP outlines measures for participation of the Vulnerable and Marginalised Groups and strengthening social relationships in the project life cycle. These include encouraging the vulnerable in the community to raise their voices and claim for better services, and also acting collectively with the rest of the members of the community.

3.3.2. Environmental Management and Coordination Act (EMCA), 1999 (Revised 2015)

This is an Act of Parliament that was reviewed in 2015 and provides for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. This Act is divided into 13 Parts, covering main areas of environmental concern as follows: Preliminary (I); General principles (II); Administration (III); Environmental planning (IV); Protection and Conservation of the Environment (V), Environmental impact assessments (EIA), audits and monitoring (VI); Environmental audit and monitoring (VII); Environmental quality standards (VIII); Environmental Restoration orders, Environmental Easements (IX); Inspection, analysis and records (X); International Treaties, Conventions and Agreements (XI) National Environment Tribunal (XII); Environmental Offences (XIII).

The Act has provided for Environmental safeguards within the statutes of Kenya by regulating for Environmental Impact Assessment (EIA), environmental Audits (EA) and Strategic Environmental Assessments. EIA/EA regulations gazette notice 101 in schedule II provides for activities that require EIA projects and those that required EIA full studies, this categorization depends on the level of risks anticipated from an activity. Through this process an impact rating is anticipated and therefore informs the decision on whether the project goes to full categorization or not.

The proponent in preparing this ESIA report has taken cognizance of this principal environmental law and has prepared it in accordance with the relevant provisions. The report will be submitted to NEMA for necessary review and licensing after clearance, approval and Disclosure from the World Bank Group, the lending institution of KCSAP project.

3.3.3. Environmental (Impact Assessment and Audit) Regulations, 2003

The regulations provide for the procedure for carrying out Environmental Impact Assessment (EIA) and Environmental Audit (EA), the carrying out of an environmental audit study following commencement of project operations and the contents of an EIA and an EA Report. *The proponent has prepared this ESIA report in accordance with the guidelines provided for in this regulations.*

The proponent, apart from preparing this ESIA report and subjecting it to the necessary processes also commits to prepare and submit an initial environmental and social audit after one year of operation of the project to assess the level of compliance with the ESMP and make any necessary recommendations thereof.

The contractor will hire an environmental expert to ensure that the policies, legislations and regulations are complied with throughout all the phases of the project.

3.3.4. The Environmental Management and Coordination (Water Quality) Regulations, 2006

Provides for the protection of ground and surface water resources and also the water quality standards for sources of domestic water. It also prohibits actions that may directly or indirectly cause water pollution.

The proponent provides measures in the ESMP for ensuring that the quality of water at the potential water pan meets the specified standards as set out in the First Schedule of these regulations.

3.3.5. The Environmental Management and Coordination (Waste Management) Regulations 2006

The regulations provide for standards for handling, transportation and disposal of various types of wastes including hazardous wastes.

It also specifies the requirements for ensuring waste minimization or cleaner production, waste segregation, recycling or composting.

Additionally, the regulations provide for licensing of vehicle transporting waste and waste disposal facilities.

The proponent proposes in the ESMMP that the contractor uses the top soil in landscaping after project completion and the subsoil to compact the embankment as per the design of the water pan.

3.3.6. Environmental Management and Coordination, Conservation of Biological Diversity (BD) Regulations, 2006

These regulations are described in Legal Notice No. 160 of the Kenya Gazette Supplement No. 84 of December 2006. These Regulations apply to conservation of biodiversity which includes Conservation of threatened species, Inventory and monitoring of BD and protection of environmentally significant areas, access to genetic resources, benefit sharing, offences and penalties.

The proponent in the ESMMP provides for avoidance or minimal disturbance on sensitive habitat areas; regular inspection and monitoring of the water pan prior to start and during work; and species assessment.

3.3.7. Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006

These regulations are described in Legal Notice No. 131 of the Kenya Gazette Supplement no. 74, of October 2006 and will apply to all internal combustion engine emission standards, emission inspections, the power of emission inspectors, fuel catalysts, licensing to treat fuel, cost of clearing pollution and partnerships to control fossil fuel emissions used by the Contractor. The fossil fuels considered are petrol, diesel, fuel oils and kerosene.

In the construction phase of the project, the ESMMP outlines that the contractor will ensure all the machinery and equipment are well-maintained and use good quality fuel and lubricants only.

3.3.8. The Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009

These regulations prohibit the generation of unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.

They also provide for the maximum noise levels permissible in various environmental set ups such as residential areas, places of worship, commercial areas and mixed residential dwellings.

In order to comply with these regulations, the proponent provides the following measures in the ESMMP: maintaining of daytime working hours between 8am to 7pm; use of well-conditioned and maintained equipment and vehicles with some noise suppression equipment

(e.g. mufflers, noise baffles) and in working order; provision of ear protection equipment for noise level control for workers; entering into contractual agreement with the construction contractors on noise and vibration mitigation; implementation of best driving practices when approaching and leaving the site (speed limit of ≤ 30 km/hr); and switching off engines of vehicles/trucks and earth-moving equipment and other machineries when not in use.

3.3.9. Environmental Management and Coordination (Air Quality) Regulations, 2014.

These regulations provide for ambient air quality tolerance limits and prohibits air pollution in a manner that exceed specified levels. It also provides for installation of air pollution control systems where pollutants emitted exceed specified limits; the control of fugitive emissions within property boundary; the control of vehicular emissions; the prevention of dispersion of visible particulate matter or dust from any material being transported; and for acquisition of an emission license.

During the construction phase of the project, the proponent elaborates in the ESMMP that the contractor will ensure that the all the machinery and equipment are well-maintained and use good quality fuel and lubricants only to minimise emissions, wetting of operational sites to reduce raising dust and avoiding construction during windy times.

3.3.10. County Government Act, No. 17 of 2012

The constitution of Kenya, 2010 ushered in a two tier system of government. County government act is one of the pieces of legislation enacted by parliament to give effect to the various chapters of the constitution under the principles of constitution. County Government Act is An Act of Parliament to give effect to Chapter Eleven of the Constitution; to provide for County Governments' powers, functions and responsibilities to deliver services and for connected purposes. Among the functions and responsibilities of the county government is development control in their respective areas of jurisdiction.

In the planning phase of the project, the County Government of Bomet is expected to approve the planned construction of Mogoiywet water pan against its set criteria for approval of development projects.

3.3.11. Water Act 2016

The Water Act provides that every person in Kenya has the right to clean and safe water in adequate quantities and to reasonable standards of sanitation and that a permit is required for use of water from a water resource;

It also prohibits pollution of a water resource by any person without authority conferred by the Act.

To comply with these regulations, the proponent recommends in the ESMMP the following measures: banning garbage/refuse, oily wastes, fuels/waste oils in the project site grounds; properly securing fuel storage tanks in order to contain any spillage; avoiding the maintaining and cleaning of vehicles, trucks and equipment near the project site or close to water bodies; and providing toilet facilities at the construction site to avoid indiscriminate defecation. The proponent will also hire a licensed waste handlers to regularly collect and dispose the wastes.

3.3.12. *The Water Resources Management Rules (2007)*

These Rules are described in Legal Notice Number 171 of the Kenya Gazette Supplementary Number 52 of 2007. They apply to all water resources and water bodies in Kenya, including all lakes, water courses, streams and rivers, whether perennial or seasonal, aquifers, and shall include coastal channels leading to territorial waters. The Water Resources Management Rules empower Water Resources Management Authority (WRMA) to impose management controls on land use falling under riparian land.

The proponent suggests in the ESMMP to work in liaison with Nyongores WRUA whose jurisdiction the project falls under in catchment protection. Nyongores River is a tributary of Nyongores river. The proponent also plans to train the beneficiary community in integrated catchment protection. The ESMMP also enlist as a measure the periodic taking of water samples for testing in accredited labs to ensure that it always meets the standards for use for domestic purposes.

3.3.13. *The Public Health Act (Cap. 242)*

Section 115 of the Act states that no person/institution shall cause a nuisance or condition liable to be injurious or dangerous to human health. The law requires that all lawful, necessary, and reasonably practicable measures be taken to maintain areas under jurisdiction clean and sanitary to prevent the occurrence of nuisance or condition liable for injurious or dangerous to human health.

The proponent defines the necessary measures in the ESMMP to prevent the occurrence of nuisance or condition liable for injurious or dangerous to human health during the construction and the operation phase of the project. Proposed measures include ensuring OHS during construction; dust management through watering of ground; proper disposal of unrecyclable or un-reusable waste; and in operation; water pollution control, mosquito control, design and operationalization of standard operating procedures, provision of hand

washing points, fencing of the water pan site, provision of sanitary facilities (latrines) and water drawing points and community sensitization campaigns on communicable diseases such as COVID-19. Additionally, COVID-19 control measures have been provided in the ESMMP and will be implemented during all phases of the project

3.3.14. The Public Health Act (cap. 242) Legal Notice No. 50: (Covid-19 Restriction of Movement of Persons and Related Measures) Rules, 2020

Provides for measures aimed at preventing, controlling and suppressing the COVID-19 pandemic in Kenya in both in public places and enclosed premises.

The proponent outlines in the ESMMP that the workers maintain a physical distance of no less than one meter from the next person; use a proper face mask that must cover the person's mouth and nose; provide at the construction site a handwashing station with soap and water or an alcohol-based sanitizer approved for use by the Kenya Bureau of Standards and regularly sanitize their premises or business location.

3.3.15. Land Act, 2012

The Land Act, 2012 mandates the Land Commission and other public officers to use the following guiding principles and values; equitable access to land; security of land rights; sustainable and productive management of land resources; and conservation and protection of ecologically sensitive areas

The Act further provides for the creation of a public rights of way (ROW) or wayleave by the National Land Commission. (Refer to Annex 9: Certificate of Official Search)

The proponent proposes measures in the ESMMP to ensure that the water pan catchment is utilized sustainably including planting trees, placing silt traps appropriately in order to prevent the water pan from silting up and ensuring there is equitable access to the water resource.

3.3.16. **Community Land Act No. 34 (2016)**

This is an ACT of Parliament to give effect to Article 63 (5) of the Constitution; to provide for the recognition, protection and registration of community land rights; management and administration of community land; to provide for the role of county governments in relation to unregistered community land and for connected purposes.

