THE UNITED REPUBLIC OF TANZANIA

PRIME MINISTER'S OFFICE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE AGGREGATION CENTERS / FISH AGGREGATION CENTERS & CONNECTIVITY INFRASTRUCTURE AS PART OF THE AGRO-INDUSTRIAL DEVELOPMENT PROGRAM IN TANZANIA

(Volume 3)

FINAL DRAFT REPORT

Prepared by

Maisory Chacha

Registered Environmental Expert

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LIST OF ABBREVIATIONS

AC	Aggregation Centre
APH	Agro Processing Hub
ATC	Agriculture Transformation Centre
AfDB	African Development Bank
DC	District Council
EIS	Environmental Impact Statement
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FACs	Fish Aggregation Centres
MC	Municipal Council
NEMC	National Environmental Management Council
PMO	Prime Minister’s Office
SAPZ	Special Agro-Industrial Processing Zone
TANROADS	Tanzania National Roads Agency
URT	United Republic of Tanzania

EXECUTIVE SUMMARY

INTRODUCTION

The African Development Bank (AfDB) is supporting the Agro-industrial Development Program (AIDP), a comprehensive program that is geared towards improving agricultural production by creating an enabling environment for agricultural value addition that will enhance the participation of the private sector and consequently create opportunities for young men and women by undertaking agricultural value addition activities along the entire agricultural value chain systems in the selected regions. Value addition in the agricultural sector is expected to improve program beneficiaries' income levels as well as address the youth unemployment challenges being experienced in Africa. The Government of the United Republic of Tanzania (URT) is among the countries on the continent that expressed strong interest in participating in agro-industrialization development through a project that is developing Special Agro-industrial Processing Zones (SAPZ) and requested the Bank's support for finances to support the programme.

The Project will be implemented in the following selected districts/regions respectively Biharamulo District (Kagera region), Bunda District and Bunda Town (Mara region), Bariadi District and Maswa District (Simiyu region), Nyang'hwale district and Geita district (Geita region), Msalala district (Shinyanga region), Uyui district (Tabora region), Singida Municipal (Singida region), and Buchosa (Mwanza region). Through the development of Agro Processing Hub (APH), Agricultural Transformation Centre (ATC), Aggregation Centre (AC) and Fish Aggregation Centre (FAC).

The programme's beneficiaries will include crop farming households, livestock farming households, fisher-folks, Small and Medium Enterprises (SMEs) involved in crops, livestock and fisheries processing, other agro-allied industries, traders, transporters, consumers, youth, and women entrepreneurs, among others.

PROJECT OBJECTIVES

The main objective of the proposed SAPZ Project in Tanzania is to support structural transformation of Tanzanian economy through agro-industrialisation with a view to increasing production and productivity, adding value to agricultural produce, improving household income, generating employment, and increasing domestic consumption and exports. Specifically, the program will support the establishment of the integrated Lake Zone Special Agro-industrial Processing Zone comprising:

i) a main agro processing hub (APH) located in Shinyanga;
ii) three major agricultural transformation centres (ATCs) tentatively located in Geita, Tabora and Mwanza regions; and
iii) a network of Crop Aggregations centres (ACs) and Fish Aggregation Centres (FACs) to be located in the procurement zones around the ATCs.

SCOPE OF THIS ESIA

- To identify, predict, evaluate and suggest mitigation measures for the negative environmental impacts likely to be associated with the project;
- To identify key social issues relevant to the Project objectives, and specify the Project's social development outcomes as well as identifying social vices that are likely to come along with the implementation of the project;

- To determine the magnitude of adverse environmental and social impacts and identify the safeguards measures as this safeguards instrument (the Environmental and Social Impact Assessment report) as as an outcome of the Operational Safeguards (OS) 1 on Environmental and Social Assessment), and national legislation and regulations;
- To predict and assess, in quantitative terms as far as possible, the impacts from changes brought about by the Project on the baseline environmental conditions;
- To establish the mitigation measures that are necessary to avoid, minimize or offset predicted adverse impacts and incorporate these into the Environmental and Social Management Plan (ESMP);
- To identify stakeholders who will directly be affected by the project and carry out stakeholder analysis to determine their role in achieving environmental and social development outcomes sustainability by candidly disclosing the possible impacts of the project to them;
- To inform, consult and carry out dialogues with stakeholders on matters regarding the project's design alternatives, implementation of environmental and social mitigation measures and to seek their recommendations that will determine the overall Project design as per the outcomes of the consultations;
- To assess and provide an environmental and socio-economic profile of the population and available infrastructure facilities for services and community resources; and
- To develop monitoring and evaluation mechanism for assessing and monitoring the effectiveness of mitigation measures that will be put in place including resettlement outcomes during and after Project completion.

STRUCTURE OF THE ESIA REPORT

CHAPTER	CONTENT
Chapter 1 – Introduction	Presents a brief background of the project, and purpose, methodology and structure of the report
Chapter 2 – Baseline Environmental & Social Condition	Provides detailed baseline condition of the existing physical, biological and social economic environment of the project area.
Chapter 3 – Project Description	Describes project location, rationale, activities and components, need and desirability of the project
Chapter 4 – Legal and Policy Framework	Describes the relevant policies of URT and AfDB's Environmental and Social Guidelines and Policies triggered by the Project.
Chapter 5 – Project Alternatives	Describe and evaluate project activities, development and identify options and alternatives designs
Chapter 6 – Potential Impacts	Presents the predictable impacts to the physical, biological and socio-economic and cultural environment as the result of the proposed Project.
Chapter 7 – Mitigation Measures	Provides mitigation measures to reduce, alleviate, offset and prevent various impacts as the result of the proposed Project during construction and operation
Chapter 8 – Environmental and Social Management Plan	Outlines the proposed management measures, cost timeframe and responsible authority/person to implement the mitigation and enhancement measures.

Chapter 9 – Stakeholder Engagement & Information Disclosure	Summarizes the stakeholder engagement plan, procedure, consultation conducted during the preparation of the project.
Chapter 10 – Resource Evaluation	Summarises environmental cost benefit analysis.
Chapter 11 – Decommissioning	Provides information on project decommissioning
Chapter 12 – Conclusions & Recommendations	This chapter provides analysis of the project development and implementation including recommendations where applicable.
Chapter 13 – Appendices	This chapter provides credits to relevant reports, documents and study surveys that were reviewed and referenced during the course of the preparation of the ESIA.

PROJECT DESCRIPTION

The Agro-industrial Development Program is a comprehensive program that is geared towards creating an enabling environment in which the private sector, young men and women will be capacitated to undertake agricultural value additions activities along the entire value chain ecosystem. The latter is expected to improve program beneficiaries' income level as well as addressing the youth unemployment challenge. The main objective of the proposed SAPZ in Tanzania is to support structural transformation of Tanzanian economy through agro-industrialisation with a view to increasing production and productivity, adding value, improving household income, generating employment, and increasing domestic consumption and exports.

PROJECT LOCATION

The Project will be implemented in selected districts through the development of an Agro-Processing Hub (APH), Agricultural Transformation Centres (ATCs), Aggregation Centres (ACs) and Fish Aggregation Centres (FACs) within, Shinyanga (Tanganyika packers), Tabora (Uyui District – Kisengi village), Geita (Nyang'wale district), Simiyu (Maswa district – Ikungulyasubi village and Bariadi district – Dutwa / Igaganurwa village), Mwanza, Mara (Bunda district – Masahunga/Songambele A village) and Bunda town council – Makongeni and Tairo villages), Singida (Singida Municipal Council – Kindai Mtaa), Kagera (Biharamulo district – Lusahunga village). Arusha, Kigoma and Manyara will be considered as main procurement zones for the programme.

Project site	**Location (district / region)**	**Size**
Lusahunga AC	Biharamulo district / Kagera region	5.45 ha
Masahunga FAC	Bunda district / Mara region	2.94 Ha
Bunda AC	Bunda Town / Mara region	872 Ha
Dutwa ac	Bariadi district / Simiyu region	1.27 Ha
Ikungulyasubi AC	Maswa district council / Simiyu region	5.35 Acres
Nyang'wale Aggregation Centre	Nyangwale district / Geita region	2.81 Ha
Bulige AC	Msalala district / Shinyanga region	5.4 Acres
Kisengi AC	Uyui district / Tabora region	6.2 Acres
Kindai AC	Iguguno ward / Singida region	7.6 Acres
Bukokwa FAC	Buchosha district / Mwanza region	48.5 Ha
Nyamigota AC	Geita district / Geita region	8.85 Ha

PROPOSED PROJECT ACTIVITIES

The project will involve various activity phases:

- Pre-Construction Phase
- Construction Phase
- Operation and
- Decommissioning Phase

POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

The operation of the AC, APH, FAC and has to comply with Tanzania's national policies and legislations since they are being implemented in Tanzania.

Policy Requirements	
1. National Environmental Policy of 1997, 2. National Land Policy of 1997, 3. National Agricultural Policy of 2013, 4. Fisheries policy of 2015, small and Medium Enterprises 5. Development policy of 2003, 6. National Livestock Policy of 2006, 7. National Food Security and Nutrition of 1992, 8. National Investment Promotion Policy of 1997, 9. National Investment Promotion Policy of 1997, 10. National Trade Policy of 2003, Wildlife Policy of 2007,	11. National Forest Policy of 1998, 12. National Construction Industry Policy of 2003, 13. National Energy Policy of 2003, 14. National Gender Policy of 2002, 15. National Water Policy of 2002, 16. National Health Policy of 2003, 17. Cultural Heritage of 2008, 18. National policy on HIV/AIDS of 2001, 19. National Employment Policy of 1997, 20. National Youth Development Policy of 1996, 21. Community Development Policy of 1997
Legislative Requirements	
Act	**Regulations**
1. Environmental Management Act No. 20 of (2004), Cap. 191, 2. The Land Act No. 4 of 1999 and the Village Land Act No. 5 of 1999, 3. The water resource Management Act No. 11 of 2009, 4. The Public Health Act of 2009, The HIV and AIDS (Prevention and Control) Act of 2008, 5. Land Use Planning Act of 2009, 6. Occupational Safety and Health Act of 2003, 7. Local Government Laws (Miscellaneous Amendment) Act of 2006, 8. The Standards Act No. 2 of 2009, 9. Forest Act No. 14 of 2002, 10. Regional and District Act No. 9 of 1997, 11. Mining Act No. 4 of 2010, 12. The Land Acquisition Act of 1967, 13. Wildlife Conservation Act No. 5/09 of 2009, 14. Employment and Labour Relations Act No. 6 of 2004, 15. Public-Private Partnership (PPP) Act of 2010, 16. Special Economic Zones Act of 2012, 17. Engineers Registration Act and the Amendments 1997 and 2007, 18. The contractors Registration Act of 1997	1. The Tanzania 2025 Development Vision, 2. National Strategy for Growth and Reduction of Poverty (2005), 3. Environmental Impact Assessment and Auditing Regulations (2018), 4. The Environmental Management (Air Quality Standards) Regulations, 2007, 5. The Environmental Management Water Quality Standards) Regulations of 2007, Solid Waste Management Regulations, 2009 G.N. No 263, 6. The Environmental Management Regulations (Hazardous Waste Control), 2009, 7. Environmental Management (Soil Quality Standards) Regulations (2007), 8. Environmental Management (Quality Standards for control of Noise and Vibration Pollution) Regulations (2011), 9. Environmental Management (fees and charges) (amendment) Regulations (2018), 10. Land (Assessment of the value of land for compensation) Regulations, 2001.

PROJECT ALTERNATIVES

The EIA procedure stipulates that an environmental investigation needs to identify main project alternatives for any proposed development. Therefore, it is required that several possible proposals or alternatives for accomplishing the same objectives be considered. In principle, these should include an analysis of the location, timing, input and design alternative as well as the Do- Nothing option.

POTENTIAL IMPACTS

1. Potential Impacts during Pre-Construction Phase

Positive Impacts

Employment opportunities

The project will create employment opportunities to various professionals directly or indirectly linked to the project.

Negative Impacts

Vegetation clearance during Preliminary Engineering Design Presently the proposed site has some vegetation and greenery areas along the existing project area that blend very well with the surroundings.

2. Potential Impacts during Construction Phase and Operational Phase

Positive Impacts

1. *Employment opportunities*

The project anticipates providing direct employment in the agro-industrial zone, farming sector outside the ACs. The project will also provide indirect employment in primary, secondary and tertiary sectors including banks, logistics, insurance, manufacturing etc. of the Project Area of Influence.

2. *Infrastructure development*

The Project will stimulate the establishment of major infrastructures for both local and foreign needs considering the county's infrastructure gaps and needs. The project is expected to accelerate the infrastructure development in the districts of Biharamulo, Bunda, Bunda Town Council, Maswa, Bariadi, Geita, Buchosa, Nyag'hwale, Uyui, Singida Municipality, and Msalala, in the country.

3. *Capacity Building*

The project will provision increase capacity building and training in during both construction and operational phases ensuring that the locals, project affected people and their communities are prioritized.

4. *Skills Transfer*

The project seeks to attract both national and foreign experts and consultants for the development, design, construction and operation of the SEZ/SAPZ.

5. *Improved food security*

The project will reduce poverty and hunger by restoring hopes and confidence in farmers. Rural and local farmers will be motivated and inspire to grow and produce surplus cash crops and products. This means farmers wouldn't have to worry about the available market for purchasing and storing their products.

6. *Increased government revenue*

The project will help restore confidence in foreign investors and promote good doing business climate. The project seeks to attract foreign and national investment that help strengthen and decentralize the economy, increase the national treasury through TAX payments, and encourage rural and community development.

7. *Improved economy*

The ACs will promote production and value-added goods and services for the local and foreign markets thus stimulating industrial and commercial growth. It will eventually Increase in revenue and profitability of the sector thereby encouraging mindset change in youth towards the agribusiness sector.

<u>Negative Impacts</u>

1. *Impact on air quality*

It is important to note that the project takes place in rural areas where air quality is usually good and natural. The current and existing air pollution source along the project area is vehicular traffic (particulates and combustion emissions). Potential air emissions from the project in the form of fugitive dust and emission releases will occur as a result of earth work activities including vegetation clearing, excavation works, and transportation of materials to and from the project sites especially where trucks travel on unpaved portions of tracks and roadways.

2. *Impacts on water resources*

Increased sediments as a result of increased soil erosion due to earthworks can enter surface waters causing increase turbidity and hence impacting aquatic fauna and flora by altering the aquatic environment.

Ground water – construction of ACs may have significant impacts on ground water hydrology and quality. Potential chemicals and improper handling of lubricating slurry, and other toxic substances during construction and operation may cause groundwater pollution thus through gradual seepage.

3. *Impact on public health*

Construction camps located near inhabited areas can at times cause easy and sometimes unwanted interaction with local communities. In most cases this leads into conflicts due to negative social behaviour such as theft, harassment and even spread of diseases such as STDs especially HIV/AIDS. Sexual interactions among workers and local communities may lead into unwanted pregnancies and divorce among families. Therefore, such a sensitive social issue of improperly located construction camps should be observed in the early stages to avoid animosity towards the project.

4. *Impacts on soil*

The project area is located within the coastal plain and is generally flat with some undulating rises. The main impacts on soil will occur due to increases erosion potential as a result of vegetation clearing and earth moving activities.

5. *Impacts on flora and fauna*

Construction activities are likely to affect the local vegetation and faunal and flora species directly or indirectly. Site clearing, excavation and initial preparatory works will potentially impact local flora and fauna of the proposed project area. These preparatory site activities will alter the natural habitat of critical species and the ecosystem services they provide. Vegetation clearing and earthwork activities will also result in increased noise and may result in loss in fauna and flora species and by extension affect their reproduction patterns.

6. *Impacts on waste generation*

The Project will produce many types of wastes during both construction phase and operational phase. During mobilization and construction phases, solid materials such as domestic waste, packaging from construction materials, debris, excavation remnants and others will be generated which could contaminate both soil and water resources. Vendors, construction staffers and employees must adhere to strict hygiene practices and correctly dispose waste in adherence to relevant national legislation and regulations.

7. *Impacts from noise and vibration*

The main source of noise and vibration will be as the result of drilling and other earthmoving activities. Additionally, noise will be generated from transportation activities during construction period which would be much higher than during the operational period.

8. *Impacts on health and safety*

Construction works, industrial processes and operations attracts significant numbers of people and professionals from diverse orientations including skilled laborer, unskilled laborer, technical experts, construction works, and operations technicians. Consequently, there is an increased risk of trips, falls, injuries, accidents and spread of diseases amongst these contractors, pedestrians, passengers and staff at the project level as well as the project's community level.

9. *Impact on traffic management*

Project activities will significantly increase the frequency of vehicular traffic congestion and thus increase the risk of motor-vehicle accidents. In addition to the risk of accidents, increase traffic will lead to inconvenience to the public, motorists, and chauffeurs, and increase the potential for nuisance in the project area of influence.

10. *Disturbance, particularly land scarring at sources of construction materials (sand, aggregates, stones,)*

Sand and aggregates materials to be used for construction will be collected from sources far from the construction site. The immediate impact of land scarring in the course of sourcing materials.

11. *Contamination of water from leakages (oil and grease) of fuels and lubricants from the construction equipment and workshops*

Ground water (e.g. through water wells) and surface water (such as Lake Victoria, river Nywalwambu in Biharamulo) contamination may also occur if the contractors do not follow pollution control measures. Ground water can be contaminated through leaching of contaminated soil both during construction and operation phases of the project.

12. *Poor air quality from dust and emissions around the construction site and material hauling routes*

The potential impacts on air quality will occur mostly in the excavation and demolition areas and other equipment used at construction areas. Resuspension of dust may occur as a result of land cleaning, demolitions, and circulation of vehicles on non-paved roads, either next to the working faces or in the way to support areas. This is likely to happen when these activities are developed within relatively long terms under dry weather conditions.

13. *Generation and poor disposal of solid and liquid wastes*

Both solid and liquid wastes can be generated during construction phase of the project, different wastes including organic waste, packaging refuse, building and demolition refuse, and sewage from camp sites. Hazardous waste such as used oils, electronic waste and concrete wash-out water would also be produced during the construction phase of the project.

MITIGATION MEASURES PROPOSED

The Environmental mitigation consists of measures that can mitigate/reduce the negative environmental impacts associated with implementation (construction, and operation) of the project. Mitigation measures have been identified that would reduce both existing and potential impacts associated with the project development objectives during biding phase, construction, and operational phases

Receptor	**Proposed Mitigation Measures**
Air Quality Pollution	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Avoid burning of materials resulting from onsite clearance • Ensure that persons working in areas prone to dust are provided PPEs • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads • Cover all vehicles hauling materials likely to give off excessive dust emissions • Regularly water spray surfaces to control dust emissions
Pollution of Water Resources	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate clean-up of spillages (oil, fuel, chemicals)

Receptor	Proposed Mitigation Measures
	• Cover open stockpiles of construction materials on site with tarpaulins during rainstorm events to prevent the washing away of construction materials • Install natural or synthetic liners beneath chemical storage tanks • Compact earthworks as soon as the final surfaces are formed to prevent erosion especially during the wet season • Ensure to grade gravel roads for maintenance of existing drainage patterns • Ensure the protection of riparian areas • Ensure to avoid dumping of construction waste into water bodies • Ensure that proper storage of chemicals and onsite materials
Impacts on the Aquatic Ecology	• Schedule construction activity to avoid heavy rainfall • Ensure to construct fence at the perimeter of construction site to avoid cross pollution with aquatic resources, and the establishment of hydrologically isolated oxidation ponds/ lagoons for any ad-hoc effluent that fails to meet water quality thresholds upon water quality monitoring • Ensure to prevent dumping of oil, filter cans and other substances into aquatic ecosystem or waterways draining into aquatic environments.
Wastewater Generation	• In the construction phase, proper containment and management of concrete washout within designated pits • In the operational phase, ensure to obtain required permit for discharge of any ad-hoc effluent generation within the AC facilities (e.g. from vehicle servicing and/or washing bays) • Should any effluent-generating activities become introduced during the operational phase, water quality monitoring for discharged effluent should be implemented in full compliance with the discharge permit conditions and relevant national regulations • Ensure that washing water from vehicles is drained in a sand/silt • Ensure that any ad-hoc (unforeseen) effluent releases from construction and operational activities are directed towards hydrologically isolated oxidation ponds/ lagoons, and away from any natural and constructed waterways.
Impact on flora and fauna	• Ensure that no flora species classified as Vulnerable on the IUCN Red List are removed or cleared • Ensure that no tree greater than 200 mm diameter at breast height is damaged • Promote plantation of trees and green corridors along the project facility • Ensure that no species discovered during excavation are traded for commercial value • Minimize vegetation clearance • Prevent any hunting activities • Ensure to report fauna species of high conservation value • Avoid all direct and indirect impact on areas of high ecological • Ensure that sustainable management of solid and liquid waste emanating from construction and operation activities

Receptor	Proposed Mitigation Measures
	• Ensure outdoor construction lighting is unobtrusive and turn off when not required
Impact on soil	• Landscape the excavated areas in a suitable way to allow native vegetation to regrow naturally • Suspend activities during extreme rainfall events • Ensure to Provide drainage channels and silt traps for all parts of the topsoil storage areas • Ensure to rehabilitate areas with topsoil and revegetate after completion of activities • Install sediment and erosion controls • Use non-toxic and readily biodegradable chemicals on-site where feasible • Install natural or synthetic liners beneath chemicals storage tanks • Grade unpaved roads
Solid Waste generation	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site
Hydrocarbon Materials	• Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oil/water separator
Noise generation during the construction works	• Choose inherently quiet equipment/equipment's installed with noise absorbers • Keep equipment speed as low as possible • Minimize idling time for pickup trucks and other equipment • Limit site working hours where feasible • Ensure that all workers exposed to noise emanating environment are equipped with hearing protection and relevant PPEs • Schedule noisy activities during the morning hours • Enforce noise monitoring • Inform the locals when noisy activities are planned • Utilize and properly maintain silencers or mufflers that reduce vibration on construction equipment

Receptor	Proposed Mitigation Measures
	• Operate only well-maintained mechanical equipment on-site
Employment opportunities	• Ensure to set up a formal compliant register system which responds to complaints about nuisances in a timely manner • Adopt policies for recruiting locally and hiring local sub-contractors as much as possible • Include local communities in the consultations and participation process throughout the project activities • Ensure high rate of local employment to minimize influx of foreign workers • Ensure equal employment opportunities • Adhere to prohibition of child labour • Prohibit discrimination in any form or manner such as religion, ethnicity, tribe, creed etc. • Adopt a grievance mechanism to enable the communities and employees to relate concerns that arise from the Project or Contractors
Occupational health and safety risks	• Provide surveillance and active screening of workers • Provide health care benefits to workers • Ensure that hazardous substances are kept in suitable, safe, adequately marked and locked storing place • Conduct health awareness initiative • Restrict access to the operation sites • Ensure that employee/workers/ contractors are informed about the risks and prevention methods for Covid 19, Ebola, HIV, STDs, and others • Conduct firefighting and leak checks training drills for staff • Ensure that workers are qualified, well trained and instructed in handling their equipment, including PPEs • Install warning signs at the entrance of the site to prohibit public access • Provide appropriate PPE (impermeable latex gloves, working overalls, safety boots, safety helmets, safety goggles, hearing protein devices for workers exposed to noise levels exceeding 85 dBA, and lifesaving vests for sites near water bodies) • Develop and implement an Emergency Preparedness & Response Plan • Ensure containers of hazardous substances are clearly marked and that MSDS's are available • Designate an area where contaminated materials and hazardous can be stored for proper disposal in line with relevant statutes and regulations • Provide training to personnel on occupational health and safety and safety procedures prior to beginning work at sites • Ensure that sensitive and dangerous areas with high risks are clearly designated • Ensure that presence of an onsite first aid treatment facility • Adopt good housekeeping practices for ensuring hygiene on site • Ensure the presence of firefighting equipment such as dry powder extinguisher • Ensure that safety specialist is recruited to manage the preparation, implementation, and maintenance of a comprehensive safety program

Receptor	Proposed Mitigation Measures
	• Ensure to eliminate pools of stagnant water, which could serve as breeding grounds for infectious diseases • Install warning signs at places where dangerous and high risks operations are ongoing • Ensure that protective materials are use at all times
Road safety impacts	• Properly plan and develop traffic control plan • Notify the affected communities regarding the operation schedule and consult with them about potential traffic issues • Provide traffic re-rooting plan for the construction phase • Limit the movement of heavy machineries to off-peak hours and provide prior notification to local communities • Repair any road damage caused by increased traffic due to operations • Pave road where heavy use is expected • Speed limitation should be enforced for instance, onsite 10km/h, through towns and villages 35km/h and on the highway 80km/h • Ensure safety of motorists through adequate warning, signing, delineation and channelling at least 500 m down and up-gradient form the construction site • Ensure the prohibition of passenger siting on the back of trucks working for the Contractor/sub-contractor • Ensure that all drivers are licensed and obey traffic rules and regulations
Cultural heritage and chance finds	• Adopt Chance Find Procedures for managing unanticipated discovery of finding of archaeological or historical significance

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The environmental and Social Management Plan (ESMP) will involve environmental and social control and mitigation measures, monitoring programs, and responsibilities which must be developed based upon an assessment of environmental and social risks for the proposed project. The ESMP aims at ensuring effective implementation of the proposed mitigation and enhancement measures are achieved.

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
Pre-construction	Employment opportunities	• Inclusion of legally binding (contractual) requirements for local content for construction contractors; and • Engagement of the respective ward Office to maximize local procurement.	Client, all contractors, respective district council and ward offices	4,000
	Vegetation clearance	• Restriction of vegetation clearance to delineated construction sites; • Prohibition of herbicide use; • Restriction of pre-construction and construction works to prescribed working hours to minimize disturbances on resident fauna;	• Client, contractor	• 3,500

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Site rehabilitation and revegetation (wherever possible) of areas cleared for construction works to aid natural regeneration, following construction; and • Involvement of the respective district council, Natural Resources department, and Environment department, during site clearance.		
Construction and operation phase	Employment opportunities	• Ensure to set up a formal compliant register system which responds to complaints about nuisances in a timely manner • Adopt policies for recruiting locally and hiring local sub-contractors as much as possible • Include local communities in the consultations and participation process throughout the project activities • Ensure high rate of local employment to minimize influx of foreign workers • Ensure equal employment opportunities • Adhere to prohibition of child labour • Prohibit discrimination in any form or manner such as religion, ethnicity, tribe, creed etc. • Adopt a grievance mechanism to enable the communities and employees to relate concerns that arise from the Project or Contractors	• Client, all contractors, • respective district council and ward offices	• 5,000
	Improved economy	• Materials, goods, and services will be sourced locally, but if these cannot be obtained within respective districts, the Client/contractor has an option to procure this service elsewhere in Tanzania	• Client, contractor	• 4,000
	Impact on air quality	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads	• Client, contractor	• 3,000
	Impacts on water resources	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate clean-up of spillages (oil, fuel, chemicals) • Install natural or synthetic liners beneath chemical storage tanks • Ensure to grade gravel roads for maintenance of existing drainage patterns	• Client, contractor	• 3,000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Ensure to avoid dumping of waste into water bodies • Ensure that proper storage of chemicals/preservatives if any		
	Impact on public health	• Awareness-creation campaigns for HIV/AIDS for construction labour; and collaborating with active NGOs and other groups focussing on HIV/AIDS and STDs in the project area. • If there are any on-going projects in the area, the Client will join to scale up	• Client, district council, contractor	• 3500
	Impacts on soil	• Landscape the excavated areas in a suitable way to allow native vegetation to regrow naturally • Suspend activities during extreme rainfall events • Ensure to Provide drainage channels and silt traps for all parts of the topsoil storage areas • Ensure to rehabilitate areas with topsoil and revegetate after completion of activities • Install sediment and erosion controls • Use non-toxic and readily biodegradable chemicals on-site where feasible • Install natural or synthetic liners beneath chemicals storage tanks • Grade unpaved roads	• Client, contractor	• 2000
	Impacts on flora and fauna	• Ensure that no flora species classified as Vulnerable on the IUCN Red List are removed or cleared • Ensure that no tree greater than 200 mm diameter at breast height is damaged • Promote plantation of trees and green corridors along the project facility • Ensure that no species discovered during excavation are traded for commercial value • Minimize vegetation clearance • Prevent any hunting activities • Ensure to report fauna species of high conservation value • Avoid all direct and indirect impact on areas of high ecological importance • Ensure that sustainable management of solid and liquid waste emanating from construction and operation activities • Ensure outdoor construction lighting is unobtrusive and turn off when not required	• Client, contractor	• 3000
	Impacts on waste generation	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory	• Client, supervision consultant and contractor	• 3,500

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site • Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separator • Carefully fuel/refuel vehicles, and machineries to avoid spillage		
	Impacts from noise and vibration	• Choose inherently quiet equipment/equipment's installed with noise absorbers • Keep equipment speed as low as possible • Minimize idling time for pickup trucks and other equipment • Limit site working hours where feasible • Ensure that all workers exposed to noise emanating environment are equipped with hearing protection and relevant PPEs • Schedule noisy activities during the morning hours • Enforce noise monitoring • Inform the locals when noisy activities are planned • Utilize and properly maintain silencers or mufflers that reduce vibration on construction equipment • Operate only well-maintained mechanical equipment on-site	• Client, contractor	• 6,000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
	Impacts on health and safety	• Provide surveillance and active screening of workers • Provide health care benefits to workers • Ensure that hazardous substances are kept in suitable, safe, adequately marked and locked storing place • Conduct health awareness initiative • Restrict access to the operation sites • Ensure that employee/workers/ contractors are informed about the risks and prevention methods for Covid 19, Ebola, HIV, STDs, and others • Conduct firefighting and leak checks training drills for staff • Ensure that workers are qualified, well trained and instructed in handling their equipment, including PPEs • Install warning signs at the entrance of the site to prohibit public access • Provide appropriate PPE (impermeable latex gloves, working overalls, safety boots, safety helmets, safety goggles, hearing protein devices for workers exposed to noise levels exceeding 90 dBA, and lifesaving vests for sites near water bodies) • Develop and implement an Emergency Preparedness & Response Plan • Ensure containers of hazardous substances are clearly marked and that MSDS's are available • Designate an area where contaminated materials and hazardous • Provide training to personnel on occupational health and safety and safety procedures prior to beginning work at sites • Ensure that sensitive and dangerous areas with high risks are clearly designated • Ensure that presence of an onsite first aid treatment facility • Adopt good housekeeping practices for ensuring hygiene on site • Ensure the presence of firefighting equipment such as dry powder extinguisher • Ensure that safety specialist is recruited to manage the preparation, implementation, and maintenance of a comprehensive safety program • Ensure to eliminate pools of stagnant water, which could serve as breeding grounds for infectious diseases • Install warning signs at places where dangerous and high risks operations are ongoing	• Client, contractor	• 3,000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Ensure that protective materials are use at all times		
	Impact on traffic management	• Properly plan and develop traffic control plan • Notify the affected communities regarding the operation schedule and consult with them about potential traffic issues • Provide traffic re-rooting plan for the construction phase • Limit the movement of heavy machineries to off-peak hours and provide prior notification to local communities • Repair any road damage caused by increased traffic due to operations • Pave road where heavy use is expected • Speed limitation should be enforced for instance, onsite 10km/h, through towns and villages 35km/h and on the highway 80km/h • Ensure safety of motorists through adequate warning, signing, delineation and channelling at least 500 m down and up-gradient form the construction site • Ensure the prohibition of passenger siting on the back of trucks working for the Contractor/sub-contractor • Ensure that all drivers are licensed and obey traffic rules and regulations	• Client, contractor	• 30,000
	Disturbance, particularly land scarring at sources of construction materials (sand, aggregates, stones,)	• Ensure that all species of conservation values are enumerated, conserved, and reported to the designated conservation authority • Rehabilitate the landscape by planting new trees	• Client, district council, Ward, contractor	• 5,000
	Contamination of water from leakages (oil and grease) of fuels and lubricants from the construction equipment and workshops	• Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Fence construction site to prevent flying materials to deposit in nature • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping	• Client, Police, contractor, security contractor and relevant LGAs	• 2,000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separator • Carefully fuel/refuel vehicles, and machineries to avoid spillage		
	Poor air quality from dust and emissions around the construction site and material hauling routes	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads	• Client, all contractors	• 2,500
	Generation and poor disposal of solid and liquid wastes	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site • Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separator	• contractor	• 2500

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Carefully fuel/refuel vehicles, and machineries to avoid spillage		
	Community grievances due to ongoing Project activities	• Include local communities in the consultations and participation process throughout the project activities • Continuous engagement with directly affected communities along Project site	Client, Contractor	35,000
	Environmental and social management	• Capacity building to PIU in ensuring regular ESMP implementation	Client, Contractor	45,000
Total cost for management plan				**160,500**

STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION

Stakeholder Engagement and Consultation is designed to establish an effective platform for productive interaction with the potentially affected parties, disadvantaged groups, and others with interest in the implementation outcome of the Project. The purpose of the stakeholder engagement plan is to provide meaningful stakeholder engagement throughout the project cycle. The consultation aimed was to solicit views, concerns, comments, and inputs from wide range of stakeholders and project affected parties regarding project implementation.