The proponent has liaised with the relevant agencies to ensure that the community land is properly secured and free from any encumbrances before commencement of the project. (Refer to Annex 9: Certificate of Official Land Search)

3.3.17. Climate Change Act 2016

The Country developed a Climate Change Act 2016, gazetted in June 2016 and resident with the Ministry of Environment and Natural Resources. The Act aims at creating a regulatory framework for enhanced Climate Action responses measures and to provide a mechanism and measure for low carbon climate resilient development.

The Climate Change Act has five sections namely i) Climate change policy coordination and oversight, which establishes the National Climate Change Council to oversight all Climate change matters in Kenya ii) responses measures and actions, articulating specific Climate actions to be undertaken , such as ensuring mainstreaming Climate change matters into policies, plans and programmes iii) Climate Change duties and responsibilities , that assign specific duties to institutions to follow with respect to Climate Change, for example NEMA is given specific roles of monitoring Compliance with the Act in the area of greenhouse gas emission; (iv) and Public participation, and financial provisions and miscellaneous.

Emission from Agriculture forms part of the GHG inventory for Land Use and Land Use Change and Forestry (LULUCF inventory. Compliance with reporting on GHG emission from Agriculture sectors forms part compliance revision of Climate Change Act 2016.

The proponent outlines the following measures aimed at reducing GHGs emissions in the ESMMP: -optimization of the supply chain should be done to shorten the flow of material and equipment distribution; machine optimization and increased operator expertise to influence emissions reduction; choosing of construction method that will improve the efficiency of time and cost as well as material so that the waste generated will also be less; the use of eco-labelled materials in every construction component also has an impact on carbon reduction; optimization of energy, electricity, gas & water and material utilization in every construction operational activity; Implementing planned waste management through the concept of reduce, reuse and recycle; and utilization of new technologies and renewable energy to help in reducing the amount of carbon emissions.

3.3.18. Sexual Offences Act (No. 3 of 2006)

The Sexual Offences Act, No.3 of 2006 makes provision about sexual offences, their definition, prevention and the protection of all persons from harm from unlawful sexual acts, and for connected purposes.

The proponent ensures that everyone involved in the implementation of the project is safe from sexual abuse by adopting in the ESMMP the following strategies during all the phases; promoting social norms that protect against violence; undertaking sensitization on GBV to that

community and site workers on prevention of sexual violence; establishing a grievance redress mechanism and invoking this law in case of any offenders.

3.3.19. Occupational Safety and Health Act, 2007

This Act provides for the safety, health and welfare of workers and all persons lawfully present at work places, the registration of workplaces and outlines safety requirements in use of machinery to prevent accidents and injuries.

The proponent outlines the following measures in the ESMMP for management of occupational safety and health issues in the execution of the project: - registering of the construction site as a workplace; putting in place safety measures in use of tools and machinery on site; protecting of the workers and general public with any form of interaction with the construction site; and insuring the machinery and equipment which shall be used. The workers and third parties will also be provided with insurance covers.

3.3.20. The Penal Code (Cap.63)

The Penal Code prohibits any person or institution from voluntarily corrupting, or foiling water for public springs or water pans rendering it less fit for its ordinary use. It also prohibits making or vitiating the atmosphere in any place to make it noxious to health of persons/institution in dwellings or business premises in the neighborhood or those passing along a public way.

The proponent provides in the ESMMP for sensitization of the beneficiary community against pollution of the water in the pan in any form.

3.3.21. Irrigation Act, 2019

The purpose of this Act is to support sustainable food production through irrigation both at national and county level.

The proponent suggests in the ESMMP that she will seek for facilitation including technical assistance from the County Irrigation Development Unit during the implementation of small scale irrigation activities.

3.3.22. Agriculture Produce and Marketing Act, Cap 320

The Act provides for selling of a produce for which a marketing board exists for the purpose of marketing it to that Board or through such agency as the Board may direct.

Exploitation by middlemen in marketing of the produce from irrigation is a possible impact which is likely to affect the farmers economically. The proponent through ESMMP defines that any produce which shall come out of the irrigation component of the sub-project shall be

marketed through the relevant marketing Board, if it exists, for that produce. This will help in ensuring that the farmers get the value for their investment. If there is no marketing Board for the produce in question, the farmers shall be encouraged to form marketing cooperatives.

3.3.23. Fertilizer and Food Stuffs Act Cap 345

This Act regulate the fertilizers and animal foodstuffs industry in Kenya including the production, manufacture, packaging, importation and marketing of fertilizers and animal foodstuffs among other purposes.

Use of fertilizers which does not meet the standards set out in the Act is likely to affect production from the individual farmers. In order to mitigate this, the proponent shall seek for advice from the frontline extension workers on the access of quality fertilizers which are approved by Kenya Bureau of Standards.

3.4. WORLD BANK GROUP OPERATIONAL POLICIES

The following World Bank environmental safeguards (Operational Policy (OP) /Bank Procedure (BP)) will guide the proposed project.

3.4.1. OP/BP 4.01 (Environmental Assessment)

The principal objective of OP/BP 4.01 is to ensure that World Bank financed projects are environmentally sound and sustainable. The policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence. OP/BP 4.01 covers impacts on the natural environment, human health and safety, and trans-boundary and global environment. The assessment has considered: the natural environment (air, water, and land); human health and safety) social aspects (involuntary resettlement, indigenous peoples and physical cultural resources).

The proposed project was screened for environmental and social risks and the proponent has subjected the project to ESIA, which is the subject of this report. This report has established all the significant impacts that need to be addressed and proposed appropriate measures to prevent or reduce any risk that may be posed to the physical, biological and social environment. The adverse impacts and their mitigation measures are well outlined in the ESMMP including responsible parties, duration and cost in the whole project cycle. The public were consulted as required by this Policy. Further, the proposed site has no known species of biological conservation significance. The proponent through this ESIA and ESMMP has taken advance measures for protecting, preserving and conserving the environment in the project setting from predicted and emergent adverse impacts. The proponent will undertake the planting of indigenous trees in the project area.

3.4.2. OP/BP 4.11 (Physical Cultural Resources)

The objective of this policy is to avoid or mitigate adverse impacts on physical cultural resources from development projects. The policy considers Physical Cultural Resources (PCR) to be resources of archaeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic or other cultural significance.

The proposed Mogoiywet Water pan project shall not traverse any homes in rural Longisa Ward. There are no physical or cultural object/resource that the proposed development may interfere. However, the contractor will apply chance find procedure provided in Annex 10 (Chance find Procedure) in case of unexpected find at the project site.

3.4.3. OP/BP 4.09 (Pests Management)

The policy is meant to minimize and manage the environmental and health risks associated with pesticides use. The policy promotes and supports safe, effective, and environmentally sound pest management. *The proponent will comply with this policy by using integrated pest management as stipulated and guided by KCSAP pest management plan in the ESMF in future, when it will be deemed necessary to use pesticides in the irrigation component of the project.*

3.4.4. The World Bank's Disclosure Policy

The policy articulated how the Bank will disclose any information in its possession that is not on a list of exceptions. The Bank routinely make available to the public as much information as practical, particularly on its external website,

This ESIA report will be disclosed as per World Bank Group's Disclosure policy after clearance/approval for eventual licensing by NEMA.

3.5. INTERNATIONAL CONVENTIONS AND TREATIES

Kenya is a signatory to a number of international conventions, some of which relate to potential project impacts and activities. It is therefore obliged to consider recommendations and follow the requirements of the specific conventions. In 1992, the first conference of its kind, the United Nations Conference on Environment and Development (UNCED), commonly referred to as the Rio Conference or Earth Summit, succeeded in raising public awareness of the need to integrate environment and development. The conference drew 109 heads of state to Rio de Janeiro, Brazil, to address what were dubbed urgent problems of environmental protection and socio-economic development. The Earth Summit influenced subsequent UN conferences, including Rio+20 and set the global green agenda. "The World Conference on Human Rights, for example, focused on the right of people to a healthy environment and the right to

development; controversial demands that had met with resistance from some Member States until the Earth Summit."

Major outcomes of the conference include the United Nations Framework Convention on Climate Change (UNFCCC) —a climate-change agreement that led to the Kyoto Protocol, Agenda 21, the United Nations Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD). It also created new international institutions, among them the Commission on Sustainable Development, tasked with the follow-up to the Rio Conference and led to the reform of the Global Environment Facility.

3.5.1. Convention on Biological Diversity

Convention on Biological diversity is one of the three outcomes of the UN conference on Environment and Development which was held in Rio de Janeiro in 1992.

The objective of the convention is to conserve biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the use of genetic resources. Article 14, Impact Assessment and Minimising Adverse Impacts, of the Convention on Biological Diversity states that each contracting party, as far as possible and as appropriate, shall *“introduce procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures”*.

A project specific EIA would be required to be carried out wherever there is a risk to biological diversity. The report should be submitted to NEMA which is the focal point for the convention in Kenya.

The location of the pan does not have conservation significance neither is it a protected area. Impacts on loss of biodiversity from the project will be mitigated by avoiding or doing minimal disturbance on sensitive habitat areas. Also, the proponent will carry out regular inspection and monitoring on identified or suspected sensitive habitats (swamps/ wetlands), prior to start and during work and undertake species assessment.

3.5.2. United Nations Framework Convention on Climate Change (UNFCCC) – 1992 and the Paris Agreement on Climate Change.

UNFCCC is another outcome of the United Nations Conference on Environment and Development. This convention addresses climate change issues. It aims to stabilize the emission of various greenhouse gases such as carbon dioxide or methane that contribute to global climate change. NEMA is the designated agency and also regulating agency which may be approached for this.

The construction of the water pan is itself a measure for adapting to climate change and building resilience. During construction phase likely climate change impacts will be mitigated by optimization of the supply chain in order to shorten the flow of material and equipment distribution; machine optimization and increased operator expertise to influence emissions reduction; choosing of construction method and materials that will affect the efficiency of time and cost so that the waste generated will also be less; the use of eco-labeled materials in every construction component also has an impact on carbon reduction; optimization of energy, electricity, gas & water and material utilization in every construction operational activity; Implement planned waste management through the concept of reduce, reuse and recycle; and utilization of new technologies and renewable energy will help in reducing the amount of carbon emissions.