LEVEL	STAKEHOLDER	REMARKS
Regional	1. Regional Council – Shinyanga, Singida and Mwanza	Courtesy call to Regional Administrative secretary
District	2. Maswa District Executive Director's Office 3. Bariadi District Executive Director's Office 4. Misungwi District Executive Director's Office 5. Bunda District Executive Director's Office 6. Buchosa District Executive Director's Office 7. Misungwi District Executive Director's Office 8. Uyui District Executive Director's Office 9. Igunga District Executive Director's Office 10. Singida Municipal Director's Office 11. Msalala District Executive Director's Office 12. District Executive Director's Office 13. Bukombe District Executive Director's Office	District Management Team members responsible for: ● Agriculture ● Cooperative ● Veterinary ● Livestock development ● Trade and business ● Forestry ● Natural resource management and environment ● Town/urban planning ● Economic planning ● Community development

	14. Nyang'wale District Executive Director's Office	
Local	15. Maswa District a. Ikungulyasubi village 16. Bariadi District a. Dutwa ward 17. Misungwi District a. Ng'ombe village 18. Bunda District a. Masahunga village 19. Msalala District a. Bulige village 20. Bukombe District a. Nyamigota village 21. Uyui District a. Kisengi village 22. Nyang'wale District 23. Singida Municipal Council a. Kindai Mtaa	● Local government authorities ● Direct project beneficiaries ● Communities in the project footprint ● Project affected persons

RESOURCE EVALUATION

As a conclusion on the proposed project, the environmental and social costs are relatively lower in value and are thus outweighed by the benefits to be realized from the project. The consideration of "No-Project" or "Do-Nothing" option is dismissed as an alternative due to the need and desirability of the system to address the youth unemployment challenge, create an enabling environment in which the private sector, young men and women will be capacitated to undertake agricultural value additions activities along the entire value chain ecosystem, with a view to increase agricultural products production and productivity, adding value, improve household income, generating employment, and increasing domestic consumption and exports. Therefore, the country at large stands to benefit significantly in terms of a thousand million dollars saved, in time and money, if the project is implemented.

DECOMMISSIONING

The design life of the project road will be about 20 years or so based on associated infrastructures. The letter may operate for 20 years or so depending on the materials used to construct them.

CONCLUSIONS AND RECOMMENDATIONS

This is a category 2 project. The overall impacts of the project are minimum and the recommended mitigation measures are effective to address, reduce, and offset these impacts. Furthermore, during construction phase the impacts identified are direct, indirect, short term, temporary, irreversible, and most often under the proponents' control. Moreover, the impacts during operations are relatively low and adequate environmental management systems will be employed to address and mitigate them.

1 INTRODUCTON

1.1 BACKGROUND OF THE PROJECT

The African Development Bank (AfDB) is supporting the Agro-industrial Development Program which is a comprehensive program that is geared towards creating an enabling environment for effective participation by the private sector in agricultural production through agricultural value addition. The programme will empower young men and women through capacity building to undertake agricultural value addition activities along the entire agricultural value chain systems. The special agro-processing programme is expected to improve the beneficiaries' income levels as well as address the youth unemployment challenge that is rampant in Africa. The Government of the United Republic of Tanzania (URT) is among the countries on the continent that expressed strong interest in participating in agro-industrialization development through the establishment of Special Agro-industrial Processing Zones (SAPZ) and requested the Bank's support to finance the programme.

The Project will be implemented in the following selected districts/regions respectively Biharamulo District (Kagera region), Bunda District and Bunda Town (Mara region), Bariadi District and Maswa District (Simiyu region), Nyang'hwale district and Geita district (Geita region), Msalala district (Shinyanga region), Uyui district (Tabora region), Singida Municipal (Singida Region), and Buchosa (Mwanza Region). Through the development of Agro Processing Hub (APH), Agricultural Transformation Centre (ATC), Aggregation Centre (AC) and Fish Aggregation Centre (FAC).

The programme's beneficiaries will include crop farming households, livestock farm households, fisherfolks, Small and Medium Enterprises (SMEs) involved in crops, livestock and fisheries processing, other agro-allied industries, traders, transporters, consumers, youth, and women entrepreneurs, among others. Other beneficiaries are expected to include agricultural and veterinary extension workers who will benefit from increased engagement with the farmers/livestock/fishers and agricultural marketing cooperative societies. Reserch and government institution will also benefit from increased research on improved seeds and better livestock keeping techniques for value chain addition of agricultural and fishing products. The traders will benefit from good quality agricultural and livestock products and improved packaging to meet phytosanitary international export standards. Other beneficiaries will include financial institutions and private sector companies dealing in agricultural technologies and inputs that will benefit through increased customers through loan provision in agricultural sector; consumers are expected to receive high quality products from agricultural and fishing activities, local government through enhanced revenue, contractors, input suppliers and the general public who will generally benefit from imcreased employment, and improved household incomes.

1.2 PROJECT OBJECTIVES

The main objective of the proposed SAPZ in Tanzania is to support structural transformation of Tanzanian economy through agro-industrialisation with a view to increasing production and productivity, adding value, improving household income, generating employment, and increasing domestic consumption and exports.

Specifically, the program will support the establishment of the integrated Lake Zone Special Agro-industrial Processing Zone comprising:

i) a main agro processing hub (APH) located in Shinyanga;
ii) three major agricultural transformation centres (ATCs) tentatively located in Geita, Tabora and Mwanza regions; and
iii) a network of Aggregations centres (ACs) and Fish Aggregation Centres (FACs) to be located in the procurement zones around the ATCs.

1.3 RATIONALE OF THE ESIA STUDY

The Environmental Impact Assessment (EIA) process in Tanzania is regulated by the Environmental Management Act (EMA) (No. 20 of 2004) and the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations (GN 474 of 2018). The construction of proposed aggregation centres is a listed activity under the Regulations, and accordingly, an EIA needs to be undertaken and an EIA Certificate must be granted prior to commencement of any construction activity.

The Regulations provide the general objectives for conducting the EIA, namely:

- To ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;
- To anticipate and avoid, minimise or offset the adverse significant biophysical, social and relevant effects of developmental proposal;
- To protect the productivity and capacity of natural systems and ecological processes which maintain their functions;
- To promote development that is sustainable and optimises resources use and management opportunities;
- To establish impacts that are likely to affect the environment before a decision is made to authorise the project; and
- To enable information exchange, notification, and consultations between stakeholders.

According to Environmental Management Act and Environmental Impact Assessment and Audit regulations, Project proponent is required to commission an Environmental and Social Impact Assessment (ESIA) and produce an ESIA Report to address these objectives.

1.4 SCOPE OF WORKS

The scope of work includes:

- To identify, predict, evaluate and suggest mitigation measures for the significant negative environmental impacts;
- To identify key social issues relevant to the Project objectives, and specify the Project's social development outcomes;
- To determine magnitude of adverse environmental and social impacts and identify the safeguards instruments (notably Environmental and Social Impact

Assessment report as per Operational Safeguards (OS) 1 on Environmental and Social Assessment), and national legislation and regulations;

- To predict and assess in quantitative terms as far as possible, the impacts from changes brought about by the Project on the baseline environmental conditions;
- To establish the mitigation measures that are necessary to avoid, minimize or offset predicted adverse impacts and incorporate these into the Environmental and Social Management Plan (ESMP);
- To identify stakeholders who are directly affected and carry out stakeholder analysis to determine their role in achieving social development outcomes;
- To inform, consult and carry out dialogues with stakeholders on matters regarding project design alternatives, implementation of environmental and social mitigation measures and to provide recommendations on Project design that may require adjustments in the project design;
- To provide an environmental and socio-economic profile of the population and available infrastructure facilities for services and community resources; and
- To develop monitoring and evaluation mechanism to assess effectiveness of mitigation measures including resettlement outcomes during and after Project completion.

1.5 METHODOLOGY

The methodology used in this ESIA study is in accordance with the approved Terms of Reference (ToR); Environmental Management Act (EMA) (No. 20 of 2004); Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations (GN 474 of 2018); as well as the African Development Bank (AfDB) requirements. It included desk review, baseline data and site visits, stakeholder consultations, and impact analysis. The study adopted the following approaches and methodologies:

1.5.1 1.5.1. Desk Review

The first approach was a review of relevant literature pertaining to the proposed aggregation centres and Project areas. The Prime Minister's Office (PMO) provided project conception, plans, project coverage etc. In addition, relevant district and regional profiles were used as sources of data and information that describe baseline conditions. Other information has been gathered from wider literature sources including the internet.

The Consultant used deskwork to update and enhance their understanding on national policies, legislation, and institutional arrangements for environmental management in Tanzania and relevant international procedures to ascertain the optimal management of impacts. AfDB's requirements for adherence to environmental and social sustainability were as well addressed through reviewing relevant Environmental and Social Safeguards. Other documents reviewed relating to the project are listed on the bibliography.

1.5.2 1.5.2. Stakeholder Consultation

In line with international best practice and Tanzanian EIA regulations, relevant stakeholders were consulted free of manipulation, interference, coercion, and

intimidation. It also aims to ensure that stakeholder engagement is conducted based on timely, relevant, understandable, and accessible information, in a culturally appropriate format. This process was carried out to capture the concerns, comments, and issues regarding the proposed project.

Consultations were undertaken through:

- Courtesy call with the regional administrative authorities in the selected project regions (Kagera, Mara, Geita, Singida, Mwanza and Simiyu).
- Interviews and focus group discussion with the district experts of Buchosa District Council, Misungwi District Council, Uyui District Council, Igunga District Council, Singida Municipal Council, Msalala District Council, Bukombe District Council, Nyang'wale District Council, Biharamulo District Council, Bunda District Council and Bunda Toun Council, Maswa District Council and Bariadi District Council. The district management team included members responsible for natural resource management and environment, community development, agriculture, livestock development, urban planning, cooperatives unions, veterinary, forestry, trades and business, and economic planning. Other stakeholders included those responsible for water supply and sanitation, energy, and rural and urban roads agency.
- Public Consultations with Villagers in the settlements of Lusahunga, Masahunga (Songambele A village), Bunda town (Makongeni and Tairo village), Ikungulyasubi, Dutwa (Igaganurwa village), Bulige, Ushirombo, Nyamigota, Kizengi, Bukokwa, Iborogelo, and Kindai.

List of stakeholders consulted are attached as Appendix 13.

1.5.3 1.5.3. Fieldwork and Observations

Interviews and documentation methods were supplemented by physical observations to identify features within and surrounding the project site. Fieldwork was conducted in the proposed Project sites involving physical surveys, social-economic surveys, verification of secondary information, and consultation. It entailed the facilitation of the acquisition of information, and collection of data on physical, biological, cultural, and social-economic aspects of the Project site.

Moreover, the physical survey collected data on the availability of infrastructures / utilities present within the project site such as water, electricity, roads, current land use of the project site if any, land cover (such as crops, trees), and other critical environmental and social features.

1.5.4 1.5.4. Collection of Baseline Data

The team collected baseline data of the Project area – the data enlightened on whether and where more detailed information on environmental conditions at the development site and its surroundings are needed.

For this study, a Rapid Assessment Methodology for collection of socio-economic data was adopted. This involved brief, topic-specific collection of data, where the collection of data is conducted verbally or in a written form. The study adopted focus group discussion, qualitative and quantitative socio-economic data (district profiles information) was obtained from the district economic and statistics departments.

Qualitative method was used to determine the perspectives and the opinions of the interested and affected parties, while the quantitative data was equally important to provide statistical estimates on the quantitative situation of socio-economic life of people in the project areas, (health, education, and HIV/AIDS prevalence rates, etc).

Both primary and secondary data were collected and used. Primary data were collected by direct measurement, observations and using semi-structured interviews. Consultation with key informants in the project area was done to obtain additional socio-economic data and information. The data and information so collected was meant to update and supplement those collected during previous studies. The interviews served an additional purpose of filling in gaps and providing missing links.

Secondary data was obtained from various relevant sources of information such as district profiles and wards reports, education and health reports and many other official and non-official documents.

1.5.5 1.5.5. Impact Assessment

The main objective of the ESIA is to examine, analyse and assess the planned Project activities' effects on the baseline conditions. The impact assessment superimposes the proposed Project activities onto the baseline environmental and socio-economic conditions of the Project site and wider area of influence. The Project activities are described in Chapter 2 and the sensitivities of the environmental and social components are outlined in Chapter 4.

Superimposing Project elements/activities onto the existing social and environmental natural conditions has identified the potential environmental impacts of the Project. An environmental impact correlation matrix method has been adopted to identify impacts of major concern.

The complete impact analysis procedure is described in Chapter 6; involving analysis of data for identification, prediction and evaluation of foreseeable impacts, both beneficial and adverse using checklists, simple matrices and expert judgement; and reference to national and international standards and guidelines.

A key guiding assumption in this study is that the Project will be designed, constructed, operated and maintained with due care for safety and environmental matters using current and practical engineering practice and/or Best Available Technology Not Entailing Excess Cost (BATNEEC).

Using expert judgment to assess impacts and mitigation measures have been to minimise or avoid potential negative impacts and enhancing positive ones. These are addressed and detailed in the Impact Assessment chapters. This is further summarized in the Project's Environmental and Social Management Plan (ESMP).

2 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

2.1 INTRODUCTION

Baseline environmental data is important to understand the physical, biological, and socio-economic and cultural characteristics of the project's environment. Baseline environmental survey is conducted to assess the present status of the physical environment (Topography, climate setting, temperature, hydrology, geology, soil characteristics); Biological environment (fauna and flora, biodiversity, vegetation, protected areas, etc.) Human and Socio-economic environment (land use and planning, demographics, energy, employment, culture and tradition, livelihood, transportation, health care, education, infrastructure, and population of the project area of influence.

2.2 LUSAUNGA AGGREGATION CENTRE

Lusahunga aggregation centre is within Biharamulo district in Kagera region. Biharamulo District Council is one of the 8 district councils in Kagera region.

2.2.1 Physical Environment

a) Geographical location

Biharamulo district lies between latitudes 2º15' and 3º.15' South of the equator and between longitudes 31º00- 32º00 East of the Standard Meridian, ranging from 1100 - 1700 meters above sea level. It is bordered to the north by Karagwe District and Muleba District, to the east and south by Geita Region, to the west by Ngara District, and to the southwest by the Kigoma Region.

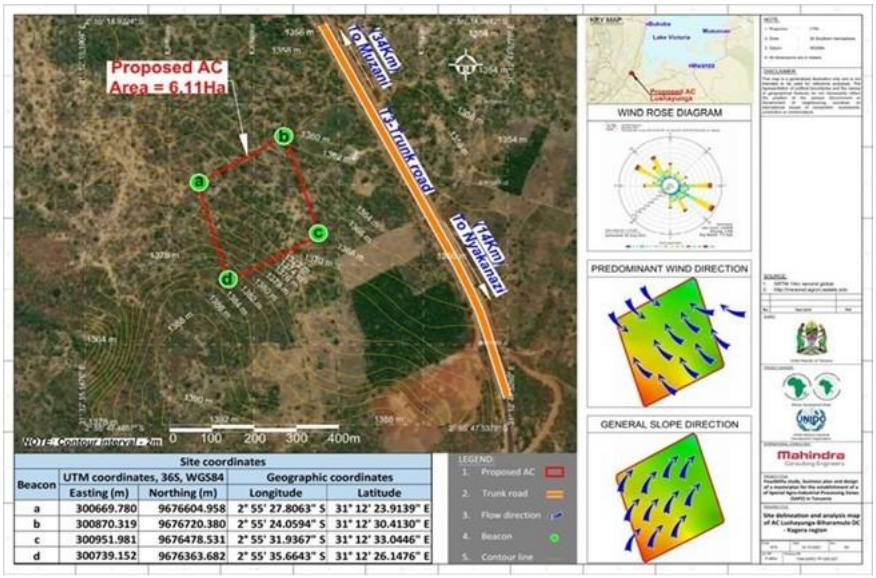


Figure 2-1: Proposed Lusaunga AC site

b) Geology and Topography

Biharamulo district is predominantly undulating, flat land, and occasional stretched hills, and plateau landscapes the district is covers the low and high lying southern parts of Kagera region.

c) Climate

The general climate of Biharamulo district is that of equatorial greatly influenced by its altitude, topography, and vegetation. The region experiences a bi-modal rainfall pattern, which occurs between September - December and February - May.

d) Hydrology

Biharamulo being in the south of Kagera is not a well-watered District council, only in Rubiza ward that is covered by water area (10 sq km of Lake Burigi). Lusahunga experiences moderate to good rainfall and with few seasonal rivers, gravity fall/spring from hills. However, rainfall is seasonal, and water is not readily available in the dry season (District profile, 2019).

e) Soils

The soils range from Sandy clay loam to sandy and clay (Mgeta et al, 2020).

2.2.2 Biological Environment

f) Flora

The common vegetation in the arable land comprises planted trees and shrubs. Miombo woodlands species such as combetum, Branchystegio, Kigelia, acacia, and Pterocarpus species they cover a greater part of the region including Biharamulo district.

g) Protected Areas and Sensitive Habitats

In Biharamulo district there is Biharmulo forest reserve that is managed by the Tanzania Forest reserve (TFS) that is approximately 18km from the proposed project site. At the proposed site there are no sensitive habitats.

2.2.3 Socio-economic Environment

h) Demographics

According to the 2012 Census, there are 323,486 people with an average household size of 5.8. The Current estimated population at Lusahangu village is 6, 999 people.

i) Livelihood

The main source of income in the district is agriculture accounting for 88.3% of the total household (2568), implying that agriculture serves as the main income generating activity conducted in the district, followed by other activities such as Business (5.3%), Government employment (3.4%), and livestock keeping (1.2%). Other livelihood activities include mining (Gold extraction) which is being undertaken at almost 16 km from the proposed site. Youths in Lusahunga prefer to be engaged in small scale activities such as welding, driving motorcycles or bodaboda, sand mining and rock quarrying and small businesses.

j) Land use and Land Cover

Most of the land in Biharamulo District is unsurveyed, the land uses in all wards include agriculture and livestock uses which makes a total of 123,602 Ha. Some part of land is covered by the forest reserve which accounts for 123,602 Ha. At lusahunga ward the proposed site area was formally designated for Strategic agricultural resource centre special for fishing and agriculture products. The council has future plans for the surrounding land plots for the provision for godowns structures, small scale processing industries to support the AC and residential plots.

k) Land Tenure

Lusahunga proposed AC project site has a total area of 5.45ha, and the land is owned by the village government, and has currently given it to the Biharamulo district council for investment development activities. The land is free of conflicts and no land acquisition is required.

Figure 2-2: Proposed Lusahunga AC site

l) Health Care

Biharamulo district has had 34 health facilities as of 2019, 1 hospital, 6 health centres and 27 dispensaries. Lusahunga wards has 1 health centre and 3 dispensaries. Out of 30 health facilities One (1) hospital and five dispensaries are owned by private sector, while 5 health centres and 19 dispensaries are publicly owned.

m) Education

Biharamulo District Council has 89 primary schools, at least every village owns a school while there is poor contribution of private sector in education where only 4 schools are privately owned. In 2019, the district had established two special schools for disabilities (Biharamulo and Kabindi special schools). There is a total of 22 secondary schools of which 20 secondary schools are publicly owned and 2 secondary school owned by the private investors. Of the 22 secondary schools, 12 are connected to electricity facility, 6 schools use Solar Energy as the lighting energy.

n) Energy

As of 2019 firewood was the most prevalent source of energy for cooking in Biharamulo District Council by 86.7 percent of total households, followed by charcoal 34.0%and while other sources such as Paraffin, Animal faeces, and Kerosene were also used.

However, the use of electricity as a source of energy for lighting was only 5.6 percent of total households in the Council.

o) Water Supply

The main source of water for the rural population in Biharamulo DC is shallow wells 67.4%, followed by rainwater harvested through water tanks 13.5%, bore holes 10.9% and spring water 6.6%, piped scheme is the least used source of water in the district council 1.5%. There are no reliable water sources at the proposed site, the local authority suggests that water abstraction should be through boreholes, as the available water source at the ward are seasonal rivers which are unreliable. One of the main seasonal rivers used for different purposes is known as river Nyalwambu.

Figure 2-3: Nyalwambu seasonal river

p) Markets

Currently agricultural products are sold on individual levels, where one collects the products and packages them and waits at the highway road and sells them to trans-cargo drivers. There is also a local auction market for livestock where people from various location meet and display their products. These agricultural products include livestock, Banana, coffee, cotton, maize, rice, beans, and sorghum. The most active member in this local market is women.

q) Waste Management and Sanitation

There are no sewage systems at the proposed site neither within the surrounding communities in Lusahunga ward. The highest proportion (51%) of households use pit latrine with washable slab and lid, followed by 29.1% of the households with pit latrine without lid. Lusahunga main wastes found at village level is domestic wastes from settlements, and have been managed through burying and burning, liquid waste has been managed through pit latrines.

r) Gender Issues

Gender empowerment aims at ensuring that all sexes, particularly women, participate fully in policy and decision making processes in all aspects of economic, socio-cultural and political. Various measures have been taken by the district council to involve women more in these activities rather than household activities. These measures include family

planning, opening and operating of day care centers, establishment of women economic groups and participation in SACCOs, CBOs and other cooperative societies' activities.

s) Ethnicity

Generally, inhabitants are mainly of the Subi tribe. However, the composition of the current population is getting more cosmopolitan due to the influx of workers in the government offices, businessmen and fortune seekers from different district councils of Kagera region as well as other regions of Tanzania.

t) Archaeological and Historical Sites

In Biharamulo district there are no archaeological sites or historical sites

2.3 MASAHUNGA FISH AGGREGATION CENTRE

Masahunga fish aggregation centre is within Bunda district in Mara Region. Bunda district is one of the five districts of Mara Region. It borders to the North by the Musoma Rural District, to the South by Lake Victoria and Simiyu Region, to the East by the Serengeti District, and to the West by Lake Victoria.

2.3.1 Physical Environment

a) Geology and Topography

Bunda district is located at an elevation of 1,225 meters above sea level. Its coordinates are 2°0'0" S and 33°49'60" E in Degrees Minutes Seconds. The district has an area of about 3080 sq. km, of which water occupies an area of 200 sq. km and land 2888 sq. km, which translate into 6.5% and 93.5% of the total area respectively.

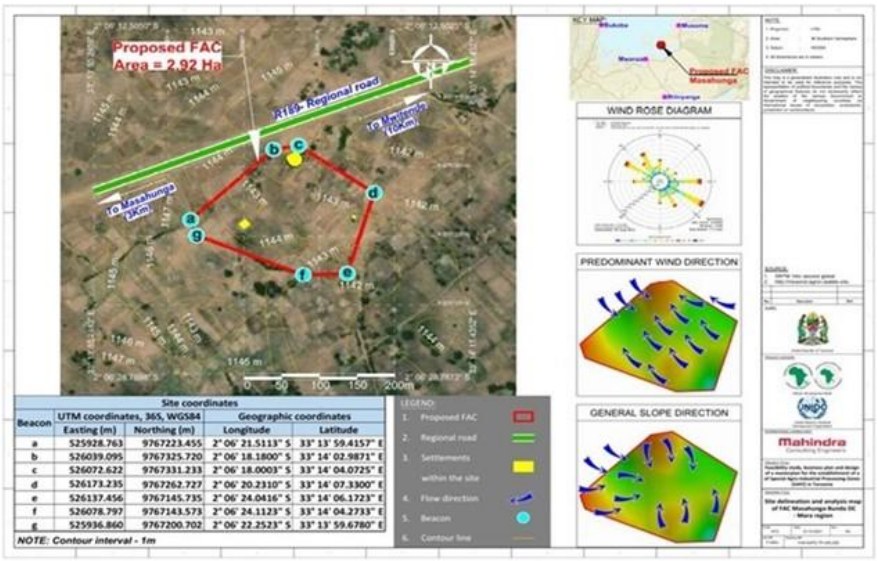


Figure 2-4: Proposed Masaunga FAC site

b) Climate

Bunda district has complex climate with wide variations across the district, characterized by seasonality. The annual average temperature ranges from 21˚C to 30˚C. There are two rainy seasons, February –May and August to December with an annual average rainfall of 1100 mm.

c) Hydrology

The area is within the Mara River Basin (MRB) which covers 13,750 km² and is a trans-boundary basin shared between Kenya and Tanzania and forms part of the upper catchment of the larger Nile Basin. The Mara River Basin (MRB) is located roughly between longitudes 33° 47' E and 35° 47'E and latitudes 0° 38' S and 1° 52' S, with the upper 65% area (8,941 km^2) in Kenya and 35% in Tanzania.

2.3.2 Biological Environment

d) Protected Areas and Sensitive Habitats

Currently there are no protected areas in Masahunga village. However, there is Nansimo game reserve in Nkulwilwi village within Chitengule ward almost 18km from the proposed site.

2.3.3 Socio-economic Environment

e) Demographics

The population size in Bunda District is estimated at 335,061, of which 150,461 or 48.4% and 172,820 or 51.6% are male and female respectively (NBS, 2012). The population size in Masahunga village is 2,598 where 1,251 are male and 1,347 females, where at the village there 592 households.

f) Livelihood

The economy of Bunda district is mainly dependent on three sectors, agriculture, fishery, and livestock. Other important sectors for the economy are business and tourism in small scale.

g) Land Use and Land Cover

The District Council occupies a total area of 2,343.47 km^2, of which 188.95 km^2 is covered by water equivalent to 8% and the remaining 2,154.51km^2 equivalent to 92% is dry land. Out of the dry land, 480 km^2 is protected area and the remaining 1,674.508 km^2 is for agriculture, settlement, and grazing.

h) Land Tenure

The proposed site for FAC in Masahunga village has a total area of 2.94 Ha, and the land is owned by the village government and has currently given the land to the district council for investment development activities. The land has fairly even terrain and adjacent the proposed site are farmlands, settlements, and Lake Victoria. Within the proposed site there is one household that has encroached, however, the village government are due to evacuate the individual.

Figure 2-5: Proposed Masahunga AC site

i) Health Care

Bunda District Council has 28 health facilities, comprised of 1 hospital owned by FBO, 5 Rural Health Centres and 22 Dispensaries. Out of the 22 dispensaries, 21 are owned by the government and one is privately owned.

j) Education

The Bunda District Council comprises of 104 Primary schools, out of that 100 schools are owned by the government and 4 are privately owned. The district also has Bunda District Council has 19 secondary schools. Out of 19 secondary schools, 17 secondary schools are owned by the Government and 2 are privately owned.

k) Energy

Major sources of energy for lighting in Bunda District Council is electricity, solar, and Kerosene. The district is connected to the national electric grid. It is expected that by 2018/19 all 78 villages will be connected to the National Electric grid under Rural Electrification Programme (REA). At Masahunga village electrical infrastructure is near the site almost 50m.

l) Water Supply

Lake Victoria is the main source of water at Masahunga village, located approximately 500m from the proposed site. There are 2 boreholes available within Masahunga village, but only one is working and does not meet all the requirements of the population.

Figure 2-6: Lake Victoria, the main water source for Masahunga village

m) Transportation

The District Council Road network has a total of 507.62kms as follows: Trunk road (0 kms); Regional roads (133.57 kms); District roads (244.39 kms); Rural roads (129.66 kms). The roads are passable on average of 76% during rainy season. The District Council has one air strip called Grummet Air strip located at the western corridor of Serengeti National Park which serves tourists and park staffs. For public air transport the Council depends on the neighbouring airports located in Musoma and Mwanza, the proposed site is near the main road (TANROADS) to Ukerewe district.

n) Waste Management and Sanitation

Solid waste is generally from domestic activities and agricultural waste, and fishing activities that is usually managed through burning and burying. The village and the ward in general have no designated landfilling area. During consultations, District officials indicated that there is a special area set for waste disposing activities in Kisolya Village which is 1km-1.5km away from the proposed site.

There are no sewage systems at the village nor within the district. The wastewater generated in the village is disposed onsite using pit latrines. Once the pit latrine is full it is covered by earth and another pit is dug nearby, there is also open defecation at the lake shore by some community users.

o) Gender Issues

The Bunda district has made considerable efforts to minimize gender imbalances and inequalities. Significant efforts have been made to promote women's participation in political and leadership positions. The proportion of women in leadership representative (decision-making) position has reached 23 percent. Women's representation in public service (heads departments) is 17 which is 15%.

p) Ethnicity

Major dominant ethnic group in Masahunga village are the Jita and the Kerewe groups.

q) Archaeological and Historical Sites

There are no cultural and histrorical sites at the village.

2.4 BUNDA AGGREGATION CENTRE

Bunda aggregation centre is located within Bunda Town Council in Mara region. Bunda Town Council is located at the southern end of Mara region, about 65 kms from the regional headquarters (Musoma).

2.4.1 Physical Environment

a) Geology and Topography

Bunda Town Council lies between 01030' and 2045' south of the Equator and between 33039' and 34005' East of Greenwich. Bunda town council lies adjacent to the southeast shores of Lake Victoria, from which it is separated by wide plains which stretch slowly into the lower and flatter lands of Serengeti Town on the eastern side.

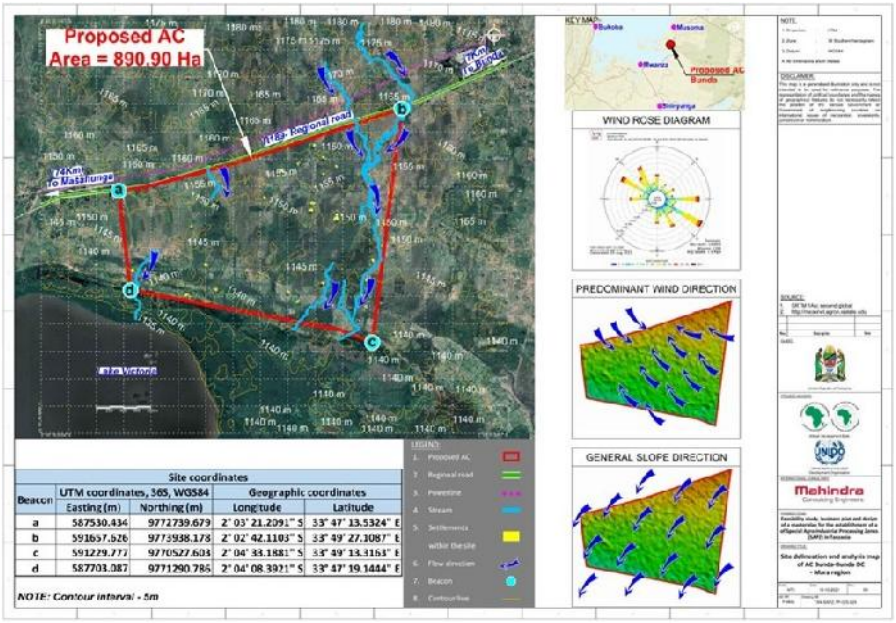


Figure 2-7: Proposed Bunda AC site

b) Climate

Bunda district has complex climate with wide variations across the district, characterized by seasonality. The annual average temperature ranges from 21˚C to 30˚C. There are two rainy seasons, February – May and August to December with an annual average rainfall of 1100 mm. The highest monthly average rainfall, observed in April, is 110 mm. The climate in Bunda is hot and overcast. Over the course of the year, the temperature typically varies from 62°F to 87°F and is rarely below 59°F or above 93°F.

c) Hydrology

The area is within the Mara River Basin (MRB) which covers 13,750 km² and is a trans-boundary basin shared between Kenya and Tanzania and forms part of the upper catchment of the larger Nile Basin. The Mara River Basin (MRB) is located roughly between longitudes 33° 47' E and 35° 47'E and latitudes 0° 38' S and 1° 52' S, with the upper 65% area (8,941 km^2) in Kenya and 35% in Tanzania.

2.4.2 Biological Environment

d) Flora

Bunda Town Council has expansive woodlands, wooded grasslands, and bush lands. Woodlands are heavily exploited for charcoal, firewood and house construction materials. The proposed site has a general fairly even terrain, covered by grass and few scattered shrubs of native species.

Figure 2-8: Green patches of the wetland

e) Protected Areas and Sensitive Habitats

There is no protected and/or sensitive habitats in the proposed site. However, in Tairo and Makongeni villages there are sightings of elephant crossings towards Lake Victoria (may be seen around May-June).

2.4.3 Socio-economic Environment

f) Demographics

According to 2012 National Census results, the population size of Bunda Town Council was 133,977.

g) Livelihood

The economy of Bunda Town Council is mainly depending on subsistence agriculture. Majority of people are engaged in agriculture, livestock-keeping, fishing, small-scale industrial activities, shopkeeping, minor mining, and other petty business.

h) Land use and Land Cover

Bunda Town Council has the largest size of unused land potential for investment accounted for 3,631 Ha. The estimated amount of land devoted for human settlements, agriculture, and livestock as well as forest reserves varied across all Ward in the Council. In Tairo and Makongeni villages the land is currently used for residential, agricultural purposes including feeding grounds for livestock, planting seasonal crops (maize, rice, Sorghum, cotton, and horticulture ie. Watermelons and vegetables) and livestock drinking grounds at the lake shore. The proposed site for the AC in Tairo and Makongeni village has a total area of 872 Ha.

Figure 2-9: Bunda AC proposed site

i) Land Tenure

The proposed site is owned by the Export Processing Zone Authority (EPZA) and has given the town council for investment development activities. There are 5 households who have encroached the proposed site and have built mud house structures for settlement, and their livestock settlements. However, Bunda town council does not recognize the encroachers stating that they have already received their compensation from EPZA. The officials from Bunda district council and village council will coordinate with the District Executive Director to ensure the encroachers are relocated prior to construction activities.

j) Health Care

In Bunda Town Council, there are 3 health centres and 16 dispensaries – 11 dispensaries owned by the government and 5 dispensaries which are privately owned. The Council does not have any Government Hospital.

k) Education

There are 61 government-owned and 8 private-owned primary schools in Bunda town council recorded in 2020. There are 70 adult education centres in the council.

l) Energy

Major sources of energy for lighting in Bunda Town council are electricity, solar, and Kerosene. The district is connected to the national electric grid.

m) Water Supply

Bunda Urban Water Supply Authority (BUWASA) supplies water to Bunda town. Bunda Town Council is served by several sources of water including traditional water sources such as spring, rivers, lakes, rainwater, dam and traditional wells and improved wells and boreholes. In the proposed site, there are BUWASA water infrastructures laid along the highway approximately 200m away. There are also water infrastructures crossing the site from the lake to OLAM industry.

n) Markets

There are open markets in the Council, and they are operating on monthly rotation basis for the whole year. The major animal protein marketed in the rural areas are milk, eggs and sometimes chicken and fish.

o) Transportation

Length of road network in Bunda Town Council is 300.9 Km. The length of road network by types of road surface is estimated to be 565.4Km, about 25.1 Km (4.4%) is tarmac road, Km 275.8 (33.2%) is gravel road and 352.7Km (62.4%) is earth road.

p) Waste Management and Sanitation

In Bunda Town Council, majority of solid wastes originate from industrial products such as boxes, papers, packaging materials, organic wastes from domestic activities. The common method for disposing includes burning and burying. Only in a small area of town (Saranga) there is organised collection of solid waste. The district does not have a sewage system – wastewater in the village is disposed onsite using pit latrines, and a few septic tanks. Once the pit latrine is full it is covered by earth and another pit is dug nearby, there is also open defecation at the lake shore by some users.

q) Ethnicity

Major dominant ethnic group in Bunda Towns Council is the Sukuma tribe, Jita, KuryaIkizu. Other tribes found in the Council includes Luo, Kerewe, Zanaki, Ruri, Sizaki, Wakara, Taturu, Ikoma, Nata, Shashi, Wakwaya, Ngoreme and Isenye tribes.

r) Archaeological and Historical Sites

None

2.5 DUTWA AGGREGATION CENTRE

Dutwa aggregation centre is located in Bariadi district council in Simiyu Region. Bariadi District Council is located North of Tanzania and South East of Lake Victoria.

2.5.1 Physical Environment

a) Geology and Topography

Bariadi district lies between Latitude 2015” and 3010’ South of Equator and longitude 33040” and 35010” East of Greenwich. The Council is bordered by Busega Districts (Simiyu Regions) to the West, Bunda and Serengeti Districts (Mara Region) to the North, Maswa Game Reserve to the East, Maswa and Itilima Districts (Simiyu Region) to the South.

The Topography of the Council is mostly covered by gently undulating land from sedimentary plains to rocky outcrop hills scattered in most part of the Council. There are few volcanic plains in the eastern parts which extend to the boarder formed by Lake Ndutu. Other volcanic plains subject to long time erosion can be traced in Dutwa division.

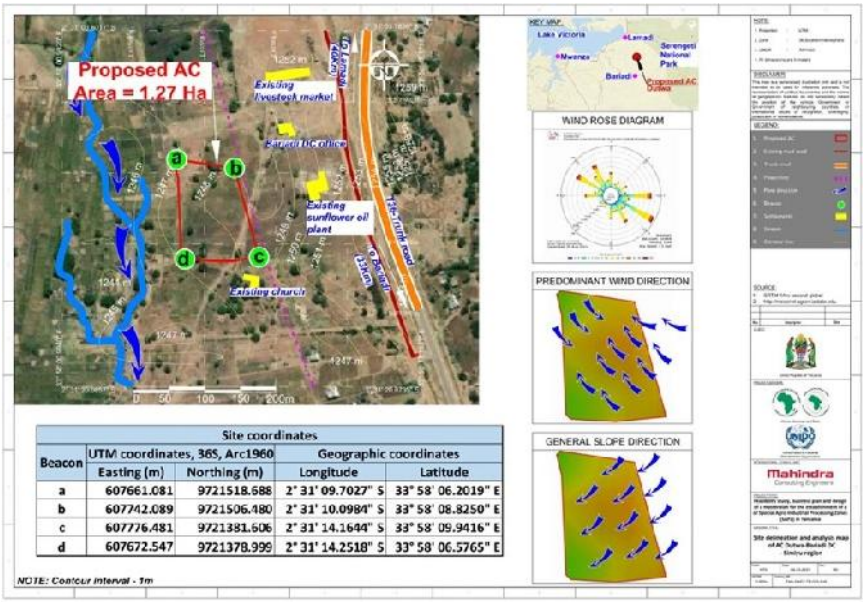


Figure 2-10: Proposed Dutwa AC

b) Climate

The climate of the Council is generally of a tropical type. The annual rainfall ranges from 700mm-950mm pa. There are two districted periods of rain seasons. The short rain period is normally between October – December with a dry spell in January and February. Long rain falls in between March to mid-May. The period from June to September is hot and dry. The average temperature during the day is 29^{o}C and 19^{o}C at night.

c) Soils

There are three dominant soil types of namely black cotton soils, clay, and loam clay soil. Black cotton soils are commonly found in Dutwa division where cotton, maize, sorghum, millet, groundnuts, and sweet potatoes are grown at large. Clay soils are located on the western and central part of the Council where paddy, cotton, sorghum, maize, groundnuts, onions, and sweet potatoes are grown.

2.5.2 Biological Environment

d) Flora

The land is fairly even terrain with a very gentle sloping covered by grass and scattered tree shrubs of thorny eucalyptus, and neem trees.

Figure 2-11: Proposed Dutwa AC site

e) Fauna

No wildlife animals to the community around.

f) Protected Areas and Sensitive Habitats

There are no sensitive habitats on the proposed site.

2.5.3 Socio-economic Environment

g) Demographics

According to 2012 National population census result, population of Bariadi District Council was 267,296 with population growth rate of 2% per annum. The population estimates for 2021 is 319,443.

h) Livelihood

Population of Dutwa mainly engage in agricultural activities and livestock keeping for income generation.

i) Ethnicity

Bariadi is inhabited by mainly one ethnic group the Sukuma people. The Sukuma people of Bariadi are known as the Ntuzu. Other ethinicity groups include immigrants from other regions which including the Chagga, Kurya, Kerewe, Zanaki, Waha, Haya etc settled in trading centres like Nkololo, Dutwa and Ngulyati and some villages.

j) Health Care

There is no District Hospital or referral Hospital. There is a total of 2 health centres and 84 Dispensaries.

k) Education

There are 73 registered Primary Schools in Bariadi District Council is 73. There is no Colleges and Vocational Training Schools/Centres.

l) Energy

Electricity Supplied in the Council is through National Grid. Other sources of energy in the council are solar and fuel.

m) Land Tenure

The proposed site has a total of 1.27 Ha, the land is owned by Bariadi district council. Presently adjacent to the proposed site is a sunflower oil processing plant, farmlands, a seasonal river, livestock market, and district council offices.

n) Water Supply

The Rural Water Supply Authority (RUWASA) has water infrastructures crossing the site from Sengerema. The infrastructure is laid underground along approximately 400m. There is also a seasonal river adjacent to the site on the southern side, the river has gully erosion and is gradually expanding. The water is used for irrigating the agricultural farms nearby.

o) Markets

There is a local livestock market adjacent to the proposed site.

p) Transport and Infrastructure

The Council has a total road length of 727.6 km, which comprises of district roads 296.6 km, and feeder roads 429.1 km. Most manufactured goods, medicine, raw food crops and cash crops etc are transposed via road services. The district does not have transport companies.

q) Waste Management and Sanitation

Main type of waste at the village level is solid waste, found from residential area and sunflower factory. At the district and village level there is no sewage system and specific waste disposing area. The district has set a waste disposal area in Manogwa village, which is approximately 2.5km from the site – the area has not been used, yet.

r) Ethnicity

Bariadi district is inhabited by mainly one ethnic group the Sukuma people. The Sukuma people of Bariadi are known as the Ntuzu.

s) Archaeological and Historical Sites

No cultural historical sites at the proposed site. There is an historical site at close proximity to the proposed area, approximately 1km away, at Isenge village where there is a house used by Chief Ileme of Dutwa.

2.6 NYANGH'WALE AGGREGATION CENTRE

Nyangh'wale aggregation centre is located in Nyangh'wale village in Nyangh'wale ward within Nyangh'wale district in Geita region. Nyang'hwale is one of the 5 administrative districts of Geita, it covers a total area of 1,450 km^2 of land area.

2.6.1 Physical Environment

a) Geology and Topography

Nyang'hwale district comprises of land comprised of gentle sloping and its topsoil is that of sandy. This favours the growth of varieties of crops such as cassava, bananas, sweet potatoes, beans, groundnuts, paddy, maize, cotton, coffee, millet, wheat, fruits, sisal, sunflower etc.

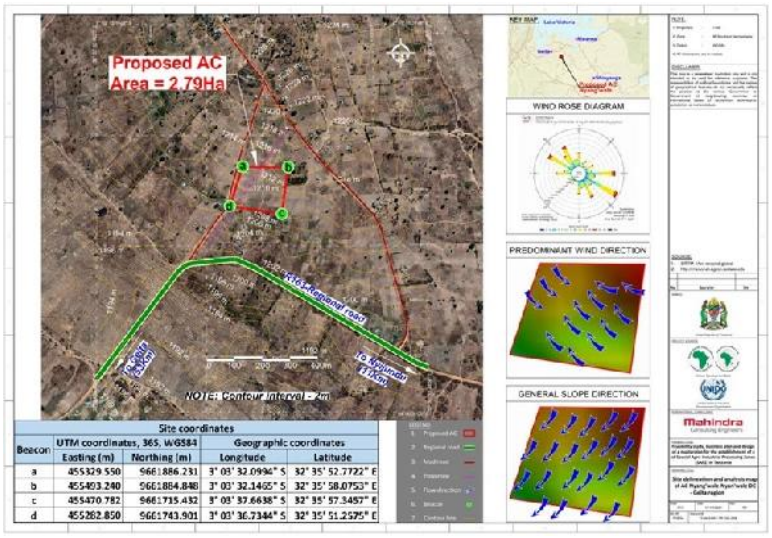


Figure 2-12: Proposed Nyang'hwale AC

b) Climate

The region experiences moderate temperatures between 22^{o}C and 30^{o}C with an average rainfall of 900mm- 1200mm per annum. Rainfall is fairly evenly distributed with short rains from September to December, followed by a dry spell from January-February before long and heavy arains set in between March to the end of May.

c) Hydrology

Geita region is covered by Lake Victoria waters in the north.

d) Soils

In Nyang'hwale district the topsoils are comprised of sandy soil throughout the district. The soils in Geita region comprise those made of black cotton soil, loam, sandy, sandy loam, and clay loam soil.

2.6.2 Biological Environment

e) Flora

The vegetation found in the area include scattered shrubs, and native tree species.

f) Fauna

Geita region has a significant variety of wildlife, due to the presence of forest covers. This wildlife richness includes animals such as statunga, bushbucks, crocodiles, hippopotamus, various snake species, and baboons. However, there are no wildlife in Nyang'hwale district and at the proposed AC site.

g) Protected Areas and Sensitive Habitats

The region has natural forests covers that covers about 196,582 Ha. Nyang'hwale district is the least district covered by forest, the forest covers 92 sq.km. The proposed AC site is not in close proximity to any forest reserve nor any protected area.

2.7 SOCIO-ECONOMIC ENVIRONMENT

h) Demographics

The district has the lowest population in the region, it has 148,320 people, and the district has the highest average household size of 6.8.

i) Livelihood

In Nyang'hwale district, majority of individuals are engaged in agricultural activities, livestock rearing and small trade. Other activities involve forestry activities such as lambering, carpentry, charcoal production, construction activities and bee keeping.

j) Land use and Land Cover

Geita region is one of the smallest region in Tanzania, it covers only 4.3% of Tanzania, it has a total surface area of 21,879 sq.kms, of which 1,946 sq.km is covered by waters of lake Victoria, and 19,933 sq.km of dry land.

k) Land Tenure

The proposed site for the AC in Nyangwale, has a total of 2.81 Ha, the land is owned by the village government. Adjacent to the proposed site are agricultural farmlands, and settlements. The land has a fairly even terrain.

Figure 2-13: Proposed Nyang'wale AC site

l) Health Care

Nyang'hwale has one district hospital, one health centre and a dispensary within the ward.

m) Education

There are a total of 611 primary schools in Geita region, out of which 576 are public schools and 35 are private schools. There are 3 vocational training centres which are located in Geita and Chato, two of these VCTs are government owned and one is privately owned.

n) Energy

The region is connected to national electricity grid. The region receives electricity through two ways: from Sengerema (33kv) that serves Geita district only, and from Bulyanhulu (33 kv) which serves power to Chato, Mbogwe and Nyang'hwale districts. The distribution lines are passing along the proposed site.

o) Water Supply

Water supply in Geita is sourced from Lake Victoria. Other sources of water include rivers, streams, shallow wells, bore holes, rainwater harvesting and springs. In Nyang'hwale there are no surface waters, the whole district is covered by dry land.

p) Transportation

The region has three air transportation airports, one managed by Geita Gold mine and the other by Rubondo national park. The new Chato airport offers a room for international tourism investments and attract business opportunities. Marine transport is also available in the region, there are four ports namely Nkome, Chato, Nyamirembe, and Muganza. There is also Nungwe harbour and motorised local vessels ferry. The road transport is well connected, there are about 58.1% of road network that are passable, the roads measure 8,019.57 kilometres graded into four categories: trunk roads (7.3%); regional roads (5.8%); district roads (45.1%), and feeder roads (41.8%) – of the feeder roads, 25 percent is gravel and 70.3 percent is earth.

q) Waste Management and Sanitation

There are no sewage systems in the district, and waste and sanitation management are being handled onsite using pit latrines, improved pit latrines, and a few pour flush. Most solid wastes originate from domestic activities and agricultural wastes which mostly are organic. The common method for disposing includes burning and burying.

r) Ethnicity

Major dominant groups involve amixture of Wasukuma, Wasumbwa, Wazinza and Waha.

s) Archaeological and Historical Sites

These were not observed within and around the entire site.

2.8 BULIGE AGGREGATION CENTRE

Bulige aggregation centre is located in Bulige village in Msalala district in Shinyanga region.

2.8.1 Physical Environment

a) Geology and Topography

Shinyanga Region lies on 1233 metres above mean sea level. The natural vegetation in the region consists of extensive Miombo and Acacia woodlands. The vegetation is however decreasing due to human activities, namely land cultivation, livestock keeping, and cutting trees as source of energy.

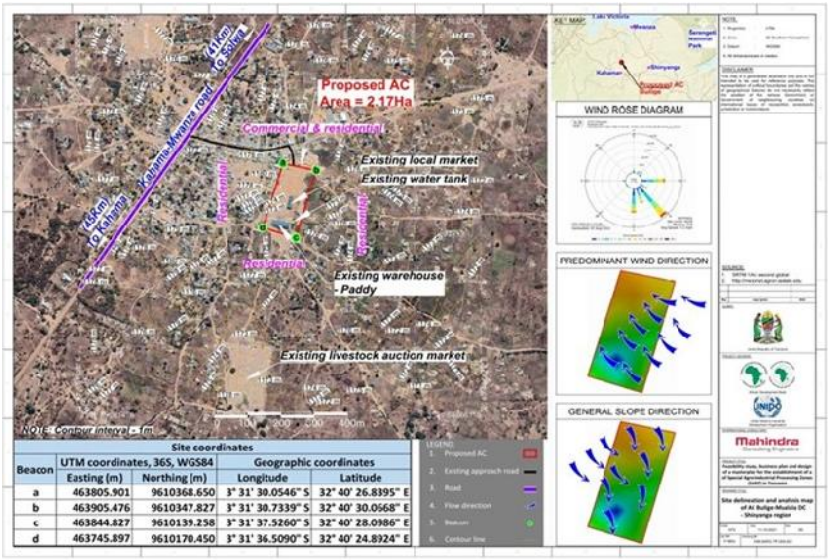


Figure 2-14: Proposed Bulige AC site

b) Climate

The region experiences a tropical climate with extreme seasonal variations in monthly rainfall, Annual rainfall ranges between 600mm and 900mm with a mono rainfall distribution Shinyanga has a mean annual maximum temperature of 26.0°C and a mean annual minimum temperature of 22.3°C.

c) Soils

The region's soil ranges from heavy clay soil, sandy soil, sandy loam soil, sandy soil, loam soils, red soils, clay, loamy soil, and sand loamy soil. The proposed AC location is in the north-east zone and is comprised most of sandy soils and heavy clay soils suitable for production of a range of crops, especially sorghum, sweet potatoes, maize, cotton, groundnuts, and sunflower. This zone receives an average annual rainfall of between 500 and 700 mm. In Msalala district council in Bulige village topsoil is that of sandy in most areas.

2.8.2 Biological Environment

d) Flora

Bulige proposed AC location in in urban setting and they were no observed flora.

e) Fauna

Shinyanga Region is home to Kigosi National Park, which borders Moyowosi Game Reserve on western side. This national park covers an area of about 7,000 square kilometres; it is endowed with a rich variety of wild animals such as hippo, lions, leopards, statunga, buffalo, wild dogs, bushbuck, impala, giraffe, baboons, greater kudu, topi, roan antelope and elephants. However, at the proposed AC location in Bulige there was no fauna observed

f) Protected Areas and Sensitive Habitats

Shinyanga region has some partsthat have forest reserves and this includes Nyamba and Busongo forest reserves (in Kishapu District), Mwantini and HASHI forests reserves

(in Shinyanga District), Mkweni Hills (in Kahama Town Council) and Ubagwe Forest Reserve (in Ushetu Council). However, In Msalala district council, Bulige village and there are no protected areas.

2.8.3 Socio-economic Environment

g) Demographic

According to the national cencus of 2012, the population of Msalala district council was 164,999 people. The population of Shinyanga region has increased significantly from 1,245,112 in 2002 and reached 1,534,808 in 2012. The region's projected population is expected to be 1,993,589 at the end of year 2020.

h) Livelihood

The common livelihood activities in the region include those of agricultural nature, livestock keeping, transport, trade, tourism, natural resources, mining and industrial development. 80% of the total labor force is engaged in agricultural activities in production of food crops and cash crops. Despite its dominance as the highest income generating activity, the population still uses traditional handhoes, animal driven carts, elies heavily on rain-fed cropping methods and animal husbandry. The use of traditional agriculture inputs implies, among other things, that agriculture productivity is still low.

i) Land use and Land Cover

The land has been zoned for agricultural activities and investment. Land cover entails two warehouses for storage of agro products managed by AMCOS LTD, Water reserve tank, a market structure, water closet building (toilet building).

j) Land Tenure

The proposed site has a total area of 5.4 Acres and the land is owned by the Msalala District council. Adjacent to the proposed site are commercial structures and residential settlements.

Figure 2-15: Bulige commercial structure/local market adjacent to the proposed AC

k) Health Care

Shinyanga Region provides quality health-care services using mostly health care facilities established by the Government and private sector. There are about 234 health-care facilities of which 7 are hospitals, 21 are health centres and 206 are dispensaries.

The region has several pharmacies, located mostly in urban centres, which offer a wide range of essential and non-essential medicines.

As of 2019 Msalala district council had 4 health centres, and 28 dispensaries, and in Bulige ward there is one health centre, one dispensary and one hospital.

l) Education

There are 614 primary schools and 145 secondary schools in Shinyanga region. Msalala had 92 public primary schools, 4 private primary schools, and for secondary schools there were 16 public schools and 1 private. There are two Universities with physical presence in the region: the Open University of Tanzania (OUT) and Moshi University College of Cooperative and Business Studies (MUCCOBS). There is also 1 technical college, 1 teachers' college and 1 Vocational Education Training Authority (VETA).

m) Energy

The main source of energy used for cooking is firewood, which accounts for 94.3 percent of total households in the region followed by charcoal at 4.9 percent and other sources (0.8%). Shinyanga Region is connected to the national power grid for which the transmission point is located at Ibadakuli industrial area in Shinyanga Municipality. The proposed AC site is well connected to the national grid.

n) Water Supply

In Msalala district council the number of households connected to safe sources of water by local government authority are 143,203. In Bulige village the available water source is boreholes and at the proposed AC location there is a water storage tank. Boreholes can be a reliable water source for the AC, apart from the existing water storage tank found at the site.

o) Transportation

Shinyanga Region has a total length of 4,627.81 kilometres of road network, with Kahama District having the longest road network (2,135.3 kilometres) followed by Shinyanga District with 1,799.41 kilometres. Generally, 38.2 % of the region's road network is passable throughout the year. Shinyanga Region has a railway transport advantage, popularly known as the Central Line, passing through the region. There is also a dry port in Isaka used for transit goods destined for Burundi, Rwanda and Democratic Republic of Congo (DRC). The region has two airport strips: one is located at Ibadakuli area in Shinyanga Municipality and the other in Kahama Town Council.

p) Waste Management and Sanitation

Wastewater in Bulige village is disposed onsite using pit latrines, and ventilated improved pit latrines. There is no sewage system at the village nor within the district. There is an existing local market adjacent to the proposed site. Majority of waste in the area are produced at the local market.

q) Ethnicity

The majority of the people in Shinyanga include those of the Wasukuma tribe, Wasumbwa, Wazinza and Waha.

r) Archaeological and Historical Sites

Shinyanga has a broad array of cultural related tourist activities. These include Usanda/Tinde Caves (Shinyanga): Ng'wanamalundi Foot Mark (Kishapu): Iboja Slave Trade Caves (Ushetu): Dr Williamson Diamond Grave (Kishapu): Hot Natural Spring Water and Balozi Malembela Grave and Chela German Man-Made Cave (Msalala) district. There is also Shinyanga Mazingira Museum (SMM) Centre in Lubaga. There are no historical sites within the Bulige ward and the village where the proposed AC is located.