3.5.3. United Nations Convention to Combat Desertification (UNCCD)-1994

UNCCD is the third outcome of the United Nations Conference on Environment and Development. Its mandate is to conserve and rehabilitate degraded lands - arid, semi-arid and dry sub-humid zones - and to improve the socioeconomic conditions of the communities that inhabit these.

The project will restore degraded parts of the catchment through catchment conservation by working together with the WRUA under which the project area falls under.

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

It was signed in 1973 and it seeks to regulate trade in certain species and their parts, as well as products made from such species e.g. certain tree and fish species. Scale-up Energy Access Program will not be directly affected as the convention is on international trade.

The project area is not known to be a habitat for any endangered flora and fauna. However, in case of any find, it will be reported to NEMA and KWS for further action.

3.5.5. International Public Consultation and Disclosure Plan Requirements

Public consultation and disclosure processes to be followed are specified in all Operational Policies (OPs) relevant to environmental/social issues.

Public availability in the borrowing country and official receipt by the Bank of Category A or B reports for proposed projects are prerequisites to Bank appraisal of these projects. Bank policy requires all documents associated with environmental and social policies to be made available through the Bank for public comment, after the country concerned has given its consent for the release to the proposed disclosure and after the document has been officially accepted by the bank. Thus once the Borrower has officially transmitted the Category A or B EA report to the Bank, the Bank makes the report available through its InfoShop.

This ESIA report upon clearance and approval by the WBG will be disclosed according to the Bank's disclosure policy.

3.6. ADMINISTRATIVE FRAMEWORK

At present there are over twenty (20) institutions and departments which deal with environmental and social issues in Kenya. Some of the key institutions include the National Environmental Council (NEC), National Environmental Management Authority (NEMA), the Forestry Department, Kenya Wildlife Services (KWS) and others. There are also local and international NGOs involved in environmental activities that impact on the environment in one way or the other in the country.

3.6.1. National Environment Management Authority (NEMA)

The object and purpose for which NEMA is established is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment.

A Director General appointed by the president heads NEMA. The Authority shall, among others:

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programmes and projects with a view to ensuring the proper management and rational utilization of the natural

resources environment on a sustainable yield basis for the improvement of the quality of human life in Kenya.

- Take stock of the natural resources in Kenya and their utilization and consultation, with the relevant lead agencies, and develop land use guidelines.
- Examine land use patterns to determine their impact on the quality and quantity of the natural resources among others. Moreover, NEMA mandate is designated to the following committees.
- In this project, the responsibility of NEMA is to review the ESIA report and issue the license and monitor the implementation of the ESMMP.

3.6.2. County Environment Committees

The County Environment Committee has an oversight and decision-making role at the county level. The County Environment Committees are responsible for the proper management of the environment within the county, which they are appointed. They are also to perform such additional functions as are prescribed by this Act or as may from time to time be assigned by the Minister by notice in the gazette. This committee will have an overarching role in the management of the general environment of the project area.

3.6.3. Public Complaints Committee.

The Committee is charged with the following functions:

Investigating allegations/ complaints against any person or against the Authority (NEMA) in relation to the condition of the environment and its management,

Prepare and submit to the Council periodic reports of its activities which shall form part of the annual report on the state of the environment, and

To perform such other functions and exercise such powers as may be assigned to it by the Council.

3.6.4. National Environment Action Plan Committee

This Committee is responsible for the development of a 5-year Environment Action plan among other things. The National Environment Action Plan shall contain:

Analysis of the Natural Resources of Kenya with an indication as to any pattern of change in their distribution and quantity over time, and

Analytical profile of the various uses and value of the natural resources incorporating considerations of inter-generational and intra-generational equity among other duties as the EMCA specifies.

3.6.5. Standards and Enforcement Review Committee

This is a technical Committee responsible for environmental standards formulation methods of analysis, inspection, monitoring and technical advice on necessary mitigation measures. Standards and Enforcement Review Committee consists of the members set out in the third schedule to the Environmental Management and Co-ordination Act.

3.6.6. National Environmental Tribunal

This tribunal guides the handling of cases related to environmental offences in the Republic of Kenya. The Tribunal hears appeals against the decisions of the Authority. Any person who feels aggrieved may challenge the tribunal in the High Court.

CHAPTER FOUR

4. BASELINE INFORMATION

4.1. INTRODUCTION

This Section describes the existing Hydrology & Hydrological Studies, infrastructural services, air, water and geological characteristics, biological, and socio-economic environment, at the proposed project site and its neighborhood. The description provides the **baseline** against which impacts of the proposed project will be assessed.

4.2. PROJECT LOCATION

The proposed site is located between geographical co-ordinates Latitude 0.821626 S and Longitude 35.364208 E at about 8 km to the North West of Longisa town in ward of Sub-county.

4.3. PHYSICAL ENVIRONMENT

4.3.1. Topography and Size

The topography and size of the watershed influences how much and how quickly rain water reaches the river, Steep Sloped basins are often associated with quick response to rainfall events in terms of flashy runoff, while a flat basin is not. The topography is generally flat with shallow and wide river valleys and depressions, generally undulating with wide river channels that drain gently into the lower flat land. The Figure 3 below shows the base topography of the county.

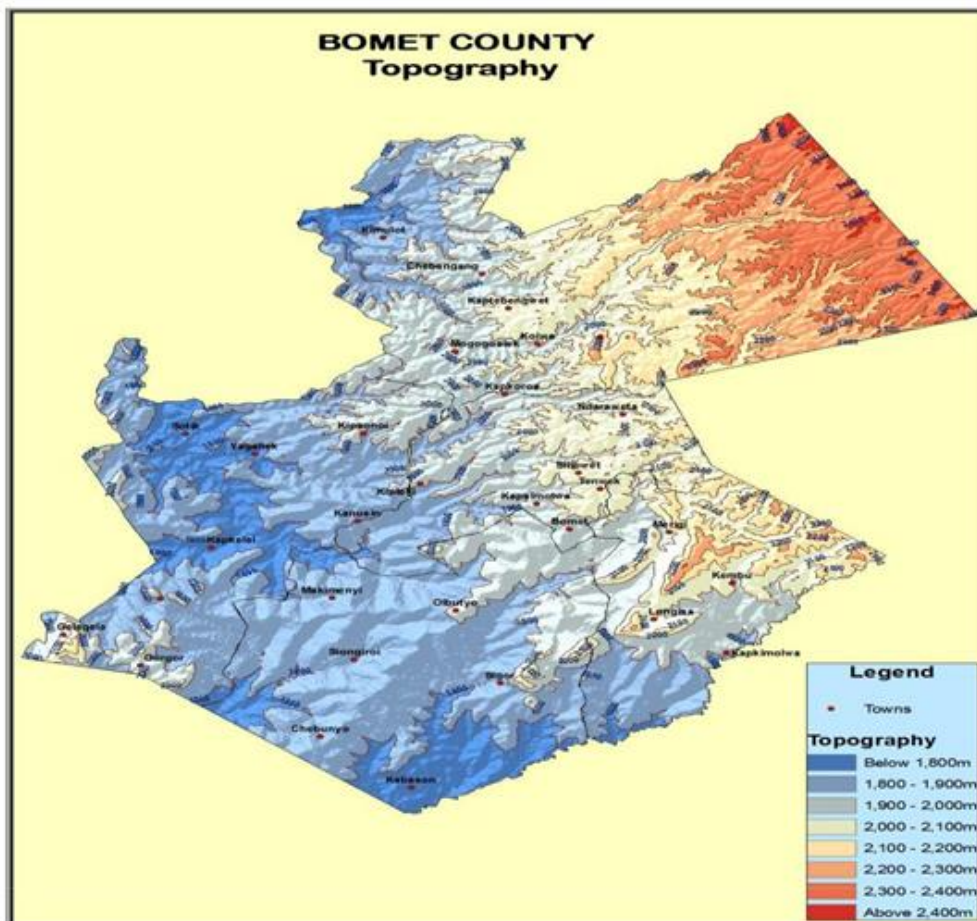


Figure 3: Base topographical map of Bomet County

Source: Meteorological Department

4.3.2. Climatic conditions

Rainfall in the county is highest in the lower highland zone with a recorded annual rainfall of between 1000mm and 1400mm. The upper midland zone which lies west of the Rift Valley experiences uniform rainfall while in the upper midland zone on the southern part of the county experiences low rainfall. Rainfall is evenly distributed except for the short dry season in January and February. The wettest months are April and May. Overall, there is little break between short and long rains in the whole county. In the extreme south, rains start in November and continue intermittently until June. The period from June to November is the driest season. In the extreme north, rains start towards the end of March and continues intermittently up to the end of December. The temperature levels range from 16⁰C to 24⁰C with the coldest months being between February and April, while the hot seasons fall between December and January.

4.4.SOCIO-ECONOMIC ENVIRONMENT

4.4.1. Population Structure

According to the 2019 National Housing and Population Census reports, Longisa Ward had an approximate population of 28,855 persons. Of these 49.59%, 50.04% and 0.003% were males,

females and intersex respectively. About 10% of this population are Vulnerable and Marginalised Groups (VMGs) which comprise of physically challenged, and some women and youth.

4.4.2. Transport

The ward has a road network which is mainly gravel and earth surface. A small portion of the road network is made of bitumen. The total number of kilometres of road network in the county is 408 Kms out of which 5 Kms is bitumen.

4.4.3. Telecommunication

The network coverage by GSM connectivity is close to 95 per cent of the ward. The Wireless, Wi-Max and Wi-Fi are not yet available in the ward.

4.4.4. Education

The ward has a total of 35 public and 14 private Early Childhood Development Centres, 40 primary schools, 5 secondary schools and 1 vocational training center.

4.4.5. Housing

Majority (89%) of the ward's population have their own houses compared to the county's figure of 85 percent. The majority of the houses are temporary, semi-permanent and a small portion of the population with permanent.

4.4.6. Land Tenure

All agricultural land in the ward is freehold with 60 percent of the households having acquired title deeds and the rest have succession issues.

Approximately 80 percent of all commercial lands are under leasehold by the government.

4.4.7. Agro-Ecology and Land Use

Land cover and land use affect the runoff infiltration processes and hence the groundwater. Ecologically, the project area consists of bird species, amphibians, reptiles and mammals as well as several plant species which interact among themselves, between themselves and the abiotic environment.