2.9 NYAMIGOTA AGGREGATION CENTRE

The Nyamigota AC is located in Nyamigota Mtaa, in Nyamigota ward in Geita District in Geita Region.

2.9.1 Physical Environment

a) Geology and Topography

The geology of Geita region, and the proposed AC land is of gentle flat terrain, and the topsoil is generally that of sandy soil.

b) Climate

The climate in Nyamigota is generally that of Geita district council, and they fall in the lake shore zone agro-economic zone, where the area receives rainfall ranges from 700-1300mm per annum. The zone supports the growth of various crops notably cotton, cassava, paddy, maize, sweet potatoes, pineaples, legumes, and coffee. Free range and tethering systems are prominently used for cattle, goats, and sheep grazing.

c) Soils

The soils of the area are comprised of those of sandy in the entire area.

2.9.2 Biological Environment

d) Flora

The entire area is covered by maize plants, scattered mango trees, cassava, short grasses, which belong to peasants who rent the area of temporal basis.

e) Fauna

There were no fauna observes within the proposed AC site and surrounding community.

f) Protected Areas and Sensitive Habitats

The proposed AC site is within the peri-urban of Katoro Township, and there were no observed sensitive habitats.

2.9.3 Socio-economic Environment

g) Demographics

Nyamigota mtaa has a population of 4345 people – 2,002 male and 2,343 female.

h) Livelihood

Employment is mainly from agriculture which is the source of income for the community around, however, trade is booming as Katoro is growing fast. Main economic activities are agriculture, livestock production and small-scale manufacturing.

i) Energy

The Geita district receives electricity from Sengerema (33kv) that serves Geita district only, at the proposed AC site there is national grid power supply at 1 km from the site.

j) Land Tenure

The proposed site for the AC in Nyamigota, has a total of 8.85 Ha, and the land is owned by the Katoro Township Authority. Adjacent to the proposed site are agricultural farmlands, and settlements.

Figure 2-16: Proposed Nyamigota AC site

k) Water Supply

Majority of residents in Geita depend on Lake Victoria for provision of water. There are other sources of water including rivers, streams, shallow wells, bore holes, rainwater harvesting and springs.

l) Waste Management and Sanitation

Most solid wastes originate from domestic activities and agricultural wastes which mostly are organic. The common method for disposing includes burning and burying. Most wastewater in Nyamigota district is disposed onsite using pit latrines, ventilated improved pit latrines and septic tanks. There are no sewage systems within the district.

m) Ethnicity

The population in Nyamigota ward include the mixture of tribes of the Wasukuma, Wasumbwa, Wazinza and Waha.

n) Archaeological and Historical Sites

There were no observed archeological or historical sites in the proposed AC site and in the entire Nyamigota ward.

2.10 IKUNGULYASUBI AGGREGATION CENTRE

Ikungulyasubi aggregation centre is located in Maswa district in Simiyu Region. Maswa District is bordered to the north by Magu District and Itilima District, to the east by the Meatu District, to the south by the Kishapu District, and to the west by the Kwimba District (Mwanza region) its administrative centre is the town of Maswa.

2.10.1 Physical Environment

a) Geology and Topography

The topography of the region is characterized with ridged and undulating type.

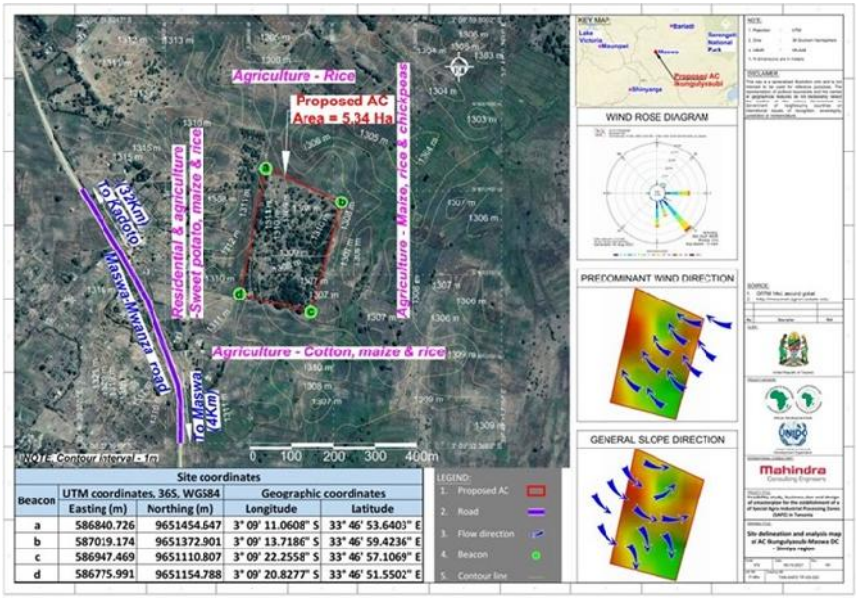


Figure 2-17: Proposed Ikungulyasubi AC

b) Climate

The climate of Maswa district is characteried by low and unreliable rainfall ranging from 700mm to 800mm per annum. This climatic condition favours cultivation of paddy rice. Other crops grown in this area includes maize, sorghum, and cotton. The area is also famous for livestock keeping. The average temperature is 21°C, and much of the district's land is devoid of trees and grass due to slash for agriculture and many livestock per area thus making the land less fertile.

c) Soils

Its soil texture consists of black clay loamy soil which is suitable for paddy growing.

2.10.2 Biological Environment

d) Flora

Ikungulyasubi AC the site is generally flat with native tree species of thorny acacia and scattered shrub bushes. No sensitive areas within the site or around except for seasonal wetlands for rice cultivation. The site was once a forest reserve before change of land use by the District Council.

e) Fauna

There is Maswa game reserve which has Wildebeest, buffalo, elephant, lion, leopard, roan antelope, Coke's hartebeest, East African impala, Thomson and Robert's gazelle, zebra, dik dik, baboon, eland, warthog, topi and hyena. At Ikungulyasubi AC there is no wildlife animals.

f) Protected Areas and Sensitive Habitats

There is no sensitive areas within the site or around except for seasonal wetlands for rice cultivation.

2.10.3 Socio-economic Environment

g) Demographics

Current estimated population at the district level is 344,125.

h) Livelihood

More than 92% of the population of Maswa District is engaged in agricultural and pastoral activities. Other economic activities are small businesses including selling of cash crops – cotton, paddy, sunflower, and lentils. Near the proposed site there are agricultural farms for rice, cotton, maize, lentils, sweet potatoes, and sunflower.

i) Education

The district has a total of 123 Primary Schools, of which 2 are private schools and 121 are public schools and are managed by the District Council. There are 51 secondary schools, of which 4 are private schools. There is a community development college 1 Malampaka Folk Development College (FDC) and a BINZA VTC Vocational College managed by the Council, there is also the Maswa College of Medicine which is managed by the Ministry of Health.

j) Energy

Grid electricity services are available in 23 villages along with the district headquarters. In addition, through the Rural Electricity Scheme (REA) Maswa District has a total of 82 villages that are in the grid. In the proposed Ikungulyasubi site, electrical infrastructure is near at 200m, however, households near the site do not have electricity.

k) Land Tenure

The proposed site for the AC in Ikungulyasubi village has a total of 5.35 Acres, the land is owned by Maswa district council. Adjacent to the proposed site are agricultural farmlands.

Figure 2-18: Ikungulyasubi proposed site

l) Water Supply

In Maswa district, water supply is available 80% for urban residents and 56 percent for rural residents. The water sources that supply this service are 670 shallow wells, 36 deep wells, 80 boreholes, and 4 tap water schemes. The Maswa Urban Water and Sanitation Authority (MAUWASA) provides water services in Maswa town and 9 villages, 65,000 residents have access to water out of the target of providing services to 7,000 residents. Ikungulyasubi village has no water sources, the available water source is 3km from the site. The water source available is constructed solar dam (Nzanzui dam) 10km from the site.

m) Markets

Maswa District has 12 large traders, 250 medium traders and 1,159 small traders. The total number of traders is 1,421. The trades taking place include the buying and selling of livestock and its products, agricultural products, transport and transportation, finance trade, communications, and food. There are 18 markets out of these 6 built and 12 non-built markets.

The district has 6 small cotton processing factories, 5 sunflower oil processing machines, 2 cotton seed oil and 189 grinding and milling machines, other industrial activities include carpentry, metallurgy and sewing.

n) Transportation

Maswa District has a total of 1,043.98 km of roads out of which 302.27 km of gravel and 741.71 km of soil. Highway km 555.1, Regional Roads 204 km, District Roads km 213.4, Urban roads 64.88 km, Rural roads 640.6 km, 57 bridges and 377 carvings. Roads are generally 55% passable throughout the year. At Ikungulyasubi Village the proposed site is almost 500m from the main road. The district is well connected by road thus facilitating ease of transport to and from the district. There is a railway station (Malampaka) which connects commercial capital of Dar es Salaam to Mwanza. There are two air strips in the district.

o) Waste Management and Sanitation

In Ikungulyasubi village, domestic wastes from settlements form majority of waste. The common method for disposing includes burning and burying. During site visit, inappropriate solid waste management was observed as shown below. There is no

sewage system at the village nor within the district. Wastewater is disposed onsite using pit latrines, and ventilated improved pit latrines.

Figure 2-19: Inappropriate dumping within Ikungulyasubi proposed AC

p) Gender Issues

The district has 695 women productive groups with an average of 5 people per group. These groups are engaged in agriculture and animal husbandry, small business, tailoring, weaving and pottery, bricklaying, construction, and disability as well as bodaboda operations).

q) Ethnicity

In the Ikungulyasubi Village main Farmers are Nyantuzu, and Livestock Keepers are Sukuma tribes.

r) Archaeological and Historical Sites

There are no archaeological and historical site at the proposed AC site.

2.11 KISENGI AGGREGATION CENTRE

Kisengi aggregation centre is located in Kisengi ward in Uyui district in Tabora Region.

2.11.1 Physical environment

a) Geology and Topography

Tabora region is located in mid-western part of Tanzania on the central plateau between latitude 40 - 70 South and longitude 310 - 340 East and bordered by six regions. Most of the region lies within an altitude of between 1,000 and 1,500 metres above sea level.

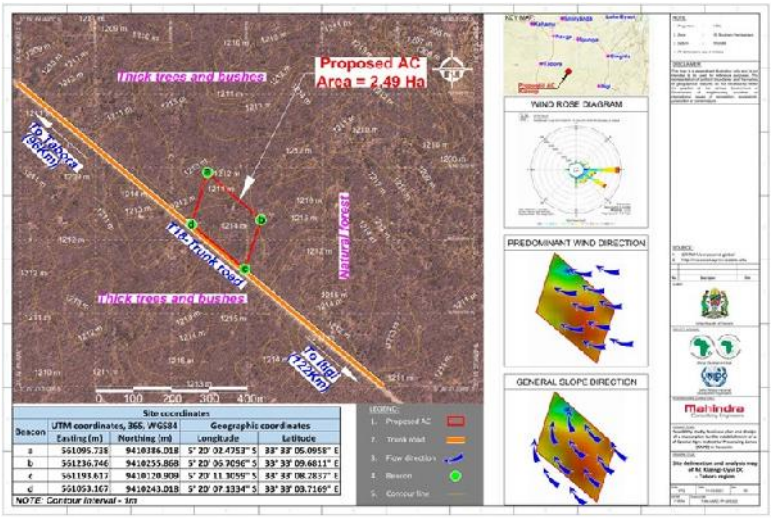


Figure 2-20: Proposed Kisengi AC

b) Climate

Tabora Region has a warm climate with temperatures reaching their peak in September – October just before the onset of the rainy season. The daily mean temperature is around 230C. The region experiences an average annual maximum temperature of 28 °C and an average annual minimum temperature of 17°C.

c) Hydrology

The region in the north-east corner bordes the Manonga River and Wembere Plains in the east. Annual precipitation is between 700 millimetres in the east to 850 millimetres in the west.

d) Soils

Soils vary from reddish sandy loams on the top of the ridges through grey sandy loams down to heavy black alluvial soils on the flood plains.

2.11.2 Biological Environment

e) Flora

The vegetation on the better-drained areas is composed of Brachystegia– Jubernadian woodland with an undercover of grassland composed mainly of Hyperrhenia with Echinocloa on river and lake edges.

Adjacent to the proposed site is a natural forest cover. The land has a fairly even terrain and is covered by thick trees and bushes. Since the site is surrounded by the forest, local authorities suggest that the agroforest products should directly cater to the APH.

Figure 2-21: Showing Kisengi proposed AC

f) Fauna

Wildlife resources found in Tabora Region are extensive; they include wild animals such as giraffe, elephant, lions, leopards, duma, snakes, and variety of birds.

g) Protected Areas and Sensitive Habitats

There is an approximate 39,547 square kilometres of conservation forest area, which is about fifty-two per cent (52%) of the forest area, mostly miombo type of trees.

2.11.3 Socio-economic Environment

h) Demographics

The population of Tabora Region in 2019 was 2,974,427 while that of Uyui district was 510,675 people.

i) Livelihood

Agricultural sector is dominated by peasantry farming. Main food crops grown are maize, paddy rice, millet, cassava, sweet potatoes, and beans, while cash crops are tobacco, cotton, sunflower, groundnuts, and oil palms Other economic activities are natural resources, mining, commercial activities, and employment in the public and private sectors. Infrastructure, social services, and administration.

j) Land use and land cover

Tabora Region has an area of 75,685 square kilometres, representing eight per cent (8%) of the total land area of Tanzania Mainland. A total area of 75,173 square kilometres is dry land, whereby 15,856 square kilometres (20.9%) of land are potential for agriculture; 39,547 square kilometres (52.3%) are forest reserves and grazing area; 19,770 square kilometres (26.1%) are for human settlements, while 512 square kilometres (0.7%) are covered with water

k) Land tenure

The proposed site for the AC in Kisengi has a total area of 6.2 Acres and the land is owned by the Kisengi Village council.

l) Health Care

There are about 319 health care facilities of which 10 are hospitals, 25 are health centres and 284 are dispensaries. There is also a blood bank facility at Kitete Regional Referral Hospital as well as several pharmacies offering a wide range of essential and non-essential drugs located mostly in urban centres.

m) Education

Universities with physical presence in the region include Open University of Tanzania (OUT) and Archbishop Mihayo University College of Tabora (AMUCTA). Other colleges include Tumbi Agriculture Research Centre, Ardhi Institute, Beekeeping Training Institute, Tanzania Public Service College, Vocational Education and Training Authority (VETA) and Tabora Teachers Training College.

n) Energy

Tabora Region is connected to the national power grid, which assures investors and other stakeholders' access to a reliable source of electricity. Tanzania Electric Supply Company (TANESCO) is the main transmitter and distributor of electricity in Tabora Region. The Rural Energy Agency (REA) has been contracted to supply electricity in the rural areas. So far 339 villages out of 696 villages have been connected to the national grid.

o) Water Supply

The current supply of water does not meet the demand of the regional population: rural water supply is at thirty-four per cent (34%), while in urban centres, including Tabora Municipality is at fifty per cent (50%). There is an on-going Lake Victoria Project whose first phase will involve bringing water to Nzega, Igunga and Tabora townships, while phase two will bring water to Sikonge and Urambo/Kaliua district councils.

p) Solid Waste and Wastewater

There are no settlements at close proximity to the proposed site. Currently there are no solid waste producers in the proposed area since it is surrounded by the forest cover, however, the expected solid waste from the AC includes those of the agricultural products, and organic wastes from domestic activities. There is no sewage system in the proposed area, further no wastewater is currently produced as settlements are far from the proposed site.

q) Markets

In terms of markets, investors will access domestic markets, regional markets in Eastern and southern Africa (in both EAC and SADC markets) and the export markets abroad in the European Union, the United States, the growing Asian economies of China and India, and in the Middle East.

r) Transportation

There are tarmac roads connecting Tabora Region with other regions of Mwanza through Shinyanga, Arusha through Singida and Manyara and Kagera. There is an on-going construction project for a 85.4-kilometre road from Nyahua to Chaya, connecting with Dodoma via Manyoni District and a 108-kilometre road from Usesula to Komanga;

a 251-kilometre road from Komanga to Kasinde connecting with Katavi Region via Sikonge District and a 28-kilometre road from Urambo to Kaliua, connecting with Kigoma Region. The remaining road network within the region is passable throughout the year. Tabora Region is now assured of safe road transport by using a vehicle tracking system.

The region is also a hub for railway transport: linking with Mpanda to the south, Kigoma to the west, Shinyanga/Mwanza to the north and Manyoni-Dodoma- Morogoro-Dar-es-Salaam to the eastern side.

The region is well served by Tabora Airport. The airport was conceived to service domestic flights, but it links well with the international flights from Songwe Airport, Kigoma Airport and through Dar-es-Salaam and directly to Mwanza Airport.

s) Ethinicity

The largest ethnic group (tribe) in the region is Wanyamwezi, followed by Wasukuma, Waha, Wanyiramba and a few refugees from the neighbouring country of Burundi, who added to the population of Tabora Region.

t) Archeological sites and historical sites

There are no archeologial and/or historical sites at the proposed AC site.

2.12 KINDAI AGGREGATION CENTRE

Kindai aggregation centre is located in Singida municipal council within Singida region.

2.12.1 Physical Environment

a) Geology and Topography

Singida Region is located below the equator between latitudes 3052' and 7034' longitudes, and between longitudes 33027'and 350 26'east of Greenwich. To the north, it shares borders with Shinyanga, Simiyu, Arusha and Manyara regions; to the east it borders Dodoma Region; to the south, it shares borders with Iringa and Mbeya regions while on the west it borders Tabora Region.

Singida Region occupies the northern part of the central plateau of Tanzania, which has elevations ranging from 1,200 metres to 1,500 metres above sea level. Surrounding the region on all sides, except the south-eastern boundary, is a major scarp of up to 180 metres high, which is the eastern part of the Great Rift Valley.

A prominent feature of the land escarpment in Iramba and Singida districts is the massive outcrop or rocky peaks of granite and metamorphic rocks. These outcrops, alternatively known as inselbergs, are remnants of ancient land surfaces which, in the adjacent areas, have been eroded to form an extensive gently undulating peneplain.

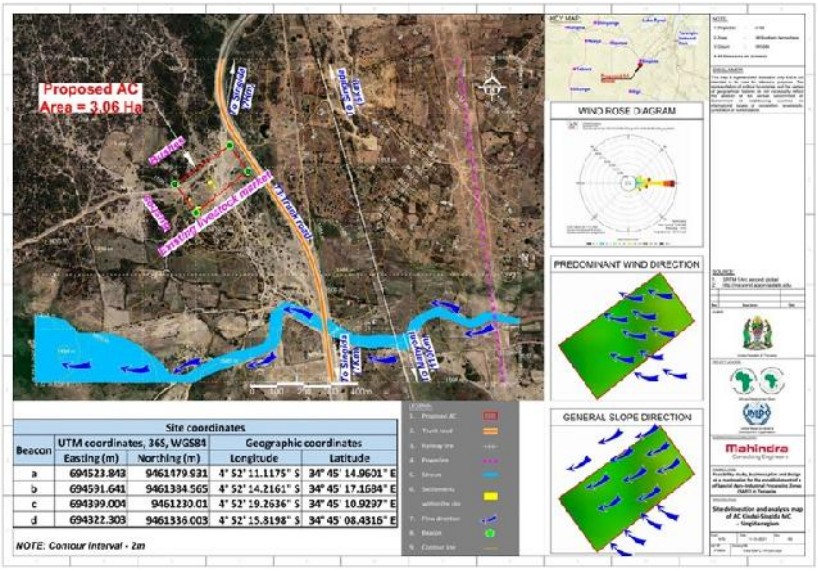


Figure 2-22: Proposed Kindai AC

b) Climate

The region forms part of the semi-arid central zone of Tanzania that experiences low rainfall and short rainy seasons, which are often erratic, with fairly widespread drought once every four years. Total rainfall ranges from 500 mm to 800 mm per annum with high geographical and seasonal variations. There are two seasons: the short rainy season during the months of December to March (and sometimes up to April) and the long dry season from April/May to November.

c) Soils

There are two major superficial geological deposits, namely alluviums, which are comprised of sandy soil, and clay scattered throughout the region and often cover very extensive areas of the Wembere Steppe and the Bahi Swamp. Concretionary banded limestone and less frequently silica are often developed below shallow “mbuga”.

2.12.2 Biological Environment

d) Flora

Types of vegetation found in the region include bush or thickets in uplands. There is also wetland vegetation that includes wooded grassland. Bushland vegetation is the most common vegetation in Iramba and Central Singida districts (Ilongero/Mgori). Wetland vegetation is found in wetter “mbuga” that are invariably flooded for long periods during the wet season within areas of wooded grassland and on the edge of swamp vegetation.

e) Fauna

No wildlife animals but hyenas are reported to be present in the shrub bushes.

f) Protected Areas and Sensitive Habitats

There is no protected area and/or sensitive habitat in the proposed site.

2.12.3 Socio-economic Environment

g) Demographics

Singida Region has experienced a significant population growth since 2002. The region's population has increased from 1,086,748 people in 2002 to 1,370,637 people in 2012, with a population growth rate of 2.3 percent. In 2012, the population of Singida municipal council was 150,379.

h) Livelihood

About 90% of the population in Singida depend on agriculture for income generation, major food crops grown include sorghum, bulrush millet, finger millet, sweet potatoes, cassava, maize, and legumes. Major cash crops include sunflower, onions, cotton, simsim and honey. Sunflower being the leading cash crop, followed by onions which are highly produced in the region. The second large activities that the population is engaged is livestock keeping of cattles, goats, sheep, poultry, and pigs.

i) Land use and Land Cover

Singida Region has a total surface area of 49,438 square kilometres out of which 95.5 square kilometres or 0.19 percent is covered by water bodies of Lake Eyasi, Lake Kitangiri, Lake Singidani, Lake Kindai and other small natural lakes. The remaining 49,342.5 square kilometres is land area and occupies about 5.6 percent of the Tanzania Mainland's total area of 885,987 square kilometres.

j) Land Tenure

The proposed site for the AC in Kindai has a total area of 7.6 Acres, and the land is owned by the Kindai village council.

k) Health Care

By 2018, the region had 9 hospitals, 18 health centres and 206 dispensaries.

l) Education

There are 555 primary schools and 164 secondary schools in Singida Region. There are two Universities, namely the Open University of Tanzania (OUT) and Tanzania Institute of Accountancy. There are also technical colleges, teachers' training colleges, VETA-registered training centres and folk development colleges (FDC).

m) Energy

Singida Region uses various sources of energy including hydroelectricity, gas (especially cooking gas), paraffin, and firewood and there are great potentials of producing wind as well as solar power. The region is served by a 220 kV power system linking it to the national power grid.

n) Water Supply

Availability and supply of adequate clean and safe water for the residents of the Singida Region is very important. In 2018 about 49.3 percent of the population in the region was served with clean water: 696,569 people (48.6%) in rural areas and 98,257 people (61.3%) in urban centres.

o) Transportation

Singida Region's total road network was 7326.88 kilometres in 2019, out of which 510.77 kilometres were tarmac roads, 2,168.45 gravel, and 4,647.66 were earth roads. Most of rural areas are well connected with roads passable throughout the year. Singida Region is traversed by the Central Railway Line of the Tanzania Railways Corporation passing East-West through Manyoni District.

There is only one airport in the region, which is located in Singida Municipality. In addition, there are 19 airstrips scattered in four districts to serve district non- scheduled air traffic for medical, tourist and other services.

p) Waste Management and Sanitation

The solid waste generated close to the proposed site comes from the local livestock market. Most wastewater in Kindai village is disposed onsite and being treated onsite using pit latrines, and ventilated improved pit latrines. There are no sewage systems at the village nor within the district.

Figure 2-23: Livestock market building adjacent to the proposed AC

q) Ethinicity

The main ethnic groups are the Wanyaturu, Wanyiramba, Wasukuma, and Wagogo. Others who form significant minorities are the Wanyisanzu, Wakimbu and the Wasangu.

r) Archaeological and Historical Sites

There are no archeologial and/or historical sites at the proposed AC site.

2.13 BUKOKWA FISH AGGREGATION CENTRE

Bukokwa fish aggregation centre is located in Buchosha district in Geita region.

2.13.1 Physical Environment

a) Geology and Topography

Buchosha is on southern parts of Lake Victoria, about 1200 - 1,400 metres above sea level; and lies between latitudes 1030' and 300' South of the Equator and between longitudes 31045' and 34010' East of Greenwich.

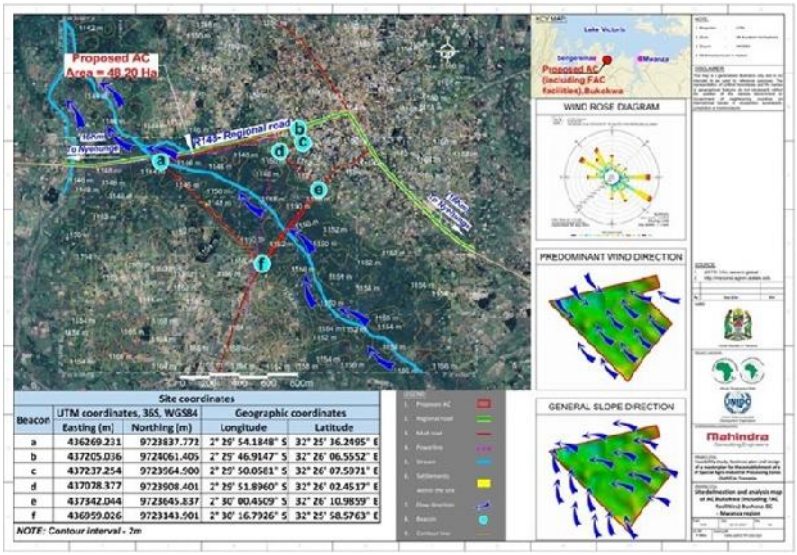


Figure 2-24: Proposed Buchosha FAC

b) Climate

Most parts of the region experience a bimodal rainfall pattern, getting short rains from October to December and long rains between March and May, with an average annual rainfall of 930 mm; the highest being in Ukerewe islands at 1,200 mm and the lowest of about 700 mm in the Southern and South-eastern parts of the Region. The temperature, mostly influenced by Lake Victoria waters, is between 250C and 280C from September to December and between 11^{o}C and 20^{o}C from June to August.

c) Hydrology

The region is served by the Lake Victoria basin which shares the boundary with Internal Drainage Basin while in South west direction shares the boundary with Lake Tanganyika basin. The basin has a surface area of 68,800km^2.

d) Soils

The soils vary from sand or sandy- loam to sand-clay or loom-clay texture “mbuga soil”.

2.13.2 Biological Environment

e) Flora

The vegetation cover is typically savannah with scattered tall trees and tall grass.


Figure 2-25: Existing situation in the proposed site

f) Fauna

The vast majority of animals that may be found in Mwanza include those of wildlife found in the forests such as velvet monkeys, wild cats, zebra, rock hyrax, De braza monkeys and over 40 species of animals, others include those of livestock agriculture such as cattle's, pigs, sheep, and goats.

g) Protected Areas and Sensitive Habitats

Mwanza has 25 natural forest reserves totalling 129,621 Ha and tree planted forests that of Rubya and Buhindi with a total area of 14,510 Ha. The natural forest reserves are of two types, those under central government, which are located in Sengerema and those under local government i.e district councils, and wards.

2.13.3 Socio-economic Environment

h) Demographics

According to 2012 national census, Buchosa District Council had a population of 327,767 populations – 163,796 females and 163,971 males. Buchosa District Council has 60,698 households; the average household size of Buchosa District Council is 5.4.

i) Livelihood

The economy of Mwanza region is dependent on agricultural sector, which is dominated by subsistence farming undertaken by small holder peasants, the main food crops include maize, cassava, paddy, sweet potatoes, and sorghum. Cash crops grown in the region include, cotton, cassava, paddy. Buchosa is regarded as the main producer of horticulture products such as vegetables and fruits in the region, with surplus exported to other regions such as Dar es Salaam.

Figure 2-26: Livestock holding ground adjacent to the proposed FAC

j) Land use and Land Cover

The Council covers an area of 6,657 square kilometers, out of which 81.9% is water of Lake Victoria and 19.1% is the dry land composed of mainland and 31 Islands and forest reserve.

k) Land Tenure

The proposed site has a total of 48.5 Ha, and the land is owned by the village government. Adjacent to the proposed site are agricultural farmlands, settlements, and livestock holding grounds. The site has a gentle flat terrain.

l) Health Care

There are almost 20 government health facilities and 22 private hospitals that operate in Mwanza region.

m) Energy

The district is connected to the national grid system, in the major towns, and minor towns and settlements. Other energy sources include solar energy, and the fossil fuels such as use of diesel generators, and kerosine for lighting.

n) Transportation

The region can easily be accessed by different modes; roads, train, water and air from all the major cities of the East African Community. Air transport system from Mwanza airport receives directly international flights, but so far most are cargo planes. The region link via road with Shinyanga, Singida, Dodoma and Morogoro; and roads linking it to Kisumu and Nairobi; and another one linking to Kagera and other towns in Uganda and Rwanda.

Mwanza region is also served by the central line railway system that connects Mwanza with Tabora, Kigoma and Dar es Salaam. The system has been earmarked for major overhaul and will be replaced with the standard gauge railway (SGR). There is also a seamless mode of transport from a new dry port at Fella, Misungwi. Marine transportation is also available which takes cargo and passengers to Kagera, Geita and Mara regions well as lake ports in Kenya and Uganda.

o) Waste Management and Sanitation

Solid waste is generally from domestic activities and agricultural and fishing activities. The waste is usually managed through burning and burying as there is no designated landfilling area. There is no sewage system at the village nor within the district. Most wastewater in Bukokwa village is disposed onsite using pit latrines, and ventilated improved pit latrines. The waste generated near the proposed site are predominantly from the existing livestock

p) Ethinicity

The major ethnic group in Mwanza is the Sukuma which constitute over 90% of the population. Other ethinic groups include those of the Zinza, Haya, Sumbwa, Luo, Nyamwezi, Kurya, Jita, Shashi and the Kerewe.

q) Archaeological and Historical Sites

There are no archeologial and/or historical sites at the proposed AC site.

3 PROJECT DESCRIPTION

3.1 INTRODUCTION

This Chapter provides a description of the proposed Project related activities and ancillary infrastructure. The Project Description formed the Terms of reference for specialist studies and for the Impact Assessments provided in Chapter 5.

The Agro-industrial Development Program is a comprehensive program that is geared towards creating an enabling environment in which the private sector, young men and women will be capacitated to undertake agricultural value additions activities along the entire value chain ecosystem. The latter is expected to improve program beneficiaries' income level as well as addressing the youth unemployment challenge. The Government of the United Republic of Tanzania (URT) is among the countries on the African continent that expressed strong interest in participating in the agro-industrialization development through Special Agro-industrial Processing Zones and requested Bank's support for financing.

The main objective of the proposed SAPZ in Tanzania is to support structural transformation of Tanzanian economy through agro-industrialisation with a view to increasing production and productivity, adding value, improving household income, generating employment, and increasing domestic consumption and exports. Specifically, the program will support the establishment of the integrated Lake Zone Special Agro-industrial Processing Zone comprising:

i) a main agro processing hub (APH) located in Shinyanga;
ii) three major agricultural transformation centres (ATCs) tentatively located in Geita, Tabora and Mwanza regions; and
iii) a network of eleven (11) Aggregation centres (ACs) and Fish Aggregation Centres (FACs) to be located in the procurement zones around the ATCs.

3.2 PROJECT LOCATION

The construction of ACs and FAC will be implemented in the following locations:

Table 3-1: Project Location

S/N	Region	District	Village	AC / FAC
1	Tabora	Uyui	Kisengi	Kisengi AC
2	Geita	Nyang'wale	Nyang'wale	Nyang'wale AC
		Bukombe	Nyamigota	Nyamigota AC
3	Simiyu	Maswa	Ikungulyasubi	Ikungulyasubi AC
		Bariadi	Dutwa / Igaganurwa	Dutwa AC
4	Mwanza	Buchosha	Bukokwa	Bukokwa FAC
5	Mara	Bunda	Masahunga/Songambele A	Masahunga FAC
		Bunda Town	Makongeni and Tairo villages	Bunda AC
6	Singida	Singida Municipal	Kindai Mtaa	Kindai AC
7	Kagera	Biharamulo	Lusahunga	Lusahunga AC
8	Shinyanga	Msalala	Bulige	Bulige AC

3.3 PROJECT SIZE

The proposed ACs and FACs will be developed on the land covering the following size:

Table 3-2 Project size

Project site	Location (district / region)	Size
Lusahunga AC	Biharamulo district / Kagera region	5.45 ha
Masahunga FAC	Bunda district / Mara region	2.94 Ha
Bunda AC	Bunda Town / Mara region	872 Ha
Dutwa ac	Bariadi district / Simiyu region	1.27 Ha
Ikungulyasubi AC	Maswa district council / Simiyu region	5.35 Acres
Nyang'wale AC	Nyangwale district / Geita region	2.81 Ha
Bulige AC	Msalala district / Shinyanga region	5.4 Acres
Kisengi AC	Uyui district / Tabora region	6.2 Acres
Kindai AC	Iguguno ward / Singida region	7.6 Acres
Bukokwa FAC	Buchosha district / Mwanza region	48.5 Ha
Nyamigota AC	Geita district / Geita region	**3.85 A**

3.4. PROJECT DESIGN (COMPONENTS AND ACTIVITIES)

The proposed project will have 4 components including; development of infrastructure for agro-industrialization; Value chain development, Capacity Building, community resilience and land management; Policy and institution arrangements, Investment Promotion and marketing; and project management and coordination. The infrastructure development related component will include a PPP arrangement during implementation. Discussions will continue with the government regarding the exact nature of the PPP, and final options will be firmed up during appraisal in line with the country existing PPP policy.

Component	Component Description	Mode of development
Component 1: Development of infrastructure for agro-industrialization	1.1 Offsite infrastructure development • Offsite connectivity: Road/ Water/ Telecom/Power connectivity to APH, ATC, AC and FAC through the designated nodal agencies. • Rehabilitation of infrastructure linking APH, ATCs, ACs, and FACs: Fish landing centers, abattoirs and existing meat factories	Fully public and financed by the project
	1.2 Development within APH, ATCs, ACs, and FACs • *Construction of climate-resilient general infrastructure (horizontal)* - Site grading, boundary wall and fencing, road, surface drainage with CD works, sewerage/effluent network, STP/ETP and treated water distribution, gas distribution network, solid waste management, water	**PPP approach** : SPV finance required: Debt: 36.75 mUSD, Equity: 24.5m.USD of which 6.5 million USD (26%) would be provided by the Government.

	treatment plant, potable & non-potable water supply, power supply & energy efficiency, dedicated sub-station with feeder station and backup power for critical areas, Wi-Fi connection and telecommunication, rainwater harvesting, summer storage, greenery & sustainability infrastructure, signage, walkways, street lighting interspersed with conventional & eco-friendly solar power systems, dedicated security system and fire detection & firefighting systems in critical areas, safety, security, disaster management, early warning system, and automatic vehicle & traffic monitoring system, environmental monitoring system including air quality and emissions, sewage, effluent, solid waste, water etc., and ICT & SCADA monitoring system. • *Ready built factories within APH* suitable to the needs of the select targeted industries who prefer plug-n-play facilities • *Specialized infrastructure within APH and ATC* (vertical infrastructure common to all units) - one Stop Shop (single window for approvals and facilitation), QA & QC lab, warehousing facilities, agri-logistics, Agri input & equipment center, R&D, market intelligence cell, admin block capacity building & training facilities, multi-chamber cold storage, boiler, chiller & compressor, Centre of Excellence (CoE), zone-specific infrastructure, demo farms, centralized processing centers, and IQF facilities. • *Social amenities within APH* (vertical infrastructure common to all units) - residential, commercial spaces, restaurants & cafeterias, health care centers, mini dispensary, and first aid, school, creche & nursing mother's room, and place of worship Development of AC and FAC specific infrastructure	**Option 1:** Govt will provide 26% of the required equity (6.5 million USD) and may also provide debt to lower the cost of finance. **Option 2:** DBOT
Component 2: Value chain development, Capacity Building, community	<u>2.1 Support to production, productivity and the development of agricultural value chains</u> • Modernization of agricultural production (extension services,	Fully public and financed by the project

resilience and land management	improved input supplies, research and development, irrigation systems) • Development of Agro-industrialization capabilities focusing on fisheries and livestock value chains • Commercialization and value chain coordination for key staples and export commodities (domestic & international market linkages, identification and traceability, chain of custody and certification) • Support to financial intermediations and business incubation hubs to support SMEs led by women and youth <u>2.2 Capacity building, TVET skill development and community resilience</u> • Enhance access to market and trade facilitation policies for Agro-industrialization clusters including legal and regulatory frameworks. • Capacity building and skills development for Agro-industrialization clusters through specific value chains for youth and women, provision of training and mentorship programs to promote technical and entrepreneurship skills development • Design and Implementation of E-wallet Framework including (i) identification, e-registration and mapping of key value chain actors through the E-wallet technology, and (ii) linkage and service provision to various value chain actors through E-Wallet technology and others • Job Creation - Fostering partnerships for innovation and technology transfer (promote high-tech cultivation, precision farming, farm mechanization and technology transfers for value addition and processing) • Enhance access to market and trade facilitation policies for Agro-industrialization clusters including legal and regulatory frameworks. • Capacity building & skills improvement for Agro-industrialization clusters and value chains among farmers, youth and women, entrepreneurship training, strengthen out grower models, capacity building of actors in selected agricultural value chains, promote	

	high-tech cultivation, precision farming, farm mechanisation and technology transfers for value addition and processing • Fostering partnerships for innovation and technology transfer • Protect agriculture land by developing land use maps around ATCs and ACs that allocated the catchment areas for agriculture • Implementation of mitigation measures for E&S safeguards, including ESMP, RAP, PMP and their compliance audits.	
Component 3: Policy Support, Investment Promotion and marketing	<u>3.1. Support to the establishment and strengthening of the policy, legal and institutional framework governing the Lake Zone SAPZ</u> • Review and harmonization of incentives schemes with EAC/AFCFTA • Enhance marketing and trade facilitation policies for Agro-industrialization clusters including legal and regulatory frameworks. <u>3.2 Attracting private investments in SAPZ implementation and agroprocessing</u> • Investment promotion and market sounding activities for the identification of the private developer • PPP Transaction support: Technical and legal advisory services during negotiations with the private developer • Branding, marketing, roadshows, private sector attraction, meetings and anchor development/tenant identification, investment promotion tools and dockets for the attraction of tenant companies and awareness raising regarding the Lake Zone SAPZ	Fully public and financed by the project
Component 4: Project Management and Coordination	<u>4.1 Support the establishment of structures required for project implementation coordination</u> • Establish and equip the Project Coordination Unit (PCU) • Governance System – Project Steering Committee • Operationalize a project monitoring and evaluation framework • Implement a knowledge management system • Install a Financial management system and procurement system	Fully public and financed by the project

5.5. PROPOSED PROJECT ACTIVITIES

The project will involve various activity phases, starting from the planning phase to construction and operation phases. Each specific phase has its respective activities outlined in the sections below:

Pre-Construction Phase

During the pre-construction, the main activities to be conducted include:

- Site selection
- Detailed feasibility study
- Engineering and detailed design and layout;
- Environmental and Social Impact Assessment;
- Acquisition of various permits/licences/certificates.

This phase will involve the preparation of tender documents and upon completion of the bidding documents, tenders will be floated to find the credible road Project contractor. This stage will also involve mobilization of the construction human resources, construction equipment and plant, construction materials and erection of workers' camps.

Construction Phase

The following are the main on-site activities to be executed during the construction phase of crop aggregation centres:

- Site clearance; including removal of natural vegetation and trees and any buildings in the construction site;
- Earthwork activities such as clearing of site access road, excavation for the preparation of construction of building infrastructure, and drainage system;
- Construction of the main aggregation centre building comprising of loading areas, generator room, office space and meeting room, electrical room, main storage area and dry storage area, toilet facilities, packing areas, and livestock pens. The centre will be constructed in a well-maintained and clean site that is easily accessible;
- Construction of rainwater harvesting system for the building
- Construction of boundary wall and fencing of the site
- Construction of parking facilities for loading / off-loading trucks and other vehicles. There will be enough room for vehicles (either motorized or man-powered) to turn around in a loading /off-loading zone
- Construction of a raised foundation to avoid flooding or runoff seeping through the floor

- The aggregation center center will be constructed in a well-drained site preferably away from the flood plain
- Establishment of power supply and energy efficiency – a generator room will be constructed within the main building to provide back-up power supply;
- Street lighting interspersed with conventional and eco-friendly solar power systems. This will allow for good, natural light and well-ventilated walls
- Plastered surface to seal cracks and make it more difficult for pests to find hiding spots
- Site clean-up and rehabilitation of cleared areas.

The following are the main on-site activities to be executed during the construction phase of fish aggregation centres

- Site clearance; including removal of natural vegetation and trees and any buildings in the construction site;
- Earthwork activities such as clearing of site access road, excavation for the preparation of construction of building infrastructure, and drainage system;
- Construction of the main fish aggregation centre building comprising of loading areas, generator room, office space and meeting room, electrical room, main storage area, toilet facilities, and packing areas. The centre will be constructed in a well-maintained and clean site that is easily accessible
- Construction of a raised foundation to avoid flooding or runoff seeping through the floor
- The fish aggregation center will be constructed in a well-drained site preferably away from the flood plain
- Construction of rainwater harvesting system for the building
- Construction of boundary wall and fencing of the site
- Construction of parking facilities for loading / off-loading trucks and other vehicles. There will be enough room for vehicles (either motorized or man-powered) to turn around in a loading /off-loading zone
- Construction of concrete / wooden platform for initial fish sorting activities.
- Site clean-up and rehabilitation of cleared areas.

Waste management

At this stage, wastes (solid, liquid, and gaseous) will be generated from construction of camps. The staff camp like any other domestic place will generate garbage, packaging, sacks, papers, cardboard boxes, plastic, wood crates, bottles, glass, metal cans and the like. Such wastes will need to be segregated for recycling or incinerating at site.

Construction Team

The Project proponent will procure a Contractor responsible for all construction activities. The Contractor will be supervised by a team of Supervising Consultant or Client Representative, on behalf of the Government (Special Purpose Vehicle). Temporary Construction camp will be established near or within the site.

Construction Materials

In order to support the construction of AC structures, various construction materials of will be used. The materials will be of different quantities and standards. The construction will use different materials such as sand, cement, aggregates, gravel, and steel bars. The exact quantities of the materials have not yet been determined. Majority of the materials will be procured within the country, however, due to demand for quantity and quality, some of the materials will be imported.

Local Supplies and Services

The supply of essential services and products such as food, medical services, fuel, water etc will be locally. The suppliers of these services will be sourced locally while some such as fuel providers can be sourced from local fuel stations. The local food vendors will be encouraged to provide food to construction workers. Medical services will be from nearby dispensaries, health centres or at the Regional Hospitals in the eight (8) regions of Tabora, Geita, Simiyu, Mwanza, Mara, Singida, Kagera, and Shinyanga.

Storage

All construction materials will be stored as soon as they arrive at the construction site. There will be a dedicated onsite storage for storing all materials and efforts will be used to reduce pilling up, particularly for sand and cement.

Operational Phase

The activities that are expected to be executed in aggregation centres during this phase include;

- Transportation activities – smallholder farmers and their cooperatives will transport their products to the aggregation centres with consignment details, for example, number of bags, estimated weight of each bag, total weigh of the consignment, collection point details and details of the crop being transported (name of crop, variety and year of produce);
- Proper stacking of commodities to enable easy inspection and pest control and pest management;
- Collection and stitching of collection bags. The common bags that will be used are natural fiber bags normally woven from sisal and polypropylene/plastic bags. The bags will not be overfilled to avoid burst once they are stacked together;

- Organisation of collection bags to allow for multiple commodities being stored in same facility;
- Inspection of bags for wear and tear, as well as for signs of insects, insects and mold before storage. Bags used in previous seasons will be washed and disinfected, then thoroughly dried;
- Manual handling of stored bags from in the storage and loading areas;
- Establishment of a storage management system – general cleanliness, good recordkeeping and quality control of agricultural products stored before the products are transferred to the ATCs;
- Establishment of an easily available accurate weighing, logging, and inventory verification system;
- Measurement of moisture content in the stored products to ensure there is no heating which leads to growth of molds, bacteria, or fungi;
- Transportation of stored agriculture products from aggregation centres aggregation centres to ATCs;
- Establishment of an environmental monitoring system for monitoring air quality and emissions, sewage, effluent, solid waste, water etc;
- Regular fumigation of storage facilities to reduce the risk of aflatoxin;
- Regular cleaning of the storage area to make sure that it is clear of any rubbish and grass to remove possible hiding places for rodents and other pests within the storage areas;
- Procurement of a dedicated security system and establishment of fire detection and firefighting systems in critical areas within the site; and
- Development of a safety, security, disaster management, and early warning system

Solid Waste Management

Ongoing activities in the aggregation centres will result to the following waste generation:

- Domestic waste generated through human activities such as food waste, waste from sanitaty activities such as sweeping, etc
- Waste from housekeeping activities such as garden waste: leaves, branches, plants;
- Agricultural waste generated through sorting and grading activities through the sieve platforms. The dust, broken grain and other foreign matter will drop down through the holes in the sieve.
-

The collected solid waste will be designated to a nearby solid waste dumping site. Currently, the projected waste to be generated has not been established in the proposed sites.

Water supply

Due to limited water supply in the existing Project locations, the Project will drill and use deep water wells. The water will be treated water supply adopting to both national and global standards with sufficient quantity. A water supply distribution network will be set up to supply both portable and non-portable water in the ACs. Furthermore, a rainwater harvesting system will be established in the AC structures for storing rainwater. Currently, the water demand has not been established.

Wastewater

In all proposed sites there is no sewage system. The Project proposes onsite wastewater management system using pit latrines. The amount of wastewater to be generated by the proposed Project has not yet been determined.

Stormwater

A stormwater drainage system will be established to manage flooding in the proposed sites.

i. Activities to be executed in fish aggregation centres during this phase involve the following:

- Transportation of the catch to the fish aggregation centres indicating the size of the catch, and details of the catch (fish species, date of the catch, etc);
- Inspection, washing, sorting, grading, and butchering of the harvested fish;
- Sorting of the catch by size, species and different times they were caught since they are at different stages of spoilage;
- Establishment of multi-chamber cold storage for chilling the catch in order to preserve the quality of the fish by bringing down the temperature near to $0^{o}C$ as quickly as possible;
- Establishment of a storage management system – general cleanliness, good recordkeeping and quality control of fish products stored before the products are transferred to the ATCs;
- The catch will be placed in the cartons for freezing which are plate frozen. The frozen catch will then be packed in boxes / cartons and stored in cold rooms waiting for dispatch to the ATCs for further processing;
- Manual handling of fish boxes / cartons – lifting boxes of fishes and repetitive cutting operations)
- Establishment of an environmental monitoring system for monitoring air quality, sewage, effluent, solid waste, water etc;
- Establishment of wastewater management system – wastewater will be generated through activities such as fish unloading, equipment sprays, offal

transportation and facility cleaning. Wastewater will also be generated through butchering of the fish involving the removal of nonedible portions such as the viscera, head, tail, and fins. Further, wastewater will be generated from cleaning of containers used for the transportation of fish. Chlorinated water will be used for cleaning activities. The wastewater will be channel into the onsite wastewater management system;

- Solid waste management – domestic waste generated through human activities such as food waste, waste from sanitaty activities such as sweeping, etc. Other waste generated will be from fish dressing as part of butchering.
- Procurement of a dedicated security system and establishment of fire detection and firefighting systems in critical areas within the site; and

Development of a safety, security, disaster management, and early warning system

4 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

4.1 POLICY OVERVIEW

The operation of the AC, APH, FAC and has to comply with Tanzania's national policies and legislations since they are being implemented in Tanzania. Policy frameworks are relevant in providing a broad spectrum of guidelines for environmental management activities in the sector. A legal and regulatory framework is essential for providing mandate, allocating specific responsibility and accountability to key actors and stakeholders, and prescribes and enforces specific operating environmental procedures and standards. The institutional framework is required to develop policies, guidelines, and plans; to ensure compliance with laws and regulations; and to monitor, review and adapt policies, plans and regulations in the light of experience.

This chapter describes and assesses the compliance of sector policies and legislation which are relevant to environmental and social issues relevant to the operation of the special Agro-industrial processing zones AC, FAC, and APH. Therefore, the developer should comply with number of cross sector policies and legislations relevant to this project

4.1.1 National Environmental Policy of 1997

The document seeks to provide the framework for making the fundamental changes needed to bring consideration of the environment into the mainstream of the decision-making processes in the country. The policy requires that industrial development, including agricultural processing activities be done in a way that it does not compromise the environmental integrity. The National Environmental Policy (NEP) stipulates that the chosen technologies should be environmentally sound, socially acceptable and economically viable. It calls for a systematic form of environmental impact assessment, as an integrated approach for the attainment of solutions to perceived or reveal environmental problems, and for identifying the best alternatives for achieving the same developmental goals. NEP states that Tanzania is committed to sustainable development in the short, medium, and long-term.

For the Special Agro-Industrial Processing zones project, Section 46 of the policy focuses to ensure food security and eradication of rural poverty through the promotion of production systems, technologies and practices that are environmentally sound. The section also advocates for (a) the soil erosion control and soil fertility improvements, (b) intensification and diversification of agricultural production. Section 60 also advocates for preservation of environment in the fishing sector and providing nutrition to people and enhancing their income through fish sales (IX) advises on integrated fish farming methods and other environmentally beneficial means of tapping the productivity of the environment through fish farming shall be pursued.

4.1.2 National Land Policy of 1997

The National Land Policy states that, "the overall aim of a National Land Policy is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad - based social and economic development without upsetting or endangering the ecological balance of the environment". This EIA responds to envisaged policy requirement.

4.1.3 National Agricultural Policy of 2013

The objective of the policy is to develop an efficient, competitive, and profitable agricultural industry that contributes to the improvement of the livelihoods of Tanzanians and attainment of broad-based economic growth and poverty alleviation. The policy highlights the challenges facing the agricultural sector in Tanzania and opportunities that would lead to increased production and productivity if utilized effectively. Related to this project, one of the key challenges facing the sector is poor infrastructure. The project in a success scenario, will promote the expansion of domestic, regional, and international market opportunities for various agricultural commodities through safe, fast, reliable, and cost-effective movement of agricultural products between markets. In addition, it will promote the growth of agribusinesses and medium to large-scale farms and hence the increase in rural jobs market.

4.1.4 Fisheries Policy of 2015

The policy seeks to develop a robust, competitive, and efficient fisheries sector that contributes to food security and nutrition, growth of the national economy and improvement of the wellbeing of fisheries stakeholder whole conserving the environment. The policy seeks to address fishery resource management, utilization and marketing controls, aquaculture development, aquatic environmental protection as well as Regional and International Cooperation.

Other key issues that the policy seeks to focus includes scaling commercial aquaculture; aquatic animal diseases, processing and marketing in the domestic and specifically foreign markets which require compliance to international quality and standards requirements; this project answers the challenge of accessing international markets through the establishment of the APH. The policy also recognizes cross cutting issues such as environment that the sustainable utilization of environmental resources are important in the development of fishery sector.

4.1.5 Small and Medium Enterprises Development Policy of 2003

The Policy seeks to promote job creation and income generation by promoting the creation of new SMEs and improve the performance and competitiveness of the existing ones. It also proposes to strengthen institutions and associations involved in SME development; increase the capacity of institutions providing business training to SMEs; ensures environmental considerations are part of SME development; and ensure gender is streamlined into SME development initiatives.

4.1.6 National Livestock Policy of 2006

The rationale of the National Livestock Policy is to commercialize the industry and stimulate its development while conserving the environment. The aim is to support the livelihoods of livestock farmers through increased incomes and self-sufficiency in food of animal origin and thus addressing the goals set in the National Strategy for Growth and Reduction of Poverty (NSGRP) of 2004. There are several pastoralists that use the proposed area for crossing their livestock. The proposed project will have both benefits and impacts on the livestock sector and therefore this policy becomes relevant.

4.1.7 National Food Security and Nutrition Policy of 1992

The policy seeks to provide a guideline and coordinate the implementation of various food and nutrition programmes in the country. It provides guidelines and techniques to combat food and nutrition problems; to incorporate food and nutrition considerations in country's development plans and allocate available resources towards solving the problem of food and nutrition at all levels. The implementation of Tanzania SAPZ will play an important part in promoting the country's food security and nutrition development.

4.1.8 National Investment Promotion Policy of 1997

The policy seeks to promote favourable conditions for investors in the country through the Tanzania Investment Centre (TIC). It promotes investors interests, incentive framework, dispute settlement mechanisms, technology transfer, etc. It encourages inflow of external resources for promoting national economic growth; and promotes export orientation on domestic production of goods and services to enhance the country's export sector. The Policy is promoting investment opportunities that the private sector can take up and increase economic growth. The Investment Promotion Policy outlines areas and conditions for investment and comes as a result of the economic liberalization program that promotes the role of the private sector in economic activities in Tanzania. The Policy encourages private sector investments whilst also considering environmental consideration to ensure investments yield the expected benefits.

4.1.9 National Trade Policy of 2003

The Policy seeks to transform the economy of the country from a supply-constrained one into a competitive export-led entity responsive to enhanced domestic integration and wider participation in the global economy. The policy specifies the need to stimulate the development and growth of trade through enhancing competitiveness aiming at rapid socio-economic development.

4.1.10 Wildlife Policy of 2007

It promotes the conservation of the biological diversity, involving all stakeholders in wildlife conservation and sustainable utilization as well as in fair and equitable sharing of benefits. The proposed project does not cross areas with wild animals but it pass through areas with urban vegetation in which there are small animals. Therefore, the requirements of this policy will be observed fully in sensitizing the contractors' employees to avoid causing any injury to any animal (if any) during execution of the project.

4.1.11 National Forest Policy of 1998

The national forest policy is based on macro-economic, environmental, and social framework. Its overall aim is to manage Tanzania's forest resources as a national heritage on an integrated and sustainable basis to optimize their environmental, economic, social, and cultural values. The policy drives towards implementing the directives contained in the National Environmental Policy (1997) in regard with forest resources management. The project does not cover forest areas. The forest policy advocates for a permit and directs the conduct of EIA for development projects that will

affect forest reserves including services crossing them. The permit requirement is applicable for private Project developers but does not apply to the Projects carried out by the Government. Government's obligation is limited with consulting to the relevant authority and conduct ESIA.

4.1.12 National Construction Industry Policy of 2003

Among the major objectives of the policy, which supports a sustainable building development sector, include the promotion and application of cost effective and innovative technologies and practices to support socio-economic development activities such as buildings, roadworks, water supply, sanitation, shelter delivery and income generating activities and to ensure application of practices, technologies and products which are not harmful to either the environment or human health. Proposed project construction of aggregation centres adheres to the principle.

4.1.13 National Energy Policy of 2003

This policy outlines to adopt clean technology and minimize pollution in developing the energy sector in the country. It emphasises utilization of the natural energy resources such as water, gas, coal, petroleum, and wind in a sustainable and environmentally friendly way. Furthermore, the policy states that energy is prerequisite for the proper function of all sub-sectors of the economy and it is an essential service whose availability and quality can determine the success or failure of development plans.

4.1.14 National Gender Policy of 2002

The key objective of this policy is to provide guidelines that will ensure that gender sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing strategies to eradicate poverty, it puts emphasis on gender quality and equal opportunity of both men and women to participate in development undertakings and to value the roleplayed by each member of society. The construction and operation al phase of the project will employ both men and women hence this policy requirement are applicable.

4.1.15 National Water Policy of 2002

The main objective of the National Water Policy of 2002 is to develop a comprehensive framework for sustainable development and management of the nation's water resources and putting in place an effective legal and institutional framework for its implementation. The policy seeks to ensure that water plays an important role in poverty alleviation. The Policy expounds on the importance of water for domestic use, agriculture, livestock keeping, mining, energy, fisheries, environment, human health, wildlife and tourism, forestry, navigation and trans-boundary requirements. The project will use water for various activities and will ensure the sustainable use and management of water including the enhancement of water resources management within the project influence area.

4.1.16 National Health Policy of 2003

The Health Policy is aimed at improving the health status of all people wherever they are, in urban and rural areas, by reducing mobility and mortality and raising life expectancy. Good health, i.e. physical, mental and social wellbeing, is a major resource and economic development. Relevant section of the policy include Part IV which deals with primary health care in which the policy advocates for community involvement and provision of health education in order to prevent occurrences of disease. Part V elaborates the health service delivery structure from national to village level. The policy encourages safe basic hygienic practices in workplaces, promotes sound use of water, promotes construction of latrines and their use, encourage maintenance of clean environment; working environment which are conducive to satisfactory work performance. The policy puts more emphasis on workers protection against all health hazards which occur in industries. It is the responsibility of the management to offer medical and preventive health services to their employees. The project is expected to contribute significantly to the objectives of this policy as it will enhance accessibility.

4.1.17 Cultural Heritage Policy of 2008

Key elements of the policy include the following:

- Defines the roles and responsibilities of different cultural heritage stakeholders;
- An analysis of the ways in which cultural heritage activities are managed and administered by the government;
- Clarifies measures by which cultural heritage resources will be protected, managed, preserved, conserved, and developed; and
- An analysis of best practices for conducting research and conservation of cultural heritage resources.

4.1.18 National Policy on HIV/AIDS of 2001

The policy identifies HIV/AIDS as a global disaster, hence requiring concerted and unprecedented initiative at national and global levels. It recognizes HIV/AIDS as an impediment to development in all sectors, in terms of social and economic development with serious and direct implication on social services and welfare. Thus, the policy recognizes the linkage between poverty and HIV/AIDS, as the poor section of the society are the most vulnerable. The project can be a precursor of incidents of HIV/AIDS due to the high influx of people into the project area to seek for jobs and income. To contribute towards observing the objectives of the National Policy on HIV/AIDS, the project Contractor will have to implement HIV/AIDS programme aimed at promoting awareness of HIV/AIDS among its employees and communities.

4.1.19 National Employment Policy of 1997

The policy also identifies strategies for exploiting existing wealth, especially in sectors dealing with Industry and trade, Agriculture and livestock, Fisheries, Service sector and small-scale mining. On top of that, it identifies special groups that require special treatment while seeking employment and proposes responsibilities of different authorities to deal with different aspects of the policy. The project is expected to provide employment to local people during construction and operation and therefore it adheres with this policy.