The most practiced agricultural activities include animal rearing (cattle, sheep, goats and poultry), growing of crops (maize, sorghum, finger millet, beans, avocados, mangoes, quavers, tomatoes, loquats, cabbages, kales, spider plants, black night shade, pumpkins, carrots, onions and ginger).

4.4.8. Trade

Longisa town is the major market centre in the ward. Youth farmers along Bomet-Longisa highway are known for selling of fresh horticultural farm produce.

4.4.9. Health Services

The ward boasts of the county referral hospital. The most common diseases in the county include: respiratory system diseases, skin diseases, malaria, diarrhoea, eye infections, arthritis and joint pains.

4.4.10. Nutritional Status

The prevalence of stunting and wasting in children under the age of 5 is at 38 percent in the ward.

4.4.11. Poverty Levels

According to the 2019 National Housing and Census Report, Poverty levels in the ward stands at 46.5%.

4.4.12. Household Headship

Majority of the households in the ward are headed by males adults (65.55%) followed by female adults (34.22%) thirdly are female children (0.14%) and lastly male children (0.08%).

4.4.13. Settlement Patterns

The settlements are evenly distributed within the agricultural lands, while those in the urban centres are dictated by development plans and their peripheries have attracted dense population patterns.

4.4.14. Source of Energy

The main sources of energy in the ward are electricity and wood fuel with approximately 80 per cent of households in the ward using wood fuel for cooking compared to 85 percent at the county level. Electricity coverage is 23.6 percent at household level, 65 per cent at market centres and 85 per cent among the learning institutions. However, this is expected to increase to 70% through the Last Mile Programme (LMP) connectivity.

4.4.15. Religion

Majority of the county population are Christians (99.5%) and only a small percentage (0.5%) are Muslims. The Christians fall under three main denominations; protestant, evangelical and catholic.

4.4.16. Water Supply and Sanitation

The main source of water is the Bomet Water Company which serves the entire ward. It supplies a total of 3,602,000 m³ per day to reach 15% of the population. The rest depend on other sources to include roof catchment, water pans, rivers, springs and deliveries from water bowsers operated by the water company.

4.4.17. Waste Disposal

The ward's major urban centre is Longisa town. Solid waste collection and management is still basic with no infrastructure for management of the wastes and there is no designated dumping site in the ward where other management facilities can be established like a landfill, incinerator and sorting shed. The wastes are aggregated on temporary sites and picked on weekly basis by a tractor belonging to the County Department of Urban Planning. The amount of wastes collected per week range between 2 and 3 tons in Longisa town.

4.4.18. HIV/AIDS

According to Kenya HIV Estimates Report published by the National Aids Control Council in 2018, the HIV prevalence in the ward stands at 1.9%. The level of knowledge is very high due continuous awareness by Public Health Department. Out of the entire population, 1.4% are eligible clients for ARVs in the ward.

CHAPTER FIVE

5. PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

5.1. INTRODUCTION

Public participation is a very important aspect of the ESIA process because it is aimed at ensuring the sustainability of the ecosystem in which man is an integral part. The Kenya constitution 2010 highlights the need for public participation in all development processes. The importance of the exercise is reflected in law by being made part of the ESIA process and is also a requirement of the World Bank. Participation helps to bring out the contentious issues and gives a chance to those who may be affected by the proposed sub-project to give their views. This was applied whereby the community was involved in; sub-project identification, topographical surveys, designs, and the ESIA process. This was important in ensuring that the concerns of the public were addressed early in the initial stages of sub- project planning and design.

5.2. OBJECTIVES OF PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

The main objective of the public consultation was to engage key stakeholders' groups to provide their inputs into the planned development and especially on those impacts that directly affect the Mogoiywet community. The specific objectives of the public participation and consultation in this ESIA was to;

- Build up confidence between the stakeholders and the proponent to minimize the risk of delays in the implementation of the Mogoiywet water sub project.
- Help the project proponent to make informed assessment of public opinion about the project, and the nature and extent of opposition likely to occur during the implementation stage.
- Bring out the contentious issues and give a chance to those who may be affected by the proposed project to give their views.
- Have a fair interaction with affected groups and assure them that every attempt would be made to minimize the negative impacts of the Mogoiywet sub project.
- Get No Objection from the members of the public and the affected community on the implementation of the project.

5.3. CATEGORIZATION OF COMMUNITY PARTICIPANTS AND STAKEHOLDERS

The first consultation was with the proponent on 23rd December, 2019 and was attended by 7 people; 6 males and 1 female. Consultations with the beneficiary community was held on 28th January, 2020 and was attended by 21 participants; 11 male and 10 females. The community members who attended the consultative Barazas were from the neighbouring villages of Masare, Nokirwet, Kongebebet, Kimugul, Ndamichonik, Kakawet, Cheboin, Segerot and Kamebwo. The consultant was informed that the proposed site is public land and was provided with a land search document.

The consultant identified the stakeholders to the proposed water pan site. Consultation with the stakeholders took place on 23rd September, 2020. Stakeholders' consultation involved people who have an interest in the sub project either as individuals or as representatives of a group. The key stakeholders comprised CPCU team (4), Mogoiywet PMC representative (1), the Departments of Water (1), Water and Water Resources Authority (1), WRUA (1), VMG Rep (1), Water PMC Rep (1), Lands (1), Department of Livestock (1) and Public Health (1) and the Consultant team (2).

5.4. PUBLIC PARTICIPATION AND STAKEHOLDERS CONSULTATION METHODOLOGY

An invitation public notice was placed in Chief's office as it is strategic for members of the public (Annex 11: Public Baraza Notification Poster). The notice indicated the date, time, venue and the agenda of the public meeting. The public baraza was facilitated by CPC and the Lead Expert. Views from the participants were gathered using pre-designed Individual questionnaires (Annex 12: Filled Individual Questionnaires). Feedback on the issues raised was given back immediately. In-depth information was gathered by carrying out Key Informant Interviews with leaders, professionals and residents. A separate stakeholder consultative with the mapped stakeholders on a separate date.

Plates 2 and 3 below shows the participants following the public participation proceedings.



Plate 2: Public participation meeting at the site



Plate 3: Public participation via public baraza

5.5. SUMMARY OF ISSUES RAISED AND MITIGATION MEASURES

The issues raised during Community and other stakeholders` consultative meetings are as highlighted in Table 4 below.

Table 4: Summary of issues raised and mitigation measures

	ASPECT/CONCERN RAISED BY STAKEHOLDERS	SUGGESTED MITIGATION MEASURE AND RESPONSE TO THE CONCERNS
1.	The construction works will generate solid waste (mud and drilled rock) that will be deposited on the embankments so as to provide proper bordering of water.	The proponent will however ensure appropriate disposal of the excess solid waste. The top soil will be used in landscaping while the excavated subsoil should be compacted on the embankment as per the design of the water pan.
2.	Social ills such as gender based violence (GBV) and may result to poor relationships between the locals and the non-local construction workers.	To address this, the proponent will promote participation; protect and promote human rights and gender equality; respect local culture without perpetuating stereotypes and discrimination; seek to understand the local context and build on women`s and men`s

	ASPECT/CONCERN RAISED BY STAKEHOLDERS	SUGGESTED MITIGATION MEASURE AND RESPONSE TO THE CONCERNS
		strengths and assets; adopt farmer field and life school approach; and coordinated approach.
3.	Spread of diseases such as HIV/AIDS and Sexually Transmitted Diseases (STDs)	Designing and conducting of HIV/AIDS awareness, sensitization and prevention program for the project with the entire community coverage.
4.	The project may trigger influx of immigrants into the area as a result the impacts from irrigated farming on agricultural productivity who will take up jobs at the expense of the locals leading to cultural conflicts.	The proponent to prepare a specific influx management plan to deal with environmental and social impacts occasioned by the influx of people to the area.
5.	The machinery undertaking construction works may produce noise and vibration levels that will affect the residents of the neighboring homes.	This will be mitigated by ensuring that the earth movers are serviced regularly, machine manufactures' manual specifications are adhered to, and ear muffs are provided to the personnel involved.
6.	The exposed water pan posing risk to both animals and people	The water engineer assured the community that their concerns are fully captured in the designs and the BQs i.e the fencing, sanitation, size of the pan, the soil conservation near the pan.

NB: In general, the concerns raised by the community were addressed by the relevant departmental heads and Government administrators present in the meeting. Furthermore, the engineer explained how most of the concerns are captured in the design and BQs while any new concern will be considered in the ESMMP and made to be part of the contract assignment.

No objections to the sub-project were raised during the public participation process with the community and the stakeholders through the questionnaires and orally.

5.6. COMMUNITY AND FUTURE STAKEHOLDER ENGAGEMENT

There will be continuous stakeholder engagement throughout the sub project cycle to ensure that the community and stakeholders continue to be informed during all construction and, where appropriate, during operation of the facility.

CHAPTER SIX

6. ANTICIPATED IMPACTS AND MITIGATION MEASURES

This chapter identifies and evaluates the probable positive and negative impacts of the proposed water pan construction. The potential environmental and social impacts from the project are both positive and negative. Some impacts will occur only during certain phases of the project life cycle while some will persist all through. Impacts may also be long term, or short term and different in severity.

Project impacts are categorized in terms of project phases by examining the tasks undertaken in each phase. The proposed project will have impacts on the natural environment and also on the social-economic status of the society. The likely impacts are analyzed against the baseline information.

6.1. IMPACTS DURING CONSTRUCTION

6.1.1. Positive impacts

a) Increase in the government revenue generation

The government is poised to gain in revenue collection in form of taxes as most of the materials that will be procured for construction of the water tank and laying of pipelines are taxable goods.

b) Boost in business of construction materials and consumables

There will be increase in business during construction as a lot of goods will be procured for construction of the water tank and laying of the pipeline which will in turn increase the turn over for the business community.

c) Creation of employment opportunities

The entire process of tank's construction will provide temporal employment to consultants, skilled labourers and casual labourers.

The project is expected to employ about 30 people. This will increase the purchasing capacity of those employed. The significance of this impact is **high** and thus a consequential poverty reduction in the locality.

d) Enhancement of technology transfer

During tank Construction, there will be transfer of technology from water resource engineers, WRMA and hydrogeologist and consulting agents to all those involved in the exercise. The technological skills obtained in the process are likely to be disseminated and applied to similar activities elsewhere.

This is of **high** significance.