4.1.20 National Youth Development Policy of 1996

The Policy seeks to empower, facilitate, and guide youth and other stakeholders in the implementation of youth development issues. The SAPZ will focus on create job opportunities among the youth and the targeted benefits and contributions at all levels of the sector employment shall be analysed keeping the considerations of the policy in mind.

4.1.21 Community Development Policy of 1997

The policy puts in place measures that enables communities to realise their potential through wise utilisation of natural resources. Although there are many sections that are relevant to the project, sections 15 and 16 elaborate on the objectives of the policy. Since land is a resource that is mainly depended upon by local communities for their development, losing land may have severe consequences on community development.

4.2 LEGAL FRAMEWORK

4.2.1 Environmental Management Act No. 20 of (2004), Cap. 191

The Environmental Management Act (EMA) is an umbrella law on environmental management in Tanzania. This major legislation oversees the overall management of the environment in the country. Its enactment repealed the National Environment Management Council Act. 19 of (1983) while providing for the continued existence of the National Environment Management Council (NEMC). Section 81, (2) state that an Environmental Impact Assessment study shall be carried out prior to the commencement or financing of a project or undertaking. It is supported by a number of regulations that provide guidance on the implementation of the Act. The project will comply with EMA directives by following the EMA requirements and related regulations and standards. This project has complied with this provision by carrying out this ESIA study.

4.2.2 The Land Act No. 4 of 1999 and the Village Land Act No. 5 of 1999

The existing land ownership system has a history of more than forty years. At present the Land Act (1999) and the Village Land Act (1999) provide guidance to land ownership in Tanzania. The laws vest all land in the President and grant occupancy rights to individuals, legal persons, and territorial communities. The President holds land in trust for all citizens and can acquire land for public use and benefit, for instance, to resettle people from densely populated areas to sparsely populated areas, settle refugees and so forth. The President can also acquire land for other national projects, like construction of strategic agriculture development infrastructures. The project has not identified any obstacle within the proposed sites, however, in the event of resettlement of people and their properties; the project is committed to follow the whole process of valuation and compensation in alignment with the requirements of this law.

4.2.3 The Water Resources Management Act No. 11 of 2009

The Act provides the institutional and legal framework for sustainable management and development of water resources; outlines principles for water resources management; for prevention and control of water pollution; and provides for participation of stakeholders and the public in implementation of the National Water Policy. Water demand for the Project is anticipated to be extensive for construction, dust suppression and for use in the works camps, although appropriate permits will be obtained, and their conditions met for water used by the Project.

4.2.4 The Public Health Act of 2009

This Act provide for the promotion, preservation and maintenance of public health with the view to ensuring the provision of comprehensive, functional and sustainable public health services to the general public and to provide for other related matters. Section 54 of this law states that "A person shall not cause or suffer from nuisance, likely to be injurious or dangerous to health, existing on land, premises, air or water". The EIA study has taken into consideration the potential impacts that the Project may have on the public health and the appropriate mitigations have been outlined.

4.2.5 The HIV and AIDS (Prevention and Control) Act of 2008

This Act provides for the prevention, treatment, care, support and control of HIV/AIDS, for promotion of public health in relation to HIV/AIDS; appropriate treatment, care and support using available resources to people living with or at risk of HIV/AIDS and to provide for related matters. The law provides for public education and programmes on HIV and AIDS. Section 8(1) of the law states that “The Ministry (Health), health practitioners, workers in the public and private sectors and NGOs shall for the purpose of providing HIV and AIDS education to the public, disseminate information regarding HIV and AIDS to the public”. Furthermore, Section 9 states that “Every employer in consultation with the Ministry (Health) shall establish and coordinate a workplace programme on HIV and AIDS for employees under his control and such programmes shall include provision of gender responsive HIV and AIDS educationdistribution of condoms and support to people living with HIV/AIDS”. PMO will develop and implement an HIV/AIDS policy and information document for all workers directly related to the Project.

4.2.6 Land Use Planning Act of 2009

The Act provides for the procedures for the preparation, administration, and enforcement of land use plans; to repeal the National Land Use Planning Commissioning Act and to provide for related matters. Among the objectives of the Act as given in Section 4 are to facilitate the orderly management of land use and to promote sustainable land use practices.

4.2.7 Occupational Safety and Health Act of 2003

This Act makes provisions for the safety, health, and welfare of persons at work in factories and all other places of work. It is geared to protection of human health from occupational hazards. It specifically requires the employer to ensure the safety of workers by providing safety gear at the workplace. Relevant sections of the ordinance

to the project activities include Part IV which deals with general health provision, such as provision of regular medical examination of employees; Safe means of access and safe working place, prevention of fire etc.; and Part V on health and welfare provisions, which includes provision of supply of clean and safe water to workers, sanitary convenience, washing facilities and first aid facility. Section 50 deals with fire prevention issues. The EIA has taken into consideration the potential for occupational health issues associated with the Project and appropriate mitigation measures have been outlined in this report. The project will contractually oblige its contractors and suppliers to adhere to the Act.

4.2.8 Local Government Laws (Miscellaneous Amendment) Act of 2006

The Act gives authority to local governments to regulate matters that are local. A pertinent example of such authority to the project is that the local government may opt to regulate extraction of minerals or building material, through their by-laws. The project traverses a number of districts in Singida, Tabora, Simiyu, Shinyanga, Geita, Kagera, Mwanza and Mara. The project will ensure compliance with the relevant local government requirements during throughout project life cycle.

4.2.9 The Standards Act No. 2 of 2009

An Act to provide for the promotion of the standardization of specifications of commodities and services, to re-establish the Tanzania Bureau of Standards (TBS) and to provide better provisions for the functions, management, and control of the Bureau, to repeal the standards Act, Cap.130 and to provide for other related matters. This act is relevant to this project as the quality of the products to be imported by Contractor during construction will have to abide to the standards set by TBS.

4.2.10 Forest Act No. 14 of 2002

This Act deals with the protection of forests and forest products in forest reserves and the restrictions and prohibitions in forest reserves. requires that for any development including mining development, and construction of building within a Forest Reserve, Private Forest or Sensitive Forest, the proponent must prepare an Environmental Impact Assessment for submission to the Director of Forestry. The law also requires licences or permits for certain activities undertaken within the national or local forest reserves, such as, among others, felling or removing trees, harvesting forest produce, entering a forest reserve for the purpose of tourism or camping, mining activities, occupation or residence within the reserve, cultivation, erecting any structures. No forests exist along the proposed project area, but the requirements of protecting the trees even the forests outside the project will be observed.

4.2.11 Regional and District Act No 9 of 1997

The Act provides for Regional Commissioners to oversee Regional Secretariats, with District Commissioners directly supervising the District Councils. Local authorities oversee the local planning processes, including establishing local environmental policies. The National Environmental Policy establishes a policy committee on Environment at Regional level chaired by the Regional Commissioner, mirrored by environmental committee at all lower levels, i.e. at the District, Division, Ward and Village or Mtaa Councils.

4.2.12 Mining Act No 4 of 2010

This Act states that “building material” includes all forms of rock, stones, gravel, sand, clay, volcanic ash or cinder, or other minerals being used for the construction of buildings, roads, dams, aerodromes, or similar works but does not include gypsum, limestone being burned to produce lime, or material used for the manufacture of cement. This act make sure minerals are well controlled and Section 6(1) states that "no person shall, on or in any land to which this act refers, prospect for minerals or carry-on mining operations except under the authority of Mineral Right granted, or deemed to have been granted under this Act." The project shall apply for relevant mining permits before starting sand, gravel and/or other mining activities. Where these materials are sourced from suppliers, the project will ensure that they are licensed and compliant prior to using their services.

4.2.13 The Land Acquisition Act of 1967

Compensation as may be agreed upon or determined in accordance with the provisions of the Act. The Act stipulates that no compensation shall be awarded in respect of land, which is vacant ground, or to be limited to the value of the unexhausted improvement of the land in case the development of the land is deemed in adequate. The Act defines the circumstances in which public interest could be invoked, e.g., for exclusive government use, public use, for or in connection with sanitary improvement of any kind or in connection with laying out any new municipality, district, township or minor settlement or extension or improvement of any existing city. Other purposes are in connection with development of any airfield, port or harbour; mining for minerals or oils; for use by the community or corporation within community; for use by any person or group of persons as the President may decide to grant them such land. The acquisition of the land for the public use as well as for the resettlement sites is within the provision of this Act. Further the Act specifies other requirements prior to the acquisition of the land such as investigation for the land to be taken, issuing notice of intention to take land and mode in which notices will be served. It further defines the requirements for and restrictions on compensation.

PMO is observing this requirement and has already consulted the landowners in respective areas through the public meetings and it is expected that compensation for the affected persons will be paid accordingly and the notice for taking land will be issued as early as possible.

4.2.14 Wildlife Conservation Act No 5/09 of 2009

This Act establishes Wildlife Protected Areas, Wildlife Management Areas and Species Management Areas. It also makes a declaration of protected species and Tanzania’s duty to abide by international obligations with regard to species afforded protection through international laws and treaties.

The prime purpose of this Act are:

1. To make better provisions for the conservation, management, protection and sustainable utilization of wildlife and wildlife products
2. To repeal the Wildlife Conservation Act Cap. 283 and
3. To provide for other related matters

Section 74 of the Act states that "A human activity, settlement or any other development that will adversely affect wildlife shall not be permitted within five hundred meters from the wildlife protected area borderline without the permission of the Director."

The EIA will consider the extent to which the Project will interact with species that are afforded protection through international laws and treaties. The project through its contractors will comply with the requirements of this Act where applicable.

4.2.15 Employment and Labour Relations Act No. 6 of 2004

The Act makes provisions for core labour rights; establishes basic employment standards, provides a framework for collective bargaining; and provides for the prevention and settlement of disputes. The act provides fundamental rights and protection e.g. prohibition of Child Labour, forced labour and discrimination in the workplace. It also sets employment standards. The Project shall ensure that recruitment and human resources aspects of the project are adheres to employment standards and requirements set out in this Act.

4.2.16 Public-Private Partnership (PPP) Act of 2010

The Act seeks to ensure fair, equitable, transparent, competitive, and cost-effective procurement processes for PPPs in the country; to ensure PPPs are procured through a competitive bidding process; create an enabling environment, including special incentives, to attract PPPs; and ensure there are efficient and sustainable PPPs for the delivery of reliable and affordable socio-economic goods and services.

4.2.17 Special Economic Zone Act of 2012

The Act establishes Special Economic Zones (SEZ) to enhance productivity, competitiveness, economic growth, export promotion, employment generation for poverty eradication. The Act also seeks to create an environment for attraction of local and foreign investment; and facilitate the expansion of employment opportunities, and attainment of economic growth targets. The Act establishes the Export Processing Zones Authority (EPZA) which shall be responsible for issuance of license to any person who wishes to carry business or other activities in the SEZ.

4.2.18 Engineers Registration Act and its Amendments 1997 and 2007

The Act regulates the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). The Law require any foreigner engineer to register with ERB before practicing in the country. Foreign engineers working with this Project shall abide to the law requirements. PMO will ensure compliance with this requirement during the recruitment of engineers for Project implementation whenever necessary.

4.2.19 The Contractors Registration Act of 1997

The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in practice. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. PMO will ensure

compliance with the requirements of this Act during the recruitment of contractors for Project implementation.

4.3 RELEVANT REGULATIONS AND GUIDELINES

4.3.1 The Tanzania 2025 Development Vision

The National Vision 2025 foresees the alleviation of widespread poverty through improved socio- economic opportunities, good governance, attain good governance through the rule of law and develop a strong and competitive economy. Establishment and operation of this project (SAPZ) contributes into the processes of achieving the goals of this vision through increasing production and productivity, adding value to agricultural products, increasing household income, generating employment, and increasing domestic consumption and exports. Specific targets include:

1. A high-quality livelihood characterized by sustainable and shared growth (equity), and freedom from abject poverty in a democratic environment. Specifically, the Vision aims at: food self-sufficiency and security, universal primary education and extension of tertiary education, gender equality, universal access to primary health care, 75% reduction in infant and maternal mortality rates, universal access to safe water, increased life expectancy, and absence of abject poverty, a well-educated and learning society.
2. Good governance and the rule of law moral and cultural uprightness, adherence to the rule of law, elimination of corruption.
3. A strong and competitive economy capable of producing sustainable growth and shared benefits a diversified and semi-industrialized economy, macro-economic stability, a growth rate of 8% per annum, adequate level of physical infrastructure, an active and competitive player in regional and global markets.

4.3.2 National Strategy for Growth and Reduction of Poverty (2005)

One of NSGRP objective is to improve the quality of life and social wellbeing. The Strategy reaffirms that infrastructure development is at the centre stage of economic development process. Functioning infrastructure reduces cost of doing business, attracts private investment, enables production and service delivery, links markets, and helps sustain improvement of the quality of life through redistribution of wealth. Infrastructure augments factors of production in enhancing economic growth by increasing the productivity of labour and capital thereby raising profitability, production, income and employment. Thus, critical infrastructures (including aggregation centres) will continue to be priority areas for rapid economic growth and development. The strategy will also ensure that the health facilities are improved and accessible and drugs are made available throughout the year (NSGRP, 2003).

4.3.3 Environmental Impact Assessment and Auditing Regulations (2018)

These regulations set procedures for conducting EIA and environmental audit in the country. The regulations also require EIA and environmental audits to be undertaken by registered EIA and audit experts respectively.

4.3.4 The Environmental Management (Air Quality Standards) Regulations, 2007

The objectives of these regulations are to set baseline parameters on air quality and emissions and enforce minimum air quality standards. They are also meant to help developers including industrialists to keep abreast with environmentally friendly technologies and ensure that the public health as well as the environment is protected from various air pollution emissions sources. These Regulations stipulate the role and powers of the National Environmental Standards Committee. According to the regulations, the approval of a permit for emission of air pollutants shall be guided by ambient, receptor, emission and specification standards approved by the Minister. Offences and penalties for contraveners are also provided for in the regulations. Emission limits of sulphur and nitrogen dioxides, carbon monoxide, lead, ozone, black smoke and suspended particulate matter together with their test methods are specified. Tolerance limits and test methods for dust, sulphur dioxide and nitrogen oxides from cement factories into the air as well as from motor vehicles are also given.

4.3.5 The Environmental Management (Water Quality Standards) Regulations of 2007

The regulations is to enforce minimum water quality standards prescribed by the National Environmental Standards Committee, enable the National Environmental Standards Committee to determine water usages for purposes of establishing environmental quality standards and values for each usage and ensure all discharges of pollutants take into considerations the ability of the receiving water to accommodate contaminants for protection of human health and conservation of marine and aquatic environments.

The regulations give NEMC the power to designate main water polluting activities for which prior grant of permit must be obtain from the Council. It can be observed from the regulations that, the NEMC plays a crucial role in water quality compliance and enforcement. Recording and reporting requirements, offences, and penalties for non-compliance as well as how appeals against aggrieved decisions should be handled are stipulated.

4.3.6 Solid Waste Management Regulations, 2009 GN. NO. 263

The regulation has been made under section 114, 115, 116, 117, 118, 119, 120, 121, 122 and 230 of Environmental Management Act, 2004. These regulations apply to all matter pertaining to solid waste management. They aimed among other things at setting standard for permit to dispose solid waste and license to own or operate solid waste disposal site.

4.3.7 The Environmental Management Regulations (Hazardous Waste Control), 2009

These regulations have been made under section 110(4) and (5), 128, 133 (4), 135 and 130 of the Environmental Management Act, 2004. These regulations apply to all categories of hazardous waste and from generation, storage, disposal and their movement into and out of mainland Tanzania. These regulations require that any person dealing with hazardous waste in Tanzania be guided by following principles of environment and sustainable development:

- The precautionary principle
- Polluter pays principle, and
- The producer extended responsibility

4.3.8 Environmental Management (Soil quality standards) Regulations (2007)

These Regulations require the project proponent:

- To comply with soil quality standards that may be prescribed by the National Environmental Standards Committee (Part II, Section 5).
- To abstain from polluting soils (Part III, Section 15)
- To abstain from discharging hazardous, waste, materials, and chemicals on
- soils (Part III, Section 16)

4.3.9 Environmental management (Quality Standards for Control of Noise and Vibration Pollution) Regulations (2011)

These Regulations require the project proponent to:

- Make or cause to be made any loud, unreasonable, unnecessary, or unusual noise that annoys, disturbs, injures, or endangers the comfort, repose, health or safety of others and that of the environment (Part III, Section 6).
- Use the best practicable means to ensure that the emission of noise from that machinery, facility or premises does not exceed the permissible noise levels as specified in Schedule 1 (Part V, Section 8).

4.3.10 Environmental Management (Fees and Charges) (amendment) Regulations (2018)

These Regulations require the project proponent to pay prescribed fees and charges that NEMC is mandated to impose on the developer.

4.3.11 Land (Assessment of the Value of Land for Compensation) Regulations, 2001

These regulations provide criteria for the assessment of compensation on land, as per market value for real property; disturbance allowance is calculated as a percentage of market value of the acquired assets over twelve months; and transport allowance calculated at the cost of 12 tons hauled over a distance not exceeding 20 km. The other criteria include loss of profit on accommodation based on business audited accounts and accommodation allowance equivalent to the rent of the acquired property per month over a 36-month period.

4.4 AFRICAN DEVELOPMENT BANK ENVIRONMENTAL AND SOCIAL GUIDELINE AND POLICIES

As a multilateral development bank, AfDB has joined the other international financing institutions in adopting environmental and social policies, guidelines, and procedures to ensure that its operations avoid adverse impacts on people and the environment.

Operational Safeguards (OS)

The Bank selected the Operational Safeguards (OSs) for inclusion in the AfDB Integrated Safeguards Systems (ISS).

There are five OSs whose aim is to achieve the goals and optimal functioning of the ISS.

1. Operation Safeguard 1: Environmental and Social Assessment: it is for determining projects environmental and social category and the resulting environmental and social assessment requirements.
2. Operation Safeguard 2: Involuntary Resettlement, Land Acquisition, Population Displacement and Compensation: this emphases policy commitments and requirements contained in the AfDB's policy on involuntary resettlement, and incorporate a number of refinements designed to improve the operational effectiveness of those requirements.
3. Operation Safeguard 3: Biodiversity and Ecosystem Services: this seeks to conserve biological diversity and promote the sustainable use of natural resources with a focus on integrated water resources management in operational requirements.
4. Operation Safeguard 4: Pollution prevention and control, hazardous materials and resource efficiency: this covers the range of key impacts of pollution, waste and hazardous materials for which there are agreed international conventions. Also, there are comprehensive industry-specific and regional standards, including greenhouse gas accounting. There is new screening tool for climate change risk that helps in screening and categorizing a projecting term of its vulnerability to the risks of climate change.
5. Operation Safeguard 5: Labour conditions, health, and safety: this relates to workers conditions, rights and protection from abuse or exploitation.

4.4.1 Assessment of the AfDB Operational Safeguards Triggered

Table 4-1 below presents the operation safeguards that and triggering status in relation to the proposed.

Table 4-1: Applicable AfDB's Operational Safeguards Policies in the Proposed Project

Operational Safeguards (OS)	Triggered?	Description
OS.1: Environmental and Social Assessment.	**YES**	As per design, the ACs are part of the larger APH infrastructure which falls into category 1, hence, ESIA and a plan for managing environmental and social issues (ESMP) is critical.
OS.2: Involuntary Resettlement, Land Acquisition, Population Displacement and Compensation.	**NO**	Feasibility study conducted and the Verification conducted on the suitability of proposed sites belongs to the Government of Tanzania, hence no land take and compensation is required. Resettlement Action Plan is not required.

Operational Safeguards (OS)	Triggered?	Description
OS3: Biodiversity and Ecosystem Services.	**No**	ACs are to be developed away from natural or sensitive / critical habitats and ecosystems.
OS.4: Pollution prevention and control, Greenhouse Gases, Hazardous Materials and Resource Efficiency	**YES**	Although ACs will not handle hazardous materials and other pollutants. The residual impacts of the APH, associated with the ACs will have potential impacts to the surrounding environment and health if applicable environmental standards are not met during the phases of the APH.
OS.5: Labour conditions, health, and safety.	**YES**	The construction and operation and even decommissioning of the ACs, ATC and APH will entail recruitments of temporary and permanent workers, skilled and semi-skilled. Therefore, compliance to occupational, health and safety issues is critical to the project.

Source: Adopted from AfDB, 2018 with amendments

5 PROJECT ALTERNATIVES

5.1 ANALYSIS OF PROJECT ALTERNATIVES

The EIA procedure stipulates that an environmental investigation needs to identify main project alternatives for any proposed development. Therefore, it is required that several possible proposals or alternatives for accomplishing the same objectives be considered. In principle, these should include an analysis of the location, timing, input and design alternative as well as the Do- Nothing option.

5.2 NO PROJECT ALTERNATIVE

The no-action alternative (i.e. no construct & operation of the ACs) suggests that the identified environmental, social and economic impacts would not occur. Hence, the direct and indirect economic and social benefits that should be accrued by the local communities, the region and by extension the nation through the project implementation including increased agro-industrialization, social and economic empowerment of rural agricultural communities, food security, decentralization of infrastructural development, logistics and processing, establishment of regional agricultural hubs, expansion of financial institutions, job opportunities and reduced poverty would not be realized. Henceforth, without the Project, many Tanzanians will continue to live in abject poverty and hunger with the presence of abundant natural land resources available to cultivate for food crops and empower the fabric of the society which is ironical.

5.3 ALTERNATIVE FOR PROJECT LOCATION

Several alternatives for the proposed located were assessed to ensure that the location that guarantees environmentally and socially sound and sustainable implementation. The PMO office has designated the ACs, FAC, APH, and ATC area as its preferred location for the SAPZ project. It is understood that the preference for the SAPZ project sites are based on the aim to accelerate economic development in the respective districts of Biharamulo, Bunda, Bunda town council, Maswa, Bariadi, Uyui, Mkalama, Msalala, Nyag'hwale, Buchosa, and Geita district and Shinyanga region the APH.

5.4 DESIGN ALTERNATIVES

The potential site options and design that have been considered or recommended based on the feasibility analysis for SAPZ project. The economic objectives of the SAPZ project would make certain location more suitable and sustainable than others.

The potential make-up of the Buchanan SEZ may be broadly categorized into two types.

1. Outward-looking SAPZ: Such a project SEZ would aim to produce exports for the external market and generate foreign exchange earnings to improve Tanzania's economic balance. The outward-looking SAPZ project would rely on seamless trade connectivity and would therefore, likely be located in an area accessible.
2. Inward-looking SAPZ: Ths type of project for the SAPZ would serve the domestic market primarily, probably focusing on substituting imports to improve the national income. In this case, the locational decision is a logistics cost trade-off to reduce the transport and related costs of moving and handling raw materials versus similar costs for the finished goods produced.

6 POTENTIAL IMPACTS

6.1 INTRODUCTION

This chapter describes identification of potential environmental and social impacts of the proposed agro-industrialization development project through Special Agro-industrial Processing Zones.The prediction of positive and adverse impacts is based on the technical design described in chapter 2, including plans for environmental and social management, but without any mitigation measures.

On alternatives to the proposed project, the EIA procedure stipulates that an environmental investigation needs to identify main project alternatives for the proposed development. Therefore, it is required that several possible proposals and alternatives for accomplishing the same objectives be considered. In principle, these should include an analysis of the technology, location, timing, input and design alternatives as well as the do-nothing option. The objective of the project is to is to support structural transformation of Tanzanian economy through agro-industrialisation with a view to increasing production and productivity, adding value, household income, generating employment, and increasing domestic consumption and exports. Specifically in the lake zone regions including Shinyanga, Tabora, Geita, Simiyu, Mwanza, Mara, Singida and Kagera.

In view of the above requirement, it should be noted that during project development and subsequent stages of environmental assessment particularly the scoping exercise and later during detailed environmental impacts assessment, the investigation on site location alternatives was limited to the Project area. Any consideration of alternative project location would imply that new routes are investigated that would have serious consequences in terms of land acquisitions and compensations. However, under this chapter, considerations of project alternatives in terms of transport modes, designs and materials have been presented under section 6.3 of this report.

6.2 IMPACT IDENTIFICATION

The identified impacts have been grouped according to the phase of project development which includes construction, commissioning, operation contractor's demobilization and decommissioning phases. These impacts are linked to the project environment that they are likely to influence, i.e. the physical, biological and human environment. Hence, each impact is analysed in relation to the baseline conditions described in chapter 4.

***Table 6-1:*Definition of Impact Types**

Designation	Definition
Type	
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor (e.g., between occupation of a plot of land and the habitats which are affected).
Indirect	Impacts that follow on from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).

Cumulative	Impacts arising from the interaction of project components or activities with other activities of the past or those occurring simultaneously, or sequentially.
Extent	
Local	Impacts that affect an area in proximity to the development area within an area defined on a resource/receptor-specific basis.
National	Impacts occurring at a regional scale as determined by administrative boundaries or which affect regionally important resources or ecosystems.
International	Impacts that extend across international boundaries or affect resources such as features, resources or areas protected by international conventions.
Duration	
Temporary	Impacts are predicted to be of short duration (in the order of days) and/or intermittent/occasional.
Short term	Impacts that are predicted to last only for the duration of the construction period (i.e. – 8 years).
Medium term	Impacts that will continue for a period of 5 to 10 years following the completion of the construction phase e.g., where the impact may reverse or affected resources or receptors recover within this period of time.
Long term	Impacts that will continue for the life of the Project but will either cease when the Project stops operating or is decommissioned, or where the impact may reverse or the affected resource / receptor recovers or reverts to a near natural state after 10 or within 20 years following the completion of the construction phase.
Permanent	Impacts that cause a permanent change in the affected receptor or resource (e.g., removal or destruction of ecological habitat) that endures substantially beyond 20 years following the completion of the construction phase.

There are three main phases and activities involved in the execution of the proposed project, which include:

1. Pre-construction Phase;
2. Construction Phase; and
3. Operational Phases

The Development, implementation and operation of the Aggregation Centres Project would contribute to the creation of new jobs opportunities; capacity building; and skill transfer. Summary of potential impacts are summarised below.

6.2.1 Potential Impacts during Construction Phase and Operational Phase

Positive Impacts

1. Employment opportunities

The project anticipates providing direct employment in the ACPZ & other industrial raw material procurement zones including direct employment in agro-industrial zone, farming sector outside the ACs. The project will also provide indirect employment in primary, secondary and tertiary sectors including banks, logistics, insurance, manufacturing etc. of the Project Area of Influence.

The project is expected to provide employment and social livelihood opportunities in the short and long term during both construction and operation phases. Employment

opportunities will be tailed on both male and female gender basis and preference will be given workers from the local communities.

As a norm, there would be high influx of people from other region to the project proposed areas for job opportunities which potentially results into social friction an altered social dynamic, and possibly increasing the risks occurrence of diseases and infections. The Project Implementation Unit will work with the Community Liaison Officer and Contractors to put in place appropriate actions that prevent reduce, minimize or offset such impacts.

2. Infrastructure development

The Project will stimulate the establishment of major infrastructures for both local and foreign needs considering the county's infrastructure gaps and needs. These infrastructural developments will decentralize the country and improve the physical and aesthetic outlook of the county. The project is expected to accelerate the infrastructure development in the districts of Biharamulo, Bunda, Bunda Town Council, Maswa, Bariadi, Geita, Buchosa, Nyag'hwale, Uyui, Singida Municipal, and Msalala, in the country.

3. Capacity Building

The project will provision increase capacity building and training in during both construction and operational phases ensuring that the locals, project affected people and their communities are prioritized. During project construction and Implementation, locals and project affected people will be taught, skills enhanced and impacted which will be utilized even after the project life cycle.

4. Skills Transfer

The project seeks to attract both national and foreign experts and consultants for the development, design, construction and operation of the SEZ/SAPZ. During these interactions and processes, the locals will have significant benefit through the transfer of relevant technical skills and tools.

5. Improved food security

The project will reduce poverty and hunger by restoring hopes and confidence in farmers. Rural and local farmers will be motivated and inspire to grow and produce surplus cash crops and product with the availability of the Special Agro-Industrial Processing Zone and specific ATCs across designated regions of the county. This means farmers wouldn't have to worry about the available market for purchasing and storing their products.

6. Increased government revenue

The project will help restore confidence in foreign investors and promote good doing business climate. The project seeks to attract foreign and national investment that help strengthen and decentralize the economy, increase the national treasury through TAX payments, and encourage rural and community development.

7. Improved economy

The ACs will promote production and value-added goods and services for the local and foreign markets thus stimulating industrial and commercial growth. It will eventually

Increase in revenue and profitability of the sector thereby encouraging mindset change in youth towards the agribusiness sector. Most importantly, the project promised to raise the competitiveness and efficiency of SME opportunities among youth and significantly increase earning potential and improving health and sanitation.

Negative Impacts

1. ***Impact on air quality***

It is important to note that the project takes place in rural areas where air quality is usually good and natural. The current and existing air pollution source along the project area is vehicular traffic (particulates and combustion emissions). Potential air emissions from the project in the form of fugitive dust and emission releases will occur as a result of earth work activities including vegetation clearing, excavation works, and transportation of materials to and from the project sites especially where trucks travel on unpaved portions of tracks and roadways.

The local ambient air quality around the project area will be temporarily impacted during construction phase as the result of air emissions generated by construction activities. In addition, pollutant emissions will occur due to the operation of diesel fuel generators, and exhaust emissions form transport vehicles such as material transport trucks and administrative vehicles.

Therefore, potential impacts of the project activities on air quality is associated with dust emissions and an increase the following combustion pollutant concentration (CO, NOX, SO2 and PM). This impact is localized and not significant.