6.1.2. Negative impacts

i. Soil and Land Degradation

The soil structure of the area will be interfered with to a moderate significance through construction activities especially the excavation phase. The soil particles will become loose and there might be a likelihood of collapse.

Mitigation measure

Minimise land clearing; Rehabilitation of degraded areas; and Minimal construction work during rainy season.

ii. Air pollution

Dust and smoke generated by the earth movers during site construction will significantly impact on air quality though its significance is low.

Mitigation measure

Operate well-maintained machineries by the contractors; Routine maintenance program for all equipment and machineries on site; Use of good quality fuel and lubricants only; Wetting of operational sites to reduce dust raising; and avoid extraction during windy times.

iii. Noise pollution and vibration

The noise levels in the area will increase during the excavation works, however, this will be for a short period of time. The significance is moderate.

Mitigation measure

Maintain daytime working hours (8am to 7pm); Use well-conditioned and maintained equipment and vehicles with some noise suppression equipment (e.g. mufflers, noise baffles) intact and in working order; Ear covers for noise level control; Ensure contractual agreements with the construction contractors on noise and vibration mitigation; Implementation of best driving practices when approaching and leaving the site (speed limit of ≤ 30 km/hr) to minimize noise generation; and Switching off Engines of vehicles/trucks and earth-moving equipment and other machineries when not in use.

iv. Solid waste accumulation

Excavated soil will accumulate at the site during construction phase.

Mitigation measure

Use top soil to do landscaping and the subsoil to compact the embankment as per the design of the water pan; prepare site specific Waste Disposal Plan; install waste disposal receptacles and signs strategically within the construction camps; provide training and do awareness creation on maintaining clean environment; provide adequate toilets and efficient sewer system within construction camps; and 3 R s (reduce, reuse, recycle).

v. Occupational health hazards

Since the construction of the dam will be a workplace, there will be potential occupational and health risks.

Mitigation measure

Ensure that there is a first aid kit on standby to handle potential minor injuries, ensure proper signage is in place, equip workers with PPEs.

vi. Disturbance by curious on-lookers

During the entire process of water pan construction, it might be difficult to control the curious onlookers. The onlookers can scare the workers and pose occupational health risks. The significance of this impact is moderate.

Mitigation measure

Fence the working site with iron sheets and sensitize the community on when the project will start and end.

6.2. IMPACTS DURING OPERATIONAL PHASE

6.2.1. Positive impacts

i. Increased water supply

Increase in the water supply represent the most important positive impacts of the project. The significance of this is ***very high***

ii. Increased wealth creation

As the farmers exploit the increased farming potential due to availability of hygienically safe and clean water, there will be increased wealth and improved standard of living.

iii. Savings arising from reduced price and time spent fetching water

Time which would otherwise have been spend in walking long distances in search of water will be utilized in doing other productive activities for the society.

iv. ***Increased value of land and property in the project area and environs***

Upon the completion of the water pan project, the resultant effect is the appreciation of land value. The quality and quantity of land will be of much significance in price determination. The land value will automatically rise as a result of the anticipated benefits that will accrue from the water pan significance is *high*.

v. ***Reduced Water use Conflicts***

During the water pan construction, the area will automatically ease pressure on the existing sources since the water pan will supplement them. This will reduce water use conflicts experienced amongst farmers and community at large. The significance of this impact is *high*.

vi. ***Spillover effects***

Temporary small-scale business opportunities will be realized during water pan construction of the associated structures. e.g. selling food and drinks to workers at the proposed site will flourish.

vii. ***Improved environmental health and sanitation***

The project is anticipated to increase hygiene and sanitation at the area because water used for domestic and sanitation purposes will be readily available. The water will be improved in its quality and accessibility. The treatment plant if put in place will result the significance of this impact is high.

6.2.2. Negative impacts

i. **Wear and tear**

Mitigation measure

Maintain the water pan to ensure that it is environmentally sustainable. Carry out environmental and social audits annually.

ii. **Downstream impacts of water pan**

During the operational phase of the project, the downstream users of Kagawet stream will be affected if the extraction of the water exceeds the limit allowed for environmental flow.

Mitigation measure

Ensure that water retention in the pan is controlled to ensure that adequate reserve is left to flow downstream for users; Use qualified personnel to design the water pan; Institute a water pan safety panel and develop a safety plan; and undertake catchment conservation activities.

iii. Water pollution

If water pollution activities such as car washing are not abated, then the water pan is likely to be affected due to pollution which might be risky to fish and small invertebrates.

Mitigation measure

Ban garbage/refuse, oily wastes, fuels/waste oils onto the site grounds; properly secure fuel storage tanks/sites to contain any spillage; Comply with water quality regulations; Avoid maintaining and cleaning of vehicles, trucks and equipment close to water bodies; provide adequate toilet facilities at the construction site; avoid indiscriminate defecation; and Implement Integrated Pest Management Plan (IPMP) where necessary.

iv. Unsustainable water use

Uncontrolled water use may lead to unsustainable utilization of the water resource.

Mitigation measure

Obtain water abstraction permits from WRA and use water prudently. Train communities on water conservation.

v. Degraded catchment area

The anticipated increase in the number of animals being kept by farmers and crop farming will in turn lead to degradation of the catchment area.

Mitigation measure

Restore degraded parts of the catchment through catchment conservation by working together with Nyongores WRUA.

vi. Vector-borne diseases

The water pan may become a breeding area for mosquitoes which causes malaria. The area may also become a breeding zone for ticks as animals will be thronging the area daily for watering.

Mitigation measure

Stock mosquito fish (Gambusia) which will eat the larvae before they turn into adult mosquitoes. Regularly spray or dip animals to control ticks.

vii. Greenhouse gas emissions

The use of machines during the construction stage will lead to emission of Greenhouse gases such as CO₂ into the atmosphere.

Mitigation measure

Optimize the supply chain to shorten the flow of material and equipment distribution; optimize the machines and increase operator expertise to influence emissions reduction; choose construction method and materials that will increase the efficiency of time and cost so that the waste generated will also be less; use eco-labelled materials in every construction component; optimize energy, electricity, gas & water and material utilization in every construction operational activity; Implement planned waste management through the concept of reduce, reuse and recycle; and utilize new technologies and renewable energy.

viii. Inequality issues on resource accessibility

There is a potential risk that the water resource can be controlled by the powerful and the most influential members of the community with the marginalised losing out.

Mitigation measure

Strengthen social relationships, by encouraging the vulnerable in the community to raise their voices and claim for better services, and act collectively with the rest.

ix. Exclusion of vulnerable groups (Women, youth, elderly and disabled)

Due to the helpless nature of the vulnerable in the community, they might end up being excluded from accessing and utilizing the water from the pan. This will disadvantage this category of the members of the community.

Mitigation measure

Adopt an all-inclusive approach which will ensure support to the interests of women, the youth and other vulnerable members of the community; conduct public awareness and education; and establish management committees that are as representative as possible and that are seen to be as fair as possible.

x. Demographic impacts

When the water pan becomes operational, there will be a potential risk of influx of people from outside seeking to settle within reach of the water resource. This will lead to competition for the resource which might generate to resource conflicts and pressure on other resources. May result in increased demand on the water resources, can have grave effects on community cohesion.

Mitigation measure

The proponent to prepare a specific influx management plan to deal with environmental and social impacts occasioned by influx of people to the area.

xi. Gender disparities

Participation by either women or men in the construction and operational phases of the project may be skewed in favour of one sex if gender mainstreaming is not done at every stage. Also the irrigated farming may result to commercially oriented farming by men at the expense of food crop production normally undertaken by women.

Mitigation measure

Consider diverse needs for water and accessibility modes to be effected for each groups; Recommendation of appropriate mitigation measures for the affected; Recommendation of group specific appropriate measures to specific impacts as per the project's specific social assessment; Improve access to safe and clean drinking water; Improve quality of water resources; and Making water affordable.

xii. Leadership issues

Leadership wrangles limit the achievement of the intended objective of the project

Mitigation measure

Community to democratically elect a Social Audit and Integrity Committee (SAIC) who will work on voluntary basis to resolve any conflicts that would arise during project implementation. The SAIC functions shall include and not limited to auditing the project, procurement and financial management processes, handling complaints and grievances, and advisory services to the community on pertinent issues of interest. This committee is expected to submit regular reports to the county technical team.

xiii. Spread of livestock diseases

The community watering point may lead to crowding of animals which may in turn lead to the spread of contagious/infectious diseases during outbreaks.

Mitigation measure

Conduct regular disease surveillance and vaccination; quarantine infected animals; regular disinfection of the watering area; regular dipping of the animals is to be done by every farmer.

xiv. Competition for land between crops and livestock

Once the water pan becomes operational, there is potential risk for farmers to keep more livestock than can be accommodated by the available land. As demand for more land increases, there is likelihood that more land being used for crop production will be converted to pasture land. This will in turn compromise food security.

Mitigation measure

Carry out land use planning and apportion land for crops and livestock and determine the carrying capacity of the available pasture for livestock; Encourage use of irrigation to maximize on food production and adopt modern farming technologies; and encourage farmers to keep high yielding animals.

xv. Impacts on gender relationships at household level

There is a potential risk that with the expected increase in household income, misunderstanding relating to financial decision making at household level may occur between men and women. There is a greater propensity not to share the

responsibility equally because of culture. This will affect the relationships at household level.

Mitigation measure

Carry out sensitization programmes aimed at sensitization of the community against gender discrimination and promoting gender equality.

xvi. Increased exposure to communicable diseases including HIV/AIDS & COVID 19

a. Health Impact-Increase in incidences of HIV/AIDS and STIs

The influx of people may bring communicable diseases to the sub project area, including sexually transmitted infections (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 resources. Local health and rescue facilities may also be overwhelmed and/or ill-equipped to address the work-related accidents that can occur in the construction site.

Mitigation measures

- *Contractor 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 (CHSMP) to be enforced by the Supervising Engineer.*
- *Periodic HIV/AIDS and other communicable diseases Awareness Workshops for Contractor's Staff.*
- *Controlled access to Contractor's Workforce Camps by outsiders.*
- *Contractor to provide standard quality condoms at the construction site during the construction period.*

b. Health Impact – Spread of COVID-19 amongst construction workers

The World Health Organization declared COVID-19 a global pandemic after assessing both its alarming levels of spread and severity, and the alarming levels of inaction. Consequentially, WHO issued various guidance and measures to prevent the spread of the virus. The measures have been adopted worldwide. Similarly, the Kenyan government has since then issued several guidance and directives after the first case was registered on March 13th, 2020. These included complete cessation of movement to and from areas considered hot spots and

night curfew, social distancing guidelines, closure on non – critical and essential enterprises, closure of places of worship and public gatherings, mandatory use of masks in public places, among others.