2. ***Impacts on water resources***

Increased sediments as a result of increased soil erosion due to earthworks can enter surface waters causing increase turbidity and hence impacting aquatic fauna and flora by altering the aquatic environment.

Surface water could be affected during the construction and operation of the SEZ/SAPZ project. Site clearance, removal of trees and shrubs and site preparatory works would cause a subsequent increase in surface runoff which may, in turn, increase the risk of flooding and soil erosion.

Surface water quality could be affected by number of factors during both construction and operations of the aggregation centres. Construction activities and operation phase may cause increased soil erosion and sediment loading off nearby streams, while accidental leaks or spills of hydrocarbons (oil, fuel or other substances) from construction machinery can also pollute soil, groundwater and surface water and impact on soil, ground water and surface water, and potentially, public health. During operations, the major threats to surface water quality is likely to be pollution from non-hazardous municipal solid waste (e.g. packaging materials, organic waste etc.) and , sewage, from storage operations..

Ground water – construction of ACs may have significant impacts on ground water hydrology and quality. Potential chemicals and improper handling of lubricating slurry, and other toxic substances during construction and operation may cause groundwater pollution thus through gradual seepage.

3. Impact on public health

Construction camps located near inhabited areas can at times cause easy and sometimes unwanted interaction with local communities. In most cases this leads into conflicts due to negative social behaviour such as theft, harassment and even spread of diseases such as STDs especially HIV/AIDS. Sexual interactions among workers and local communities may lead into unwanted pregnancies and divorce among families. Therefore, such a sensitive social issue of improperly located construction camps should be observed in the early stages to avoid animosity towards the project.

Construction camps will require sanitation facilities to serve the occupants of those camps. These facilities need to be well designed in terms of location, construction style, number of holes and toilet and bathroom units in accordance with the number of users. Improper sanitation facilities can cause contamination of ground and surface water especially during rain. It can also cause outbreak of diseases such as diarrhoea, cholera and typhoid. However, these camps will be demolished during demobilization phase i.e., when construction of ACs is almost over and the wastes that will be generated from the same will be treated accordingly.

4. Impacts on soil

The project area is located within the coastal plain and is generally flat with some undulating rises. The main impacts on soil will occur due to increases erosion potential as a result of vegetation clearing and earth moving activities. Additionally, the increase in potential of erosion, will be a risk of soil contamination from solid waste generated by site activities, as well as liquid waste such as lubricants, slurry, and accidental spills, and leaks occurring from storage and work areas. Impacts associated with soil contamination may continue long after operations have ceased if mitigation measures are not carefully management.

5. Impacts on flora and fauna

Construction activities are likely to affect the local vegetation and faunal and flora species directly or indirectly. Site clearing, excavation and initial preparatory works will potentially impact local flora and fauna of the proposed project area. These preparatory site activities will alter the natural habitat of critical species and the ecosystem services they provide. Vegetation clearing and earthwork activities will also result in increased noise and may result in loss in fauna and flora species and by extension affect their reproduction patterns.

6. Impacts on waste generation

The Project will produce many types of wastes during both construction phase and operational phase. During mobilization and construction phases, solid materials such as domestic waste, packaging from construction materials, debris, excavation remnants and others will be generated which could contaminate both soil and water resources. Vendors, construction staffers and employees must adhere to strict hygiene practices and correctly dispose waste in adherence to relevant national legislation and regulations.

In addition to these wastes generated during construction phase, the operational phase would produce considerable volumes of non-hazardous solid and liquid waste from the day-to-day operations planned for the Aggregation Centers (ACs).. Wastes expected to

be generated during this period include; organic waste from discarded (defective, contaminated or decayed) agricultural produce and storage implements (e.g. wooden pallets), plastic, glass and metallic waste from spent packaging materials, and sewage (blackwater and greywater) from sanitary facilities.

Generally, the Agro-Cluster of the SEZ will include; 1: Open farms, modern farm clusters, green houses, livestock etc., 2: Collection centers, cold stories, ripening chambers and warehousing; 3: Primary processing hubs; 4: R&D incubation centers, quality control; 5: Agribusiness management institutes; 7: IT support/library, training center; 8: Common infrastructure; 9: Utilities & services including maintenance 10: Environmental monitoring and meteorological system; 11: Integrated agro industrial park; 12: Other agro and food processing zones; 13: Packaging and support services; 14: Commercial trade area; 15: Terminal markets logistics. All these activities would post environmental, social and economic impacts and thus mitigation measures increase the project performance and acceptability.

7. Impacts from noise and vibration

The main source of noise and vibration will be as the result of drilling and other earthmoving activities. Additionally, noise will be generated from transportation activities during construction period which would be much higher than during the operational period. The increased noise level can impact employee's health and safety and reduce performances. Heavy vehicle operators, nearby communities and resident in close proximity to project area of influence are at higher risk of noise nuisance.

8. Impacts on health and safety

Construction works, industrial processes and operations attracts significant numbers of people and professionals from diverse orientations including skilled laborer, unskilled laborer, technical experts, construction works, and operations technicians. Consequently, there is an increased risk of trips, falls, injuries, accidents and spread of diseases amongst these contractors, pedestrians, passengers and staff at the project level as well as the project's community level.

In addition to the risks of accidents, there is an increased risk of accidental exposure to hazardous materials and waste during construction should said materials not stored and handled in the appropriate manner and form. The risks and impacts on health and safety are increased if contracted personneldo not adhere to relevant management plans and procedures and the administration of the Personal Protection Equipment (PPEs) relative to their respective scope of work, or if the workforce is inadequately equipped with relevant trainings in occupational health and safety procedures.

An internationally trained and experienced safety specialist will be responsible for the preparation, implementation and maintenance of a comprehensive safety program, which will periodically be reviewed and evaluated. Access to a nearby first aid facility will be provided and a driver and an ambulance will be made available should there be a need to transport patients to another location.

These risk of accidents, injuries and diseases should be minimized by providing regular training and procedures for workers, equipment usage and regular health safety induction protocols to reduce and offset these impacts.

9. ***Impact on traffic management***

Project activities will significantly increase the frequency of vehicular traffic congestion and thus increase the risk of motor-vehicle accidents. In addition to the risk of accidents, increase traffic will lead to inconvenience to the public, motorists and chauffeurs, and increase the potential for nuisance in the project area of influence. Mitigation measures will include the development of Traffic Control and Management Plan to minimize or reduce the high level of nuisance and pollution in the area.

10. ***Disturbance, particularly land scarring at sources of construction materials (sand, aggregates, stones,)***

Sand and aggregates materials to be used for construction will be collected from sources far from the construction site. The immediate impact of land scarring in the course of sourcing materials.

11. ***Contamination of water from leakages (oil and grease) of fuels and lubricants from the construction equipment and workshops***

Ground water (e.g. through water wells) and surface water (such as Lake Victoria, river Nywalwambu in Biharamulo) contamination may also occur if the contractors do not follow pollution control measures. Ground water can be contaminated through leaching of contaminated soil both during construction and operation phases of the project.

12. ***Poor air quality from dust and emissions around the construction site and material hauling routes***

The potential impacts on air quality will occur mostly in the excavation and demolition areas and other equipment used at construction areas. Resuspension of dust may occur as a result of land cleaning, demolitions, and circulation of vehicles on non-paved roads, either next to the working faces or in the way to support areas. This is likely to happen when these activities are developed within relatively long terms under dry weather conditions. Atmospheric pollution due to fuel combustion during construction may also occur as a consequence of the flow of vehicles and equipment on work, which may be implemented or outsourced to supply material inputs to the project.

13. ***Generation and poor disposal of solid and liquid wastes***

Both solid and liquid wastes can be generated during construction phase of the project, different wastes including organic waste, packaging refuse, building and demolition refuse, and sewage from camp sites. Hazardous waste such as used oils, electronic waste and concrete wash-out waterwould also be produced during the construction phase of the project.

6.3 IMPACT ANALYSIS

The potential impacts of the proposed project have been listed under **Error! Reference source not found.**. These impacts are now analysed into different categories based on the stakeholders' views and perceptions, the consultants experience in undertaking Environmental and Social Impact Assessments and experience gained in other linear projects of a similar nature.

The approach used to assess the significance of the potential impacts and later assess the effectiveness of the mitigation or enhancement measures is to apply significant ratings to each impact based on objective criteria, such as magnitude, extent and duration of that impact, to yield a final evaluation of the significance of impacts before and after mitigation.

The application of significance rating reduces the number of variables which need to be considered by the decision maker, whist providing pertinent information about the implications of the proposed project. The assessment criteria are given on **Error! Reference source not found.** below.

Table 6-2: Impact Evaluation Table

Criteria	Categories
Significance Level	• Negligeable: significance is one where a resource/receptor (including people) will essentially not be affected in any way by a particular activity, or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations. • Minor: significance is one where a resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small (with or without mitigation) and/or the resource/receptor is of low sensitivity/ vulnerability/ importance. In either case, the magnitude should be well within applicable standards. • Moderate: significance has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. • Major: significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. An aim of IA is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long term or extend over a large area.
Extent	• Local: Impacts that affect an area in proximity to the development area within an area defined on a resource/receptor-specific basis. • How about regional in the sense of extent within the country? • National: Impacts occurring at a regional scale as determined by administrative boundaries or which affect regionally important resources or ecosystems. • International: Impacts that extend across international boundaries or affect resources such as features, resources or areas protected by international conventions.
Likelihood	• Unlikely: the event is unlikely but may occur at some time during normal operating conditions.

	• Possible: the event is likely to occur at some time during normal operating conditions. • Likely: the event will occur during normal operating conditions (i.e., it is essentially inevitable).
Duration	• Temporary: impacts are predicted to be of short duration (in the order of days) and/or intermittent/occasional. • Short term: impacts that are predicted to last only for the duration of the construction period (i.e. – 8 years). • Medium term: impacts that will continue for a period of 5 to 10 years following the completion of the construction phase e.g., where the impact may reverse or affected resources or receptors recover within this period of time. • Long term: impacts that will continue for the life of the Project but will either cease when the Project stops operating or is decommissioned, or where the impact may reverse or the affected resource / receptor recovers or reverts to a near natural state after 10 or within 20 years following the completion of the construction phase. • Permanent: impacts that cause a permanent change in the affected receptor or resource (e.g., removal or destruction of ecological habitat) that endures substantially beyond 20 years following the completion of the construction phase.

Also, other important criteria considered to evaluate whether or not adverse impacts are significant include:

- environmental loss and deterioration;
- social impacts resulting directly or indirectly from environmental change;
- non-conformity with environmental standards, objectives, and guidelines; and
- Likelihood and acceptability of risk.

Criteria to evaluate adverse impacts on natural resources, ecological functions or designated areas include:

- reductions in species diversity;
- depletion or fragmentation on plant and animal habitat;
- loss of threatened, rare or endangered species;
- impairment of ecological integrity, resilience or health e.g.
- disruption of food chains;
- decline in species population;
- alterations in predator-prey relationships.

Criteria to evaluate the significance of adverse social impacts that result from biophysical changes include:

- displacement of people e.g. by roads, dams and reservoirs;

- threats to human health and safety e.g. from release of persistent and/or toxic additives, thickeners or flocculants;
- decline in commercially valuable or locally important species or resources e.g. fish, forests and farmland;
- loss of areas or environmental components that have cultural, recreational or aesthetic value;
- disruption of communities by influx of a workforce e.g. during project construction; and
- pressures on services, transportation, and infrastructure.

Environmental standards, objectives, and targets to evaluate significance include:

- prescribed limits on waste/emission discharges and/or concentrations;
- ambient air and water quality standards established by law or regulations;
- environmental objectives and targets contained in policy and strategy; and
- approved or statutory plans that protect areas or allocate, zone or regulate the use of land and natural resources.

The summary of impacts is made on **Error! Reference source not found.**, have been subdivided into direct, indirect, and cumulative impacts. Furthermore, a statement is made on whether or not the impact is considered to be slight, moderate, or significant.

7 MITIGATION MESURES

7.1 INTRODUCTION

This Chapter highlights the environmental mitigation and management measures that must be considered for the project. The Environmental mitigation consists of measures that are aimed at reducing the negative environmental impacts associated with implementation (construction, operation) of the project. Mitigation measures have been identified that would reduce both existing and potential impacts associated with the project development objectives during biding phase, construction, and operational phases. For each of the identified impacts specific mitigation measures may be defined.

The mitigation measures for the impacts likely to be caused by proposed project will focus on key potential impacts identified in Section 6 according to the project phases as;

- Relocation of infrastructure and disruption resulting from such relocations
- Interference on drainage patterns
- Trees and vegetation loss
- Soil erosion and sedimentation of water courses
- Impacts from improperly located workers' camps (theft, harassment, unwanted pregnancies, divorces, sexually transmitted diseases (HIV/AIDS, STIs)
- Poor air quality- emissions and dust during construction and operation phases of the project
- Noise pollution
- Pollution due to solid and liquid waste generation
- Depletion and pollution of water resources
- Accidents and incidents occurrence
- Public health impacts from work operations
- Water and soil contamination from solid and liquid wastes generated at the bus depots and workshops Socio-cultural changes

7.2 MITIGATION MEASURES

Identification and assessment of impacts has been undertaken through a process comprising consultation, modelling, on-site observations, literature review and expert opinion based on experience of similar projects. These modelling and assessment results have been reviewed and verified.

Hierarchy for Environmental and Social Risks presented respectively below. The general rule in designing such measures is:

- Avoidance of major impacts: major impacts are generally considered unacceptable, certainly ones that would endure into the long-term or extend over a large area; and
- Reduction of major and moderate impacts to as low as reasonably practicable by planning, designing, and controlling mitigation measures. This Implies that mitigation measures will be applied up until the limitations of cost-effectiveness and practical application are reached. The limitations are established by best international practice. Implementation of good contractor practices for impacts rated as minor, to ensure that impacts are managed within good reason.

7.3 MITIGATION MEASURES DURING PRE-CONSTRUCTION PHASE

The Pre-construction Phase encompasses various activities that poses risks, hazards and health and safety threats to the proposed project location and receptors. The Pre-construction phase will mainly include recruitment and mobilization of the contractor, equipment, machineries, finalization of the detail plans and operational manuals and others as listed below;

- Environmental, Social, Health and Safety (ESHS) conditions in the bidding documents
- Past performance of the Contractor on ESHS aspects including sexual exploitation and abuse and gender-based violence – The contractor's past performance on compliance with ESHS is an indicator on contractor's commitment and capability for implementation of this ESMP;
- ESHS Staff with the Contractor – The Bidder shall propose an Environmental, Social, Health and Safety (ESHS) Specialist as the Contractor's Key Personnel at the Site. The Bidder shall provide details of the proposed ESHS specialist including academic qualifications and work experience;
- Environmental and social performance security – The Contractor should have a financial implication if he could not comply with ESHS requirements. Hence performance security will be collected from the contractor. The Bidder shall submit the ESHS Performance Security the form of a "demand guarantee" in the amount of one percent (1%) of the Contract amount;
- Code of conduct of Contractor's Personnel - The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors. The Code of Conduct will state that the workers will comply with safety precautions, appropriate interactions with community, and prohibition of gender-based violence;
- Contractor's Environmental and Social Management Plan (C-ESMP) to manage ESHS Risks will be submitted prior to construction activities. The C-ESMP will include site-specific plans such as waste management, hazardous waste management, traffic management, Grievance Redress Mechanism, occupational health and safety for the workers, community health and safety management, pollution prevention, Gender-based violence and sexual exploitation and abuse prevention and response action plan, emergency response procedure, and construction rehabilitation plan;
- Labour Management Procedures to be followed for hiring and management of labour related issues;
- Permit for disposal of waste at the government's operated landfill site;
- The mobilization of Environmental, Social and Health and Safety (ESHS) specialist.

7.4 MITIGATION MEASURES DURING CONSTRUCTION PHASE

It is the sole responsibility of the Project Proponent to identify various Environmental and Social Impacts and Risks arising from the project activities and thus ensuring that adequate management and mitigation measures are employed to reduce, alleviate, or offset them.

Table 7-1: Mitigation measures during construction

Receptor	Proposed Mitigation Measures
Air Pollution	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Avoid burning of materials resulting from onsite clearance • Ensure that persons working in areas prone to dust are provided PPEs • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads • Cover all vehicles hauling materials likely to give off excessive dust emissions • Regularly water spray surfaces to control dust emissions
Water Resources Pollution	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate clean-up of spillages (oil, fuel, chemicals) • Cover open stockpiles of construction materials on site with tarpaulins during rainstorm events to prevent the washing away of construction materials • Install natural or synthetic liners beneath chemical storage tanks • Compact earthworks as soon as the final surfaces are formed to prevent erosion especially during the wet season • Ensure to grade gravel roads for maintenance of existing drainage patterns • Ensure the protection of riparian areas • Ensure to avoid dumping of construction waste into water bodies • Ensure that proper storage of chemicals and onsite materials
Disturbances of the Aquatic Life Systems	• Schedule construction activity to avoid heavy rainfall • Ensure that hazardous materials are not discharged in aquatic ecosystems directly or indirectly • Ensure to construct fence at the perimeter of construction site to avoid cross pollution with aquatic resources, and the establishment of hydrologically isolated oxidation ponds/ lagoons for any ad-hoc effluent that fails to meet water quality thresholds upon water quality monitoring • Ensure to prevent dumping of oil, filter cans and other substances into aquatic ecosystem or waterways draining into aquatic environments
Wastewater Generation	• In the construction phase, proper containment and management of concrete washout within designated pits • In the operational phase, ensure to obtain required permit for discharge of any ad-hoc effluent generation within the AC facilities (e.g. from vehicle servicing and/or washing bays) • Should any effluent-generating activities become introduced during the operational phase, water quality monitoring for discharged effluent should be implemented in full compliance with the discharge permit conditions and relevant national regulations

Receptor	Proposed Mitigation Measures
	• Ensure that washing water from vehicles is drained in a sand/silt • Ensure that any ad-hoc (unforeseen) effluent releases from construction and operational activities are directed towards hydrologically isolated oxidation ponds/ lagoons, and away from any natural and constructed waterways.
Impact of flora and fauna. What are the specific impacts on flora and fauna that should be mitigated?	• Ensure that no flora species classified as Vulnerable on the IUCN Red List are removed or cleared • No tree greater than 200 mm diameter at breast height should be damaged • Promote plantation of native trees and green corridors along the project facility. • Minimize vegetation clearance • Any hunting activities should be prevented • Ensure to report fauna species of high conservation value
Impact on soil – compaction, erosion, disturbilization of the bed-rocks, etc.	• Landscape the excavated areas in a suitable way to allow native vegetation to regrow naturally • Suspend activities during extreme rainfall events • Ensure to Provide drainage channels and silt traps for all parts of the topsoil storage areas • Ensure to rehabilitate areas with topsoil and revegetate after completion of activities • Install sediment and erosion controls • Use non-toxic and readily biodegradable chemicals on-site where feasible • Install natural or synthetic liners beneath chemicals storage tanks • Grade unpaved roads
Solid Waste generation	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site
Hydrocarbons and Hazardous Materials	• Ensure that disposal of hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors

Receptor	Proposed Mitigation Measures
	• Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separator
Noise generation	• Choose inherently quiet equipment/equipment's installed with noise absorbers • Keep equipment speed as low as possible • Minimize idling time for pickup trucks and other equipment • Limit site working hours where feasible • Ensure that all workers exposed to noise emanating environment are equipped with hearing protection and relevant PPEs • Schedule noisy activities during the morning hours • Enforce noise monitoring • Inform the locals when noisy activities are planned • Utilize and properly maintain silencers or mufflers that reduce vibration on construction equipment • Operate only well-maintained mechanical equipment on-site
Employment opportunities	• Ensure to set up a formal compliant register system which responds to complaints about nuisances in a timely manner • Adopt policies for recruiting locally and hiring local sub-contractors as much as possible • Include local communities in the consultations and participation process throughout the project activities • Ensure high rate of local employment to minimize influx of foreign workers • Ensure equal employment opportunities • Adhere to prohibition of child labour • Prohibit discrimination in any form or manner such as religion, ethnicity, tribe, creed etc. • Adopt a grievance mechanism to enable the communities and employees to relate concerns that arise from the Project or Contractors
Occupational health and safety risks	• Provide surveillance and active screening of workers • Provide health care benefits to workers • Ensure that hazardous substances are kept in suitable, safe, adequately marked and locked storing place • Conduct health awareness initiative • Restrict access to the operation sites • Ensure that employee/workers/ contractors are informed about the risks and prevention methods for Covid 19, Ebola, HIV, STDs, and others • Conduct firefighting and leak checks training drills for staff • Ensure that workers are qualified, well trained and instructed in handling their equipment, including PPEs

Receptor	Proposed Mitigation Measures
	• Install warning signs at the entrance of the site to prohibit public access • Provide appropriate PPE (impermeable latex gloves, working overalls, safety boots, safety helmets, safety goggles, hearing protein devices for workers exposed to noise levels exceeding 85 dBA, and lifesaving vests for sites near water bodies) • Develop and implement an Emergency Preparedness & Response Plan • Ensure containers of hazardous substances are clearly marked and that MSDS's are available • Designate an area where contaminated materials and hazardous can be stored for proper disposal in line with relevant statutes and regulations • Provide training to personnel on occupational health and safety and safety procedures prior to beginning work at sites • Ensure that sensitive and dangerous areas with high risks are clearly designated • Ensure that presence of an onsite first aid treatment facility • Adopt good housekeeping practices for ensuring hygiene on site • Ensure the presence of firefighting equipment such as dry powder extinguisher • Ensure that safety specialist is recruited to manage the preparation, implementation, and maintenance of a comprehensive safety program • Ensure to eliminate pools of stagnant water, which could serve as breeding grounds for infectious diseases • Install warning signs at places where dangerous and high risks operations are ongoing • Ensure that protective materials are use at all times
Road safety	• Properly plan and develop traffic control plan • Notify the affected communities regarding the operation schedule and consult with them about potential traffic issues • Provide traffic re-rooting plan for the construction phase • Limit the movement of heavy machineries to off-peak hours and provide prior notification to local communities • Repair any road damage caused by increased traffic due to operations • Pave road where heavy use is expected • Speed limitation should be enforced for instance, onsite 10km/h, through towns and villages 35km/h and on the highway 80km/h • Ensure safety of motorists through adequate warning, signing, delineation and channelling at least 500 m down and up-gradient form the construction site • Ensure the prohibition of passenger siting on the back of trucks working for the Contractor/sub-contractor • Ensure that all drivers are licensed and obey traffic rules and regulations

Receptor	Proposed Mitigation Measures
Cultural heritage and chance finds	• Adopt Chance Find Procedures for managing unanticipated discovery of finding of archaeological or historical significance

7.5 MITIGATION MEASURES DURING OPERATION PHASE

Table 7-2: Mitigation measures during operation phase

Receptor	Proposed Mitigation Measures
Air Pollution	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads
Water Resources Pollution	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate clean-up of spillages (oil, fuel, chemicals) • Install natural or synthetic liners beneath chemical storage tanks • Ensure to grade gravel roads for maintenance of existing drainage patterns • Ensure to avoid dumping of waste into water bodies • Ensure that proper storage of chemicals/preservatives if any
Aquatic Ecology	• Ensure that hazardous materials are not discharge in aquatic ecosystems • Ensure to prevent dumping of oil, filter cans and other substances into aquatic ecosystem
Wastewater Generation	• Ensure to obtain required permit for discharge of any ad-hoc effluent generation within the AC facilities (e.g. from vehicle servicing and/or washing bays) • Should any effluent-generating activities become introduced during the operational phase, water quality monitoring for discharged effluent should be implemented in full compliance with the discharge permit conditions and relevant national regulations • Ensure that washing water from vehicles is drained in a sand/silt • Ensure that any ad-hoc (unforeseen) effluent releases from construction and operational activities are directed towards hydrologically isolated oxidation ponds/ lagoons, and away from any natural and constructed waterways.
Impact of flora and fauna	• Promote plantation of trees and green corridors along the project facility • Prevent any hunting activities • Ensure to report fauna species of high conservation value • Avoid all direct and indirect impact on areas of high ecological • Ensure that sustainable management of solid and liquid waste emanating from construction and operation activities

Receptor	Proposed Mitigation Measures
Impact on soil	• Landscape the excavated areas in a suitable way to allow native vegetation to regrow naturally • Ensure to Provide drainage channels and silt traps for all parts of the topsoil storage areas • Ensure to rehabilitate areas with topsoil and revegetate • Install sediment and erosion controls • Use non-toxic and readily biodegradable chemicals on-site where feasible • Install natural or synthetic liners beneath chemicals storage tanks • Grade unpaved roads
Solid Waste generation	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project Prohibit all forms of littering on-site
Noise generation	• Choose inherently quiet equipment/equipment's installed with noise absorbers • Keep equipment speed as low as possible • Minimize idling time for pickup trucks and other equipment • Ensure that all workers exposed to noise emanating environment are equipped with hearing protection and relevant PPEs • Schedule noisy activities during the morning hours • Enforce noise monitoring • Utilize and properly maintain silencers or mufflers that reduce vibration on construction equipment • Operate only well-maintained mechanical equipment on-site
Employment opportunities	• Ensure to set up a formal compliant register system which responds to complaints about nuisances in a timely manner • Adopt policies for recruiting locally and hiring local sub-contractors as much as possible • Include local communities in the consultations and participation process throughout the project activities • Ensure high rate of local employment to minimize influx of foreign workers • Ensure equal employment opportunities • Adhere to prohibition of child labour • Prohibit discrimination in any form or manner such as religion, ethnicity, tribe, creed etc.

Receptor	Proposed Mitigation Measures
	• Adopt a grievance mechanism to enable the communities and employees to relate concerns that arise from the Project or Contractors
Occupational health and safety risks	• Provide surveillance and active screening of workers • Provide health care benefits to workers • Ensure that hazardous substances are kept in suitable, safe, adequately marked and locked storing place • Conduct health awareness initiative • Restrict access to the operation sites • Ensure that employee/workers/ contractors are informed about the risks and prevention methods for Covid 19, Ebola, HIV, STDs, and others • Conduct firefighting and leak checks training drills for staff • Ensure that workers are qualified, well trained and instructed in handling their equipment, including PPEs • Install warning signs at the entrance of the site to prohibit public access • Provide appropriate PPE (impermeable latex gloves, working overalls, safety boots, safety helmets, safety goggles, hearing protein devices for workers exposed to noise levels exceeding 85 dBA, and lifesaving vests for sites near water bodies) • Develop and implement an Emergency Preparedness & Response Plan • Ensure containers of hazardous substances are clearly marked and that MSDS's are available • Designate an area where contaminated materials and hazardous can be stored for proper disposal in line with relevant statutes and regulations • Provide training to personnel on occupational health and safety and safety procedures prior to beginning work at sites • Ensure that sensitive and dangerous areas with high risks are clearly designated • Ensure that presence of an onsite first aid treatment facility • Adopt good housekeeping practices for ensuring hygiene on site • Ensure the presence of firefighting equipment such as dry powder extinguisher • Ensure that safety specialist is recruited to manage the preparation, implementation, and maintenance of a comprehensive safety program • Ensure to eliminate pools of stagnant water, which could serve as breeding grounds for infectious diseases • Install warning signs at places where dangerous and high risks operations are ongoing • Ensure that protective materials are use at all times
Road safety	• Properly plan and develop traffic control plan • Repair any road damage caused by increased traffic due to operations • Pave road where heavy use is expected

Receptor	Proposed Mitigation Measures
	• Speed limitation should be enforced for instance, onsite 10km/h, through towns and villages 35km/h and on the highway 80km/h • Ensure safety of motorists through adequate warning, signing, delineation and channelling at least 500 m down and up-gradient form the construction site • Ensure that all drivers are licensed and obey traffic rules and regulations
Cultural heritage and chance find	• Adopt Chance Find Procedures for managing unanticipated discovery of finding of archaeological or historical significance

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

8.1 INTRODUCTION

The environmental and Social Management Plan (ESMP) involves environmental and social control and mitigation measures, monitoring programs, and responsibilities which must be developed based upon an assessment of environmental and social risks for the proposed project. The ESMP aims at ensuring effective implementation of the proposed mitigation and enhancement measures are achieved.

8.2 OBJECTIVES OF THE ESMP

The main objective is the provision a framework for implementation of the measures identified in the impact assessment analysed to avoid, mitigate, or offset adverse environmental and social impacts and to minimize and manage risks on the environment, project personnel and local communities. The following are detailed objectives of the environmental and social management Plan targets:

- Defining Contractors roles and responsibilities;
- Outlining how National Investment Commission will monitor, review and supervise Contractor's performance;
- Ensuring environmental protection of the highest achievable level;
- Ensuring high standard in working conditions;
- Assisting the Contractor:
- Defining Contractors roles and responsibilities;
- Outlining how National Investment Commission will monitor, review and supervise Contractor's performance;
- Ensuring environmental protection of the highest achievable level;
- Ensuring high standard in working conditions;
- Assisting the Contractor:
- Implementation of mitigation measures
- Preventing possible environmental damages or damages to third parties' properties
- Ensuring environmental protection to the highest achievable level
- In ensuring that all works complies with the National Investment HSE Policy, national legislations, best international practice and all relevant AfDB Environmental and Social Guidelines and Policies
- In identifying the possible hazards that relate to the work process and to assume appropriate measures for the reduction of risks

8.3 IMPLEMENTATION ARRANGEMENT

The project will be managed by the Prime Minister's Office, Project Implementing Unit (PIC) within close collaboration with the Inter-ministerial Steering Committee. The Project will have an Environmental and Social Management Team that oversee environmental and social performance and compliance with legal and policy requirements including the African Development Bank's Guidelines and Policies. The Team will include an Environmental Compliance Officer and a Community Liaison Officer. The Team will be responsible for implementation of the Environmental and

Social Mitigation and Management measures as well as oversee performance of contractors as prescribed in the Project's Environmental and Social Management Plan.