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.

Recently, the WHO has warned that the virus is here to stay for a long time and might persist and become our new way. The Government of Kenya has also lifted some of the initial movement controls and allowed the resumption of business, with certain industry specific guidelines being enforced. The duty of care has now been transferred to individual citizens and enterprises. Recognizing the potent risk this may present, it is difficult to clearly outline exhaustive mitigation measures under the mitigation impacts. ***As such, there is need for the client and the contractor to develop and adopt COVID-19 Standard Operating Procedure (SOPs) in line with the World Bank guidance, Ministry of Health Directives, and site-specific project conditions.*** These SOPs need to be communicated to all workers and enforced to the latter without fail. In addition to the requirement of the SOPs, the following mitigation measure shall also be adopted:

Mitigation Measures against spread of COVID-19 amongst workers are:

- (i) The Contractors will develop SOPs for managing the spread of Covid-19 during project execution and submit them for the approval by the Supervision Engineer and the Client before mobilizing to site. The SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions;*
- (ii) Mandatory provision and use of appropriate Personal Protective*

Equipment (PPE) shall be required for all project personnel including workers and visitors;

- (iii) Avoid concentration of more than 15 workers at one location. Where there are two or more people gathered, maintain social distancing of at least 2 meters;*
- (iv) 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;*
- (v) The project shall put in place means to support rapid testing of suspected workers for covid-19;*
- (vi) 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;*
- (vii) Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of workstations, door knobs, hand rails etc.*

c. Social risk - Spread of COVID-19 amongst community members during consultations

During implementation of the ESIA, various consultative activities will be undertaken. For efficient and meaningful engagement, a wide range of individual participants, groups in the local community and other stakeholders will be involved. The types of consultations to be used to pass information shall be through public Baraza's, electronic means shall be used where possible and one-on-one basis meetings while observing the COVID-19 mitigation measures to ensure safety of the stakeholders involved, the community at large and the client. The consultations will involve verification of PAPs covering the occupants of the affected area and vulnerable persons and groups; awareness raising, sensitization of PAPs and gauging attitude to the project; training and capacity building for livelihoods restoration, grievance redress, execution of site - specific surveys among others. If carried out conventionally, these activities would lead to close interaction between the proponent and the community members leading to a high risk of spreading COVID-19 amongst community members during the consultation process.

To minimize the risk of spread of COVID-19 amongst community members, alternative means of consultation will be required as mitigation measures to ensure social distancing and appropriate communication measures. The mitigation measures will be supervised by a communications/ stakeholder engagement / social safeguards expert in the project proponent's team.

Mitigation Measures against spread of COVID-19 amongst community members are.

(i) Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible. One-on-one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced.

(ii) Avoid concentrating of more than 15 community members at one location. Where two or more people are gathered, maintain social distancing of at least 2 meters.

(iii) The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet.

(iv) Use traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements, and mail) when stakeholders do not have access to online channels or do not use them frequently. Allow participants to provide feedback and suggestions.

(v) Hold meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration.

(vi) In situations where online interaction is challenging, disseminate information through digital platform (where available) like Facebook and WhatsApp & Chat groups.

(viii) Ensure online registration of participants, distribution of consultation materials and share feedback electronically with participants.

xvii. Child labor and school dropout

The proposed project may result increased opportunities for the sale of goods and services to the incoming workers can lead to child labor to produce and deliver these goods and services, which in turn can lead to enhanced school dropout.

Mitigation measures

- *The proponent to sensitize the community on national children welfare policies, children laws and World Bank policies on the protection of children and the importance of children being educated.*
- *The Proponent to ensure the Contractor complies with national and WB policies and rules on welfare of children.*
- *Control to ensure there is no child labour at the construction. This can be done by using Identification Cards to verify the age of the workers and casuals.*

xviii. Gender Based violence at community level

This impact is triggered during Project Construction Phase when the Contractor fails to comply with the following provisions.

- (i) Gender inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule.
- (ii) Failure to protect Human Risk Areas Associated with, Disadvantaged Groups, interfering with Participation Rights, and interfering with Labour Rights.

Mitigation Measures of Human Rights and Gender Requirements are.

- *Ensure clear human resources policy against sexual harassment that is aligned with national law*
- *Integrate provisions related to sexual harassment in the employee COC*
- *Ensure appointment of human resources personnel to manage reports of sexual harassment according to policy*
- *The Contractor shall require his 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 sexual exploitation and abuse*
- *The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including:*
 - a) *Effective and on-going community engagement and consultation, particularly with women and girls.*
 - b) *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.*

- *The contractor shall develop specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment.*
- *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.*

xix. Sexual Exploitation and Abuse (SEA)

This impact refers to sexual exploitation and abuse 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 to Risk of SEA include.

- *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).*
- *The SEA action plan will include how the project will ensure necessary steps are in place for:*
 - a) Prevention of SEA: including Combined Oral Contraception (COC) and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;*
 - b) 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;*
 - c) 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;*
 - d) 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.

xx. Gender-based Violence (GBV) at the community level

This impact refers to gender-based violence that women and girls may experience because of Project implementation. This includes, for example, an increase in intimate partner violence (IPV) when compensation schemes that share funds equally among husband and wife at the household level do not provide adequate sensitization and safety measures to reduce potential for increased tensions due to females receiving funds. This also refers to other GBV-related risks incurred as a result of water and sanitation projects that do not adequately consult women and adolescent girls in the community about safety and security issues related to the delivery of water and sanitation services.

Mitigation Measures to Risk of GBV at the community level are.

Develop and implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including:

- *Effective and on-going community engagement and consultation, particularly with women and girls;*
- *Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; delivery of water supplies; etc.*
- *Specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; water services; etc.*
- *Ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation*

xxi. Lack of technical knowledge on irrigation

During the operational phase, technical capacity on irrigation may become a challenge to farmers which may lead to food insecurity and failure to realize the project goal.

Mitigation measure

Training of farmers on irrigation technologies; involving the County Department responsible for irrigation.

xxii. Exploitation by middlemen

The farmers may fail to get value for their produce if marketing boards for the specific produce are not available. This may lead to middlemen taking advantage and hence exploitation of the farmers.

Mitigation measure

Farmers to seek links with marketing federations for the specific crop and network with other farmers regionally and nationally.

6.3. IMPACTS DURING DECOMMISSIONING PHASE

6.3.1. Positive impacts

i. Site rehabilitation

Upon decommissioning of the proposed water pan, rehabilitation of the project site will be carried out to restore the site to its original status or to a better state than it was originally. This will include replacement of top soil and revegetation which will lead to restoration of the visual quality of the area.

ii. Employment Opportunities

For demolition to take place properly and in good time, several people will be involved. As a result, several employment opportunities will be created for the demolition workers during the demolition phase of the proposed Mogoiywet water pan. The impact will be direct, temporary and minor.

6.3.2. Negative impacts

i. Loss of jobs

Upon decommissioning of the proposed water pan, several direct and indirect jobs which will be created as a result of the existence of the proposed Mogoiywet water pan will be lost.

Mitigation measure

Give the disenfranchised workers their exit packages and dues; Train the workers on other alternative livelihood activities; and Conduct a separate ESIA to guide the decommissioning phase.

ii. Disturbance by curious on-lookers

During the process of water pan decommissioning, it might be difficult to control the curious onlookers. The onlookers can scare the workers and pose occupational health risks. The significance of this impact is moderate.

Mitigation measure

Secure the project site with iron sheets.

CHAPTER SEVEN

7. ANALYSIS OF PROPOSED SUB-PROJECT ALTERNATIVES

This section analyses the project alternatives in terms of site, technology scale and waste management options.

7.1. 'NO PROJECT' ALTERNATIVE

The No Project option in respect to the proposed project implies that if the project is not done the status quo will be maintained. The no project alternative is the worst scenario for the proponent and community considering that there is no other water pan that can be used as an alternative.

From the analysis above, it becomes apparent that the No Project alternative is not the best option since the project will be very beneficial to the community and the proponent since more gains of the Mogoiywet water pan project outweighs the negative issues that may arise.

7.2. ALTERNATIVE PROJECT LOCATION

Relocation option to a different site might be an option available for the proposed project. However, this will deny the residents access to a sustainable water source leaving them with no alternative other than to continue relying on water from the nearby Amalo River. The search for an alternative site and land big enough to accommodate the scale and size of the proposed water pan and the related official transactions will not only be time consuming but a costly venture in regard to new designs and approvals.

7.3. ALTERNATIVE PROJECT DESIGN

Alternative designs for water pans are limited as construction of water pans is almost the only option for harvesting surface runoffs. Therefore, this option is not viable.

7.4. ANALYSIS OF ALTERNATIVE TECHNOLOGY

The proposed project will be constructed using modern, locally and internationally accepted materials and machines to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or availability factors.

7.5. REDUCED PROJECT SIZE ALTERNATIVE

This alternative would involve reducing the project size in order to reduce the impacts. Since this is category B project with reversible impacts, reducing the project size whose volume of 150,000 m³ would result to inadequate water to support viable irrigated farming as well as meet the needs of the beneficiaries.

7.6. THE PROPOSED DEVELOPMENT ALTERNATIVE

Under the proposed development alternative, the status quo would be maintained. The water pan would be constructed at the proposed site without altering the design and the proponent would be issued with an EIA License. In issuing the license, NEMA would approve the proponent's proposed development of the water pan, provided all environmental measures are complied with during the construction period and operation phase. This alternative consists of the proponent's inclusion of the Environmental and Social Management Plan (ESMMP) in the contract documents.

CHAPTER EIGHT

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANS

8.1.INTRODUCTION

The Environmental and Social Management and Monitoring Plan (ESMMP) for the proposed water pan construction provides a logical framework within which identified negative environmental and social impacts can be mitigated and monitored. The ESMMP is a very important output of this ESIA report since it provides the framework or checklist for project monitoring and evaluation. The ESMMP has been carefully considered for the entire project, taking cognizance of project planning and design, construction, operation and maintenance, and decommissioning. The ESMMP outlined below has identified the potential negative impacts and their mitigation measures that are, sufficient to take care of environmental and social concerns. The ESMMP shall be modified at the first environmental and social audit to accommodate any unforeseen impacts.