8.4 REPORTING ARRANGEMENT

An Environmental Representative from PMO or Consultant's appointee to deal with Environmental Management will cooperate with other experts in all districts in the Project regions (Kagera, Mara, Simiyu, Shinyanga, Tabora, Mwanza, and Singida)) such as Land Officers, Land and Property Valuers, Community Development Officers and Environmental Officers to provide the Regional Environmental Management Experts with environmental reports of the project implementation as part of the progress reports and annual environmental monitoring reports. The Regional Management Expert is the link person between the region and the Director of Environment as well as the Director General of NEMC.

8.5 ESMP ROLES AND RESPONSIBILITIES

The Prime Minister's Office is responsible for the detailed design, procurement, construction, and operation of the Special Agro-Industrial Processing Zone Project. In due course, will issue technical invitation to bid documents for the various elements of the construction work scope.

As Project Owner, National Investment Commission will have the ultimate responsibility for implementing the ESMP, which will include:

- Management of environmental and social issues as detailed design proceeds Monitoring and auditing of the Contractor's' HSE (including labour and working conditions) performance
- Assisting the Contractor in implementing the ESMP and topic special management plans
- Acting as a point of contact for consultation with Authorities and stakeholders Environmental and social compliance monitoring and reporting.
- Activities that ensure that Contractors will be deployed in accordance with Project standards and regulations.
- Recording of compliance and non-compliance with the provisions of the ESMMP.
- Ensuring the compilation of required periodic environmental reports for submission to the EPAL
- Ensuring that there are sufficient resources (time, money, and people) to manage the implementation of the ESMP.

The construction contractors will be required to develop and implement their own Construction Phase management plans for the Project, which will meet or exceed the requirement of PMO's HSE MS. The PMO's existing and updated HSE MS will form the framework for managing social and environmental issues throughout construction, prior to the operation of the ACs facilities. The aforementioned HSE MS will be used to deliver the Project ESIA commitments and coordinate and review the environmental and social performance of the Project at both the construction stage and operational stage. Special consideration will be given to the following:

- Practical training and raising the environmental and social awareness of personnel;
- Supervision and monitoring of environmental and social issues in the field; and Continuous improvement of environmental and social performance throughout the Project.

The Contractor will be responsible for:

- Comply with all national laws, rules and regulations concerning environmental protection and with all permitting terms;
- Demonstrating how requirements will be implemented during the construction;
- Demonstrating commitment to PMO's ESMMP, topic specific management plans and HSE MS at all levels, including subcontractors;
- Produce a Contractor's ESMP in accordance to PMO's ESMP and HSE MS;
- Follow up of legislative and regulative frame development and comply with them;
- Update this ESMP, if required.

As part of PMO's responsibility, the Environmental Officer:

- Will be required to conduct weekly inspections of all work places.
- Any other construction areas for which the contractor is responsible at each of the sites, the Contractor Environmental Officer will be required on a daily basis to check as per the following table where relevant.

PMO's Environmental/ and the Contractor's Environmental Officer will be responsible to provide Environmental or HSE training to all project personnel on potential environmental issues of the project. Contractors shall prepare a project specific training manual for this purpose. Contractors are also required to provide induction training/briefing to all their staff before the commencement of any activities within the project area of influence.

Table 8-1: Environmental Management Plan Implementation costing

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
Pre-construction	Employment opportunities	• Inclusion of legally binding (contractual) requirements for local content for construction contractors; and • Engagement of the respective ward Office to maximize local procurement.	Client, all contractors, respective district council and ward offices	4,000
	Vegetation clearance	• Restriction of vegetation clearance to delineated construction sites; • Prohibition of herbicide use; • Restriction of pre-construction and construction works to prescribed working hours to minimize disturbances on resident fauna; • Site rehabilitation and revegetation (wherever possible) of areas cleared for	Client, contractor	3,500

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		construction works to aid natural regeneration, following construction; and • Involvement of the respective district council, Natural Resources department, and Environment department, during site clearance.		
Construction and operation phase	Improved economy	• Materials, goods and services will be sourced locally, but if these cannot be obtained within respective districts, the Client/contractor has an option to procure this service elsewhere in Tanzania	Client, contractor	4,000
	Impact on air quality	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads	Client, contractor	3,000
	Impacts on water resources	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate clean-up of spillages (oil, fuel, chemicals) • Install natural or synthetic liners beneath chemical storage tanks • Ensure to grade gravel roads for maintenance of existing drainage patterns • Ensure to avoid dumping of waste into water bodies • Ensure that proper storage of chemicals/preservatives if any	Client, contractor	3,000
	Impact on public health	• Awareness-creation campaigns for HIV/AIDS for construction labour; and collaborating with active NGOs and other groups focussing on HIV/AIDS and STDs in the project area. • If there are any on-going projects in the area, the Client will join to scale up	Client, district council, contractor	3500
	Impacts on soil	• Landscape the excavated areas in a suitable way to allow native vegetation to regrow naturally • Suspend activities during extreme rainfall events • Ensure to Provide drainage channels and silt traps for all parts of the topsoil storage areas	Client, contractor	2000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Ensure to rehabilitate areas with topsoil and revegetate after completion of activities • Install sediment and erosion controls • Use non-toxic and readily biodegradable chemicals on-site where feasible • Install natural or synthetic liners beneath chemicals storage tanks • Grade unpaved roads		
	Impacts on flora and fauna	• Ensure that no flora species classified as Vulnerable on the IUCN Red List are removed or cleared • Ensure that no tree greater than 200 mm diameter at breast height is damaged • Promote plantation of trees and green corridors along the project facility • Ensure that no species discovered during excavation are traded for commercial value • Minimize vegetation clearance • Prevent any hunting activities • Ensure to report fauna species of high conservation value • Avoid all direct and indirect impact on areas of high ecological importance • Ensure that sustainable management of solid and liquid waste emanating from construction and operation activities • Ensure outdoor construction lighting is unobtrusive and turn off when not required	Client, contractor	3000
	Impacts on waste generation	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site	Client, supervision consultant and contractor	3,500

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separatorCarefully fuel/refuel vehicles, and machineries to avoid spillage		
	Impacts from noise and vibration	• Choose inherently quiet equipment/equipment's installed with noise absorbers • Keep equipment speed as low as possible • Minimize idling time for pickup trucks and other equipment • Limit site working hours where feasible • Ensure that all workers exposed to noise emanating environment are equipped with hearing protection and relevant PPEs • Schedule noisy activities during the morning hours • Enforce noise monitoring • Inform the locals when noisy activities are planned • Utilize and properly maintain silencers or mufflers that reduce vibration on construction equipment • Operate only well-maintained mechanical equipment on-site	Client, contractor	6,000
	Impacts on health and safety	• Provide surveillance and active screening of workers • Provide health care benefits to workers • Ensure that hazardous substances are kept in suitable, safe, adequately marked and locked storing place • Conduct health awareness initiative • Restrict access to the operation sites • Ensure that employee/workers/ contractors are informed about the risks and prevention methods for Covid 19, HIV, STDs, and others • Conduct firefighting and leak checks training drills for staff • Ensure that workers are qualified, well trained and instructed in handling their equipment, including PPEs • Install warning signs at the entrance of the site to prohibit public access	Client, contractor	3,000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Provide appropriate PPE (impermeable latex gloves, working overalls, safety boots, safety helmets, safety goggles, hearing protein devices for workers exposed to noise levels exceeding 90 dBA, and lifesaving vests for sites near water bodies) • Develop and implement an Emergency Preparedness & Response Plan • Ensure containers of hazardous substances are clearly marked and that MSDS's are available • Designate an area where contaminated materials and hazardous • Provide training to personnel on occupational health and safety and safety procedures prior to beginning work at sites • Ensure that sensitive and dangerous areas with high risks are clearly designated • Ensure that presence of an onsite first aid treatment facility • Adopt good housekeeping practices for ensuring hygiene on site • Ensure the presence of firefighting equipment such as dry powder extinguisher • Ensure that safety specialist is recruited to manage the preparation, implementation, and maintenance of a comprehensive safety program • Ensure to eliminate pools of stagnant water, which could serve as breeding grounds for infectious diseases • Install warning signs at places where dangerous and high risks operations are ongoing • Ensure that protective materials are use at all times		
	Impact on traffic management	• Properly plan and develop traffic control plan • Notify the affected communities regarding the operation schedule and consult with them about potential traffic issues • Provide traffic re-rooting plan for the construction phase • Limit the movement of heavy machineries to off-peak hours and provide prior notification to local communities • Repair any road damage caused by increased traffic due to operations • Pave road where heavy use is expected • Speed limitation should be enforced for instance, onsite 10km/h, through towns and villages 35km/h and on the highway 80km/h	Client, contractor	30,000

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
		• Ensure safety of motorists through adequate warning, signing, delineation and channelling at least 500 m down and up-gradient form the construction site • Ensure the prohibition of passenger siting on the back of trucks working for the Contractor/sub-contractor • Ensure that all drivers are licensed and obey traffic rules and regulations		
	Disturbance, particularly land scarring at sources of construction materials (sand, aggregates, stones,)	• Ensure that all species of conservation values are enumerated, conserved, and reported to the designated conservation authority • Rehabilitate the landscape by planting new trees	Client, district council, Ward, contractor	5,000
	Contamination of water from leakages (oil and grease) of fuels and lubricants from the construction equipment and workshops	• Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Fence construction site to prevent flying materials to deposit in nature • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separatorCarefully fuel/refuel vehicles, and machineries to avoid spillage	Client, Police, contractor, security contractor and relevant LGAs	2,000
	Poor air quality from dust and emissions around the construction site and material hauling routes	• Ensure adequate maintenance and repair equipment & machineries • Adopt a traffic management plan while avoiding congest routes • Ensure that vehicles and machines are switched off when not in use • Ensure the use of high-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads	Client, all contractors	2,500
	Generation and poor disposal of	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with	contractor	2500

Project phase	Impact	Management measures (mitigation/ enhancement)	Responsibility	Estimated annual cost (USD)
	solid and liquid wastes	relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site • Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to store hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Any vehicle maintenance, refuelling and washing bays must have a dedicated drainage system including and oi/water separatorCarefully fuel/refuel vehicles, and machineries to avoid spillage		
	Community grievances due to ongoing Project activities	• Include local communities in the consultations and participation process throughout the project activities • Continuous engagement with directly affected communities along Project site	Client, Contractor	35,000
	Environmental and social management	• Capacity building to PIU in ensuring regular ESMP implementation	Client, Contractor	45,000
Total cost for management plan				**160,500**

8.6 Environmental and Social Monitoring

Monitoring of the project is the long-term process that normally begins at the start of the project and should continue throughout the life of the project. Its purpose is to establish benchmarks so that the nature and magnitude of anticipated environmental impacts are continually assessed. Therefore, monitoring involves the continuous or periodic review of mitigation activities to determine their effectiveness.

Consequently, trends in environmental degradation or recovery can be established and previously unforeseen impacts can be identified and dealt with during the project road's life. This plan specifies the type of monitoring, who will do it, how much it will cost to carry out monitoring and what other inputs, such as training, are necessary. Environmental audits are also usually carried out some few years after complete on of the project. These audits assess the relevance, efficiency and impact of any mitigation measures administered. Environmental Officers in the District where the project normally takes place may initiate such audit processes to cover the project.

Since the project is divided into three distinct phases, including design, construction and operation, the contractor should prepare an environmental management plan which will cover the construction phase of the project. In the construction phase there are stages that include mobilization, construction, commissioning, demobilization and a fixed operational monitoring during the defect liability period.

8.7 MONITORING PLAN

The regulatory authorities at the district level have to see to it that the commitments made by the project proponent through mitigation measures are really put into practice and that is the essence of this Environmental and Social Monitoring Plan as presented on Table 8-2 below.

Table 8-2: Environmental Monitoring Plan

Phase	Impact	Monitoring Requirements						
		Parameters	Monitoring frequency	Sampling sites	Measurement/ unit	Target/ standard	Responsibility	Estimated annual cost (USD)
Pre-construction	Employment opportunities	Locals employed, goods and services procured from respective districts	Monthly during construction	Project site, Client's employment and procurement records	Number of locals/ local service providers contracted	Majority of casual labour to be sourced locally; sustenance goods and services to be sourced locally wherever possible	Client, contractor	4,500
	Vegetation clearance	Vegetation cover around construction sites	Daily during construction	All projectsites	Cleared area in m^2	No vegetation clearance beyond the delineated confines of the construction footprint and associated facilities	Client, contractor	4,000
		Habitat/site rehabilitation	Once-off after construction	Temporary construction sites	Number of modified sites reinstated	All modified temporary construction sites to be remediated to allow for natural regeneration		
Construction and operational	Employment opportunities	Employment of locals	Monthly	Project site	Recruitment reports, site inspections	Number of locals contracted	Client, contractor, district offices	2,000
	Impacts on air quality	Concentration of particulate matter and exhaust fumes	Quarterly	Construction footprint and adjacent communities	µg/Nm^3	TZS 845:2005 Air Quality Specifications	Client, district Office	4,000
	Impacts on water resources	Water used and existing borehole	Monthly	Project site	M3	Design (190 l/cap/day)	Contractor, ward office	2,000

	Impact on public health	Number of new infections/spread of STDs/STIs	Monthly	Project and premises near project site	Number of complaints	No new infections	Contractor, district office and ward office	2000
	Impacts from noise and vibration	Ambient noise and vibration levels	Quarterly	Construction footprint	L_{eq} / L_{A90} (dBA)	EMDC 6 (1733) P 3: ACOUSTICS - General Tolerance Limits for Environmental Noise	Client, Nala Ward Office	4,000
		Public annoyance with excessive noise levels	Daily	Communities adjacent to construction sites	Number of complaints about excessive noise	Zero complaints about excessive noise		
	Impacts on health and safety	Number and type of safety equipment such as mask, helmet gloves and ear plugs	Once a week	Project site	Number of safety measures provided	Zero accidents/nearmisses	Client, contractor,	4,000
	Impacts on soil	New forms of erosion	Monthly during rainy season	All construction sites	Evidence of new sheet and/or gully erosion	No major erosion forms	Contractor	2,500
		Recovery of topsoil for post-construction landscaping	Once-off after construction	Erosion-prone sites	% of excavated topsoil recovered and % excavated sites reinstated	100% of excavated topsoil to be segregated and used for landscaping post construction;		

						100% of excavated sites to be reinstated		
	Impacts on solid waste generation and liquid wastes	Littering and non-conformance to waste management requirements	Daily	All project site	Site inspections, community reports/complaints, monthly progress reports	No incidences of non-conformance to waste management requirements	Client, contractor, district offices	2,000
Total cost for monitoring plan								**31,000**

9 STAKEHOLDER CONSULTATION AND PUBLIC PARTICIPATION

9.1 INTRODUCTION

Environmental Management Act (EMA, No. 20 of 2004) and the Environmental Impact Assessment (EIA) and Audit Regulations (No. 349 of 2018), Stakeholder Engagement and Consultation is designed to establish an effective platform for productive interaction with the potentially affected parties, disadvantaged groups, and others with interest in the implementation outcome of the Project. The purposed of the stakeholder engagement plan is to provide meaningful stakeholder engagement throughout the project cycle. The consultation aimed was to solicit views, concerns, comments, and inputs from wide range of stakeholders and project affected parties regarding project implementation.

The primary objectives of the Stakeholder Consultation are summarized below:

- Provide project related information and materials to affected and interested parties;
- Solicit feedback from stakeholders to inform project design, implementation, monitoring, and evaluation;
- Enhance project acceptance by clarifying project objectives and scope at an early stage and manage stakeholders' expectations;
- Assess and mitigate project environmental and social impacts and risks;
- Enhance project benefits;
- Address project grievance;

9.2 STAKEHOLDER IDENTIFICATION AND ANALYSIS

Firstly, the consultant identified organization, groups and individuals considered to be regarded as "stakeholders". This identification was based on each one's roles and their relevance in the proposed SAPZ development project. Some of the stakeholders such as government authorities, district level, wards and sub-ward level that might be impacted by or have interest in the project or exercise some influence on the project were predetermined as shown under each level in table Table 9-1 below.

Table 9-1: Stakeholder identification and analysis

LEVEL	STAKEHOLDER	REMARKS
Regional	1. Regional Council – Shinyanga, Singida and Mwanza	Courtesy call to Regional Administrative secretary
District	2. Maswa District Executive Director's Office 3. Bariadi District Executive Director's Office 4. Misungwi District Executive Director's Office 5. Bunda District Executive Director's Office 6. Buchosa District Executive Director's Office	District Management Team members responsible for: ● Agriculture ● Cooperative ● Veterinary ● Livestock development ● Trade and business ● Forestry ● Natural resource management and environment

	7. Misungwi District Executive Director's Office 8. Uyui District Executive Director's Office 9. Igunga District Executive Director's Office 10. Singida Municipal Director's Office 11. Msalala District Executive Director's Office 12. District Executive Director's Office 13. Bukombe District Executive Director's Office 14. Nyang'wale District Executive Director's Office	● Town/urban planning ● Economic planning ● Community development
Local	15. Maswa District a. Ikungulyasubi village 16. Bariadi District a. Dutwa ward 17. Misungwi District a. Ng'ombe village 18. Bunda District a. Masahunga village 19. Msalala District a. Bulige village 20. Bukombe District a. Nyamigota village 21. Uyui District a. Kisengi village 22. Nyang'wale District 23. Singida Municipal Council a. Kindai Mtaa	● Local government authorities ● Direct project beneficiaries ● Communities in the project footprint ● Project affected persons

9.3 PUBLIC PARTICIPATION PROCESS

Public Consultations process was done by consulting with the district experts and Villagers/public in the settlements of Lusahunga, Masahunga (Songambele A village), Bunda town (Makongeni and Tairo village), Ikungulyasubi, and Dutwa (Igaganurwa village), Nyang'hwale, Msalala, Nyamigota, Kisengi, Kindai and Buchosha.

Table 9-2: Public participation process

AC / FAC	Date of visit	Individual consulted	Methodology
Lusahunga	16/11/2021	District experts	Interviews
		Local community	Public meeting
Masahunga	17/11/2021	Curtesy call to DED	Visit

AC / FAC	Date of visit	Individual consulted	Methodology
		District experts Local community	Focus group discussion Public meeting
Bunda town council	18/11/2021	Curtesy call to DAS	Visit
		Districts experts Local community	Focus group discussion Public meeting
Ikungulyasubi	19/11/2021	Curtesy call to DAS	Visit
		District experts Local community	Focus group discussion Public meeting
Dutwa	22/11/2021	Curtesy call to DAS District experts Local community	Site visit Focus group discussion Public meeting
Nyangwale	22/11/2021	District experts Local community	Focus group discussion Public meeting
Msalala	17/11/2021	District experts Local community	Focus group discussion Public meeting
Geita-Nyamigota	19/11/2021	District experts Local community	Focus group discussion Public meeting
Kisengi	18/11/2021	District experts Local community	Focus group discussion Public meeting
Kindai	22/11/2021	District experts Local community	Focus group discussion Public meeting
Buchosha	16/11/2021	District experts Local community	Focus group discussion Public meeting

9.3.1 Issues Raised

Table below summarizes the issues/concerns/views from the stakeholders.

Table 9-3: Summary of issues/concerns/views from stakeholders

Administrative level	Stakeholders consulted	Issues raised	Responses
Biharamulo DC/Lusahunga AC	District level:	● Increase in employment opportunities ● Population influx	
		● The level of HIV/AIDS may increase during operation due to high interaction of people	● Awareness sessions on HIV shall be provided to Contractor, Consultant and community members residing at the village, and the project may support the DC awareness programs
		● Women are more actively engaged in income generating activities than men	● The contractor shall support both groups of men and women to be engaged in activities that support project implementation
		● District Council officials and the community have high expectations regarding the project	●
	Community level:	● Growth of town due to the AC. ● Job opportunities to community members residing along the site ● Increase of income and cash flow ● The project will simplify transportation of agricultural products to the market ● İncrease of crimes at the village due to population influx which will arise to the need of a police station	●
		● Dust emission during construction ● Noise pollution during construction ● Destruction of natural vegetation.	● During site clearing for construction the contractor shall comply with environmental conservation policy(cut one tree plant 3 trees).
		● The project should assist in improving other infrastructure to connect the interior of the District for easy collection of agricultural products to the AC.	● The contractor may support the DC efforts to connect the interior for easy access to the AC
Bunda DC/Masahunga FAC	District level	● The project may bring conflict between the DC and the TC, during taxation. Most agricultural products are produced at the District level and being taken to the TC (Bunda AC) being taxed twice, this will result into:	● The DC suggests that the project should provide a store for collecting agricultural products to be collected easly

Administrative level	Stakeholders consulted	Issues raised	Responses
		● -Smuggling of products/ crops from rural to urban areas ● - service levy on crops to decline	
		● The village will grow and increase in individual household income	●
		● The project will simplify the collection and transportation of fish products	●
		● Stable fish prices in the market and growth of the fish market	●
		● Destruction of natural vegetation (will lead to land erosion)	●
	Community level:	● Masahunga Villagers were happy to receive the permanent project in their Village, also were gratefully to PMO to bring that project at the village. ● Destruction of seasonal wetlands, used for rice padding around the project site	●
		● There is a land conflict between the village government and one individual “Mr Masumbuko”. The village government claim to have won 5 times at the court for the title deed of the land	● The district and village level agreed to harmonize with the second part “Mr. Masumbuko” on the benefits of the project and for him to evacuate the area for development project
		● Currently fish is being collected and transported by an individual “Kassim” every Wednesday, establishment of FAC may mean destruction of his business	●
		● There are multiple livestock routes “Mapalio” near the project site,	● All route “Mapalio” shall be identified and alternative routes shall be established
		● Increase in job opportunities to community members residing near the project ● The village will be known international ● Wastes from the FAC may be left to the community members to be used as animal fodder ● Provision of Corporate Social Responsibilities (CSRs) ● Will lead to flow of waste of water in the lake, where the community around depend on it.	●
		● Dust and noise pollution during construction	●

Administrative level	Stakeholders consulted	Issues raised	Responses
		● Spread of HIV/AIDS/STD's diseases at the village. ● İncrease of crimes at the village due to influx of people. ● The government through the DC should increase awareness ● to help providing awareness about the projects to the community because at the village FAC will be the first project to occur at the village, so the community don't have any idea on how to grab opportunities which will be found.	
Bunda Town Council (Tairo and Makongeni AC)	District officials:	● Increase of local employment ● Availability of market for agricultural products ● Increase of houses built for business (renting) ● Increase of value to agricultural products ● The land is free from conflicts but there are illegal residential structures within the site	●
	Community:	● First compensation for evacuating the proposed site was conducted unfairly, PAPs are not satisfied, 3 households have not yet been compensated. ● Loss of livestock feeding grounds and increase in poverty due to loss of livelihood activities, due to searching for feeding grounds once the project commences ● The wetland at Tairo site may be polluted during construction and operation, the area is considered as fish breeding grounds ● Sometimes elephants may cross the site around May-June, I persons death was previously reported to DC offices ● The project structures should be located at the beginning "Makongeni' of the site and the Tairo site at the lake should be free for livestock for drinking purposes or the project may assist in creation of animal drinking place 'josho" ● Water infrastructures crossing the site from the lake to OLAM industry, (the infrastructure is laid underground along the electrical transmission lines), may be destroyed during construction	● The contractor shall contain all the waste water to reduce pollution ● The village council will oversee the compensation process again to the DED office to solve the land conflict. The DC will harmonize with the households that were not compensated as there have not been any conflict regarding the land, since records show that the land is owned by the DC and EPZA ●

Administrative level	Stakeholders consulted	Issues raised	Responses
		● Lake water pollution will kill their livestock and people during construction and operation at Tairo site ● SW may be produced during operation	
Maswa DC/ Ikungulyasubi	District officials:	● Destruction of natural resources of the environment and loss of habitat for Small animals' ● Dust during construction (air pollution), there should be a plan to reduce dust such as water spraying ● Deforestation during site clearing for construction	● The contractor shall comply with the Environmental conservation policy for the DC for reafforestation is "cutting 1 tree planting 5 trees" ● The trees cleared for construction should be given to the community for firewood
		● Availability of market for agricultural products and fixed prices ● Increase of income and improved livelihood ● Increase of employment opportunities ● Increase of income and improved livelihood activities for the DC through service levy/tax ● Increase of household income ● Use construction material from the local community ● Employment should be considered to people from the surrounding community, and conditions for employment should be known to the community earlier ● EIA report should be sent to the DC offices ● The project should construct boreholes for the community leaving nearby	●
		● Loss of land for roads around the site for agricultural farms around the site	●
		● Maswa DC is leading in HIV/AIDS cases within Simiyu region, and may increase during construction and operation due to population influx ● Killing/slaughtering of older women for witchcraft reasons at the Maswa DC, 1 woman was found slaughtered during our site visit	● The Contractor shall create training programs to workers for HIV/AIDS awareness and provision of condoms ● The contractor shall support the DC programs to increase awareness
	Community officials	● No wildlife animals but hyenas may be present in the shrub bushes and mostly attack livestock ● The village has no water sources, the available water source is 3km from the site, the project may	●

Administrative level	Stakeholders consulted	Issues raised	Responses
		allow the community to use their water source in case they decide to have a borehole within the site during construction ● The project may support the water irrigation scheme that was not developed properly by IFAD, 2002 ● Haphazard disposal of solid waste during operation ● Reduction of animal feeding ground ● Reduced distance for searching for markets	
		● Accidents due to movement of vehicles during construction ● Change of cultural norms and traditions due to population influx ● Early pregnancies ● Theft at the project site during construction ● Establishment of new residential structures, the village has no health Centre ● The project should also construct animal drinking place "josho" ● Increase availability of good seeds for improved and high production of agricultural and animal products	● ●
Bariadi DC/ Dutwa AC	District officials:	● The DC will be able to keep records on agricultural sales and statistics ● The DC will have attained permanent building structures and they will benefit through taxation ● The collection point will connect farmers and buyers ● Farmers will get markets for their agricultural products ● There will also be a competition on the buyer's side ● There is gully erosion on the seasonal river near the site, the river may expand over time and reach the site ● The collection point may benefit the horticultural products ● No wildlife animals but hyenas may be present in the shrub bushes and mostly attack livestock	● The contractor shall comply with the district's bylaws "of 2016 in a year every household shall plant 10 trees and for institutions 50 trees in a year"
		● The seasonal river may be polluted by solid/liquid waste	●

Administrative level	Stakeholders consulted	Issues raised	Responses
	Community officials	● It will add value to their agricultural products ● They will benefit from the stable prices set by the government ● Increase in employment opportunities ● Increase in markets for agricultural products ● Increase in building houses for business (renting) ● Haphazard disposal of solid waste ● Management of agricultural products preservatives ● Dust pollution ● The community may benefit by getting a building structure from the project in partnership with the DED offices. ● The collection point may lead to loss of jobs for middlemen of agricultural products who are mostly women ● The community may benefit by getting a building structure from the project in partnership with the DED offices ● Spread of HIV/AIDS/STD's due to the project. ● The river which is peripheral to the site will be damaged during the project if will not be handling carefully. ● General biodiversity will be destroyed especially trees (Neem tree) during project phase. ● Natural resource (vegetation) will be affected. **Comments/ proposals:** - The project should benefit the village, by providing CSR support. - The project should help the Village Government by building village Office. - The project should help the village to repair the market. - The project must prioritize the community around in employment opportunities.	●

Administrative level	Stakeholders consulted	Issues raised	Responses
Nyang'hwale AC	Regional officials:	● The proposal is acceptable; it seems to have been delayed. ● It will increase sustainable markets for targeted raw materials. ● Stable prices for raw materials. ● Engage all stakeholders effectively to understand the approach	●
	District officials:	● Approach highly acceptable and aappropriate ● Device the mechanism for controlling quality of raw materials to be purchased for the industry ● Let the Government think for bringing the processing industry in the locality because of abundance of raw materials ● Support climate smart agriculture –inputs for biogas, ● It will add value to the targeted products ● Crop cess as revenue will increase ● It will stimulate expansion of agro-production ● Risks include increased transportation costs from AC to ATC and APH; ● Water sources likely to be affected around the site for the AC ● Air Pollution due to increased movement of vehicles ● All in all, the negative impacts will be low.	●
	Community members:	● It is highly acceptable and we have been engaged adequately. ● We need support to the irrigation system to increase production ● Improve delivery of agro-inputs; ● Include Rehabilitation of the charcoal dam which is the source of water for various horticulture activities.	●
Bulige AC	Regional officials:	● The proposal is acceptable; it seems to have been delayed. ● It is increase sustainable markets for targeted raw materials. ● Stable prices for raw materials. ● Engage all stakeholders effectively to understand the approach.	●

Administrative level	Stakeholders consulted	Issues raised	Responses
	District officials:	● Approach highly acceptable and appropriate ● Risks for failure to transport raw rice to the ATP in Bukombe and opt to go to Kahama ● Peasants prefer selling rice instead of unprocessed rice ● Crop cess as revenue will increase. ● It will stimulate expansion of agro-production	●
	Community members:	● The approach is good as it is not new because there is already a Centre funded by MIVARF. ● The Processing for Rice should be Bulige so Rice to be processed