Table 3 below presents the environmental monitoring plan and social monitoring plan respectively. It shows the impacts, objectives, activities, mitigation measures and responsibilities at all the project phases from construction, operation and decommissioning. It also gives verifiable indicators that can help in determining the effectiveness of actions to upgrade the quality of the environment as regards the proposed construction of the water pan. The importance of monitoring is to ensure that the ESMMP has been effectively implemented, furnish information on the progress and results of mitigation and provide early detection of conditions that necessitate mitigation measures.

Although the environmental and social impacts are expected to be moderate or low, the potential negative environmental and social impacts are planned to be prevented or mitigated during the construction and operation stages.

Environmental and social monitoring system started from the preparation phase of the sub project and will continue through the operation phase in order to prevent negative impacts of the project and observe the effectiveness of mitigation measures.

The monitoring system will provide technical assistance and supervision when needed, early detection of conditions related to mitigation measures, follow up on mitigation results, and provides information of the project progress.

The ESMMP has provided information about the key environmental and social aspects of the sub project including the mitigation measures to be monitored.

8.2. INSTITUTIONAL ARRANGEMENT FOR MONITORING COMPLIANCE WITH ESMMP

The environmental and social issues included within the mitigation measures will be monitored and supervised by the project beneficiaries, chosen contractor, engineering team and the KCSAP County Environment and Social Safeguards Compliance Officer (CESSCO) and the Projects Monitoring and Evaluation Officer.

The KCSAP Project Coordinating Unit in Bomet will comply with the provisions of any other environmental and safeguard requirement provided by legislation and conditions of the main funding agency (WBG).

8.3.AUDITS AND REVIEWS

Annual environmental, health and safety audits and reviews as required by NEMA will be conducted to assess the performance of the environmental, health and safety policies and operational procedures implemented.

8.4.TRAINING

The selected contractor and workers that shall be engaged in the construction of the Mogoiywet community water sub project will be provide with basic training to accomplish the objectives of the ESMMP. Additionally, special training on GBV/SEA shall be provide to the key personnel who have key responsibilities under the ESMMP. The ESMP will be given to the selected contractor, and will form part and parcel of his/ her contract.

8.5.KEY ROLES AND RESPONSIBILITIES IN M & E

8.5.1. The Contractor

The Contractor will have the overall responsibility of implementing the ESMMP. He/she will work closely with the KCSAP CESSCO to identify necessary improvement to the implementation of the ESMMP.

8.5.2. The Supervising Engineer

The works Supervising Engineer will follow up and ensure that the contractor implements the ESMMP. The contractor will be responsible for the day to day execution of the mitigation measures described under this ESMMP during the construction phase.

The Supervising Engineer will be required to produce monthly reports during the construction period of the water pan. This will include summary of activities and mitigation measures

undertaken during the reporting period, any deviation of non-compliance to the ESMMP, unexpected occurrence that could have occurred affecting the project implementation during the period, environmental monitoring records and any other issue of concern.

8.5.3. The CESSCO

He will have the responsibility to support the Contractor in meeting the planning requirements, training and the implementation of monitoring requirements.

The CPCU/CESSCO will also undertake the planning and coordinating with NPCU on GBV/SEA issues with subject specialist or consultant for meeting the measures proposed in the ESMMP. CESSCO will undertake routine monitoring of ESMMP compliance, and report on the same to the NPCU on quarterly basis. These quarterly reports will form the basis for effective auditing and review of the ESMMP of the proposed sub project.

8.6.GRIEVANCE REDRESS MECHANISM

A Grievance Redress Mechanism (GRM) is a system by which queries or clarifications about a project are responded to, problems that arise out of implementation are resolved and grievances are addressed efficiently and effectively. KCSAP incorporates complaint-handling and grievance redress mechanisms and social audits for greater transparency in sub project selection, implementation, and equitable sharing of benefits.

The County Grievance Committee and the Sub Project Social Accountability and Integrity Committee will always be open to the public for complaints/grievances, suggestions and advice on environmental related issues. Complaints and grievances may also be channeled through the CESSCO and the M & E Officer. These committees are important in ensuring effectiveness and compliance in the implementation of the ESMMP besides resolving noncompliance issues that may result into public complaints. The organizational structure of the grievance committees is as shown below.

8.7.ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING

PLAN MATRIX

The Table 5 below is a matrix detailing the environmental and social impacts, their mitigation measures, the respective indicators, responsibility, means of verification, time/frequency and the estimated cost for implementing and monitoring each impact. The plan has been categorized into construction, operational and decommissioning phases.

Table 5: Environmental and Social Management and Monitoring Plan Matrix

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
Construction Phase						
Soil and Land Degradation	Minimise land clearing; Rehabilitation of degraded areas; and Minimal construction work during rainy season	No. of soil erosion measurements conducted Area of degraded land rehabilitated Acreage of land cleared of vegetation	Contractor, Community	Measurement records of soil erosion	Weekly	50,000
Air pollution	Operate well-maintained machineries by the contractors; Routine maintenance program for all equipment and machineries on site; Use of good quality fuel and lubricants only; Wetting of operational sites to reduce dust raising; and avoid extraction during windy times	Frequency of machine/ vehicle servicing Frequency of surface watering	Contractor for civil works	Records of machinery servicing	Daily during construction phase	0
Noise pollution and vibration	Maintain daytime working hours (8am to 7pm); Use well-conditioned and maintained equipment and vehicles with some noise suppression equipment (e.g. mufflers, noise baffles) intact and in working order; Ear covers for noise level control; Ensure contractual agreements with the	Measurements of noise levels Hours of machine/ vehicle operations No of machinery with noise control devices Speed of vehicles approaching/ leaving the site	Contractor	Decibels of noise recorded	Daily	10,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	construction contractors on noise and vibration mitigation; Implementation of best driving practices when approaching and leaving the site (speed limit of ≤ 30 km/hr) to minimize noise generation; and Switching off Engines of vehicles/trucks and earth-moving equipment and other machineries when not in use.					
Ecosystem disruption	Avoid or minimize disturbance on sensitive habitat areas; Regular inspection and monitoring on identified or suspected sensitive habitats (swamps/wetlands), prior to start and during work; and Species assessment.	Sensitive habitats disturbed	Contractor	No. of sensitive habitats disturbed	Once during construction phase	0
Solid waste accumulation	Use top soil to do landscaping and the subsoil to compact the embankment as per the design of the water pan; prepare site specific Waste Disposal Plan; install waste disposal receptacles and signs strategically within the	Quantities of solid wastes generated No of waste waste receptacles installed No of toilets provided No of licensed waste handlers engaged Frequency of waste collection and disposal by	Contractor	Visual inspection	During construction phase	100,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	construction camps; provide training and do awareness creation on maintaining clean environment; provide adequate toilets and efficient sewer system within construction camps; and 3 R s (reduce, reuse, recycle).	the handlers				
Occupational health hazards	Ensure that there is a first aid kit on standby to handle potential minor injuries, ensure proper signage is in place, equip workers with PPEs	No. of cases of occupational health hazards reported No of first aid kits procured No of PPEs procured/ Proportion of workers with requisite PPEs	Contractor	Incident and Accident registers	Daily	50,000
Disturbance by curious on lookers	Secure the working site with iron sheets.	No. of curious on lookers Length of fence/ hoarding tape installed	Proponent	Visual inspection	The entire construction period	150,000
Operational phase						
Tear and wear	Maintain the water pan to ensure that it is environmentally sustainable. Carry out environmental and social audits annually.	No. of audits conducted	Proponent	Annual environmental and social audit reports	Yearly	500,000
Downstream impacts of the water pan.	Ensure that water retention in the pan is controlled to ensure that adequate reserve is left to flow downstream for users; Use qualified personnel to design the	No. of streamflow monitoring reports No of complaints from downstream communities	Proponent	Streamflow monitoring reports	Quarterly	15,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	water pan; Institute a water pan safety panel and develop a safety plan; and undertake catchment conservation activities.					
Water pollution	Ban garbage/refuse, oily wastes, fuels/waste oils onto the site grounds; properly secure fuel storage tanks/sites to contain any spillage; Comply with water quality regulations; Avoid maintaining and cleaning of vehicles, trucks and equipment close to water bodies; provide adequate toilet facilities at the construction site; avoid indiscriminate defecation; and Implement Integrated Pest Management Plan (IPMP) where necessary.	No. of sensitization meetings conducted on water pollution control and sanitation No of toilet facilities provided No of cattle troughs provided, etc.	Proponent	Sensitization meeting reports	Quarterly	100,000
Unsustainable water use	Obtain water abstraction permits from WRA and use water prudently. Train communities on water conservation	No. of sensitization and trainings held	Community Proponent	Sensitization and training reports	Quarterly	10,000
Degraded catchment area	Restore degraded parts of the catchment through catchment	No. of trees planted	Proponent	Environment reports	Quarterly	50,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	conservation by working together with Nyongores WRUA.					
Vector borne diseases	Stock mosquito fish (Gambusia) which will eat the larvae before they turn into adult mosquitoes. Regularly spray or dip animals to control ticks.	No. of vector-borne diseases reported Proportion of beneficiaries using treated mosquito nets	Public Health Officer	Public health reports	Weekly	50,000
Greenhouse gas emission	Optimize the supply chain to shorten the flow of material and equipment distribution; optimize the machines and increase operator expertise to influence emissions reduction; choose construction method and materials that will increase the efficiency of time and cost so that the waste generated will also be less; use eco-labelled materials in every construction component; optimize energy, electricity, gas & water and material utilization in every construction operational activity; Implement planned waste management through the concept of reduce,	No. of machines operating optimally.	Contractor	Mechanical reports	Weekly	50,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	reuse and recycle; and utilize new technologies and renewable energy.					
Inequality issues on resource accessibility	Strengthen social relationships, by encouraging the vulnerable in the community to raise their voices and claim for better services, and act collectively with the rest.	No. of marginalization cases reported	Proponent Contractor	Reports of cases	Quarterly	20,000
Exclusion of vulnerable groups (women and youth, elderly, disabled, etc.)	Adopt an all-inclusive approach which will ensure support to the interests of women, the youth and other vulnerable members of the community; conduct public awareness and education; and establish management committees that are as representative as possible and that are seen to be as fair as possible.	No. of cases of exclusion reported	Proponent	Reports of cases	Quarterly	10,000
Demographic impacts	The proponent to prepare a specific influx management plan to deal with environmental and social impacts occasioned by influx of people to the area.	No. of immigrants into the project area	Proponent	Reports	Quarterly	15,000
Gender	Consider diverse needs	No of cases of persons	M&E Officer	Reports of cases	Twice a year	30,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
disparities	for water and accessibility modes to be effected for each groups; Recommendation of appropriate mitigation measures for the affected; Recommendation of group specific appropriate measures to specific impacts as per the project's specific social assessment; Improve access to safe and clean drinking water; Improve quality of water resources; and Making water affordable.	denied access to the water resource based on gender				
Leadership issues	Community to democratically elect a Social Audit and Integrity Committee (SAIC) who will work on voluntary basis to resolve any conflicts that would arise during project implementation. The SAIC functions shall include and not limited to auditing the project, procurement and financial management processes,	No. of leadership conflicts registered No of leaders trained on leadership, project management, book keeping, conflict management and resolution, etc.	Proponent	Grievances register	Monthly	10,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	handling complaints and grievances, and advisory services to the community on pertinent issues of interest. This committee is expected to submit regular reports to the county technical team.					
Spread of livestock diseases	Conduct regular disease surveillance and vaccination; quarantine infected animals; regular disinfection of the watering area; regular dipping of the animals is to be done by every farmer.	No of disease outbreaks reported No of livestock vaccinations conducted Frequency of livestock disease surveillance	Veterinary officer	Incidences reports	Weekly	20,000
Competition for land between crops and livestock	Carry out land use planning and apportion land for crops and livestock and determine the carrying capacity of the available pasture for livestock; Encourage use of irrigation to maximize on food production and adopt modern farming technologies; and encourage farmers to keep high yielding animals.	No of livestock kept per unit area Acreage under crops No of farmers practicing irrigation Proportion of farmers adopting improved farming technologies	Proponent CPCU	Reports of animals in poor body conditions Reports of low crop yields in the project area	Twice a year	15,000
Impacts on gender relationship at	Carry out sensitization programmes aimed at sensitization of the	No of gender related conflicts at household level reported	Proponent CPCU	Reports of negative impacts on	Monthly	14,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
household level	community against gender discrimination and promoting gender equality.	No of sensitizations on gender/ SEA/ GBV conducted		gender relationship at household level reported.		
Spread of COVID-19 amongst workers	<p>The Contractor will develop a 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.</p> <ul style="list-style-type: none"> Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including Avoid concentrating of more than 15 workers at one 	Availability of SOP(s), Training material, PPE, sanitizing facilities, installed handwashing equipment etc.	All the Project components Supervising Eng. & Contractor(s)	SOPs Project assessment reports Purchase orders/receipts Photos	4 months	50,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>location. Where there are two or more people 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.</p> <ul style="list-style-type: none"> • The project shall put in place means to support rapid testing of suspected workers for covid-19. • Install handwashing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and 					

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>ensure they are used.</p> <ul style="list-style-type: none"> Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of workstations, doorknobs, handrails etc. 					
Spread of COVID-19 amongst community members during consultations	<ul style="list-style-type: none"> Electronic means of consulting stakeholders and, holding meetings, whenever possible, shall be encouraged whenever feasible. One-on-one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced. Avoid concentrating of more than 15 community members at one location. Where there are two or more people 	<p>Availability of SOP(s), Training material, PPE, sanitizing facilities etc.</p> <p>No. of participants registered online.</p> <p>Attendance registers of all meetings held</p> <p>Evidence of use of electronic media for information dissemination/engagement e.g. printed electronic mails, addresses of video links created etc.</p>	<p>All the Project components</p> <p>Supervising Eng. & Contractor(s)</p> <p>Communications/Stakeholder Engagement Expert.</p>	<p>SOPs, training manuals</p> <p>Attendance registers</p> <p>Project assessment reports</p>	1 year	100,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>gathered, maintain social distancing at least 2 meters</p> <ul style="list-style-type: none"> • The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet. • Use traditional channels of communications (TV, newspaper, radio, dedicated phone-lines, public announcements, and mail) when stakeholders do not have access to online channels or do not use them frequently. Ensure to provide and allow participants to provide feedback and suggestions. • Hold meetings in small groups, mainly in form of 					

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration.</p> <ul style="list-style-type: none"> In situations where online interaction is challenging, disseminate information through digital platform (where available) like Facebook and WhatsApp & Chat groups. Ensure online registration of participants, distribution of consultation materials and share feedback electronically with participants. 					
Child labor and school dropout	<ul style="list-style-type: none"> Sensitize the community and selected contractor on national children welfare policies, children laws and 	<ul style="list-style-type: none"> No. of sensitizations Register of all workers employed <p>Signed agreement with contractor to adhere with child labour laws.</p>	CPCU	Signed agreements attendance registers copies of ID. Card No. of	Construction phase	10,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>World Bank policies on the protection of children.</p> <ul style="list-style-type: none"> Contractor complies with national and WB policies and rules on welfare of children. <ul style="list-style-type: none"> Control to ensure there is no child labour at the construction. 			workers		
Sexual Exploitation and Abuse by project workers against community members	<ul style="list-style-type: none"> 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). The SEA action plan will include how the project will ensure necessary steps are in 	<ul style="list-style-type: none"> SEA Action Plan Code of Conduct Number of staff trainings SEA FP Community Liaison trained in PSEA IEC materials for workers' sites and community Discrete SEA reporting pathway Relevant policies, e.g. investigations and discipline and whistleblower protection <p>Monthly minutes from SEA coordination meetings</p>	Supervision Consultant GBV Expert	SEA action plan Attendance registers	1 year	150,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>place for: Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials.</p> <ul style="list-style-type: none"> • 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. • Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard 					

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>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;</p> <ul style="list-style-type: none"> • 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 					

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.					
Gender-based Violence (GBV) at the community level	<ul style="list-style-type: none"> The contractor will implement provisions that ensure that GBV at the community level is not triggered by the Project, including: <ul style="list-style-type: none"> Effective and on-going community engagement and consultation, particularly with women and girls; Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; delivery of water supplies; etc. Specific plan for mitigating these 	<ul style="list-style-type: none"> Number of SEA action plans prepared Code of conduct prepared Number of staff trainings on SEA held. -Number of PSEA community liaison trainings carried out Number of IEC materials available 	Supervision Consultant GBV Expert Local NGO/CBO	GBV plans Attendance registers GBV action plans	1 year	100,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	<p>known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; water services; etc.</p> <ul style="list-style-type: none"> • Ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation. 					
Lack of technical knowledge on irrigation	<p>Training of farmers on irrigation technologies Involving the County Department responsible for irrigation</p>	No of irrigation bids initiated	Reports	During the operation phase of the project	Irrigation Officer	30,000
Exploitation by middlemen	<p>Farmers to seek links with marketing federations for the specific crop and network with other farmers regionally and nationally.</p>	No. of marketing Boards accessible to farmers	Proponent	Marketing reports	During the operation phase	30,000
Decommissioning phase						
Noise pollution and excessive vibration	<p>Maintain daytime working hours (8am to 7pm); Use well-conditioned and maintained equipment</p>	Decibels of noise emitted	Contractor	Noise meter records	Throughout construction period	15,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	and vehicles with some noise suppression equipment (e.g. mufflers, noise baffles); use ear covers for noise level control; Enter into contractual agreements with the construction contractors on noise and vibration mitigation; Implement best driving practices when approaching and leaving the site (speed limit of ≤30 km/hr) to minimize noise generation; and switch off Engines of vehicles/trucks and earth-moving equipment and other machineries when not in use.					
Waste pollution	Prepare site specific Waste Disposal Plan; install waste disposal receptacles and signs strategically within the construction camp; provide of training and create awareness on clean environment; provide adequate toilets and efficient sewer system within construction camp; and use 3 R s (reduce, reuse,	Waste receptacles; Toilets and bathrooms constructed	Proponent	No. of waste receptacles installed; No. of toilets and bathrooms constructed; Quantities of wastes reused and recycled.	Throughout construction and operational phase	50,000

Environmental impact	Proposed Mitigation Measures	Indicator	Responsibility	Means of Verification	Time frame/frequency	Estimated Cost (KShs.)
	recycle) strategy.					
Loss of jobs	Give the disenfranchised workers their exit packages and dues. Train the workers on other alternative livelihood activities Conduct a separate ESIA to guide the decommissioning phase	People rendered jobless Workers trained on other IGAs	Contractor	No. of people rendered jobless Training reports on alternative IGAs	Once	20,000
Disturbance by curious on lookers	Secure the project site with iron sheets.	No. of curious on lookers Length of iron sheet fence installed.	Proponent	Visual inspection	The entire construction period	100,000
TOTAL						<u>1,854,000</u>

CHAPTER NINE

9. CONCLUSIONS AND RECOMMENDATIONS

9.1.1. CONCLUSION

From the study conducted, the implementation of the water pan project has the potential to generate both positive and negative environmental and social impacts.

However, the negative impacts are reversible and the proposed environmental and social management plans give possible mitigation measures.

9.1.2. RECOMMENDATIONS

It is thus recommended that the proposed project proponent be allowed to go ahead provided the outlined mitigation measures are implemented as outlined in the ESMMP. The ESMMP should be shared with the Contractor and the same should be required to translate this ESMMP into Contractor-Specific Environmental and Social Management Plan (CESMMP). The contractor will also be required to employ a qualified Environmental and Social Safeguards specialist as well as Safety and Health officer to oversee implementation of the ESMMP.

On approval, it is recommended that the proponent should implement the proposed project based on the proposed plans and if alterations are necessary, advice should be sought from the CESSCO and supervising engineer; share the ESMMP with the Contractor and other responsible stakeholders and that the ESMMP form part and parcel of the Contractor's contract to ensure that their obligations as outlined in the ESMMP are executed; undertake annual environmental audit pursuant to the provisions of EMCA; and in consultation with other related parties ensure compliance with the water quality standards as outlined in EMCA water quality regulations 2006 as per the proposed water use. In this regard the proponent should ensure that water testing for the necessary parameters is undertaken regularly.

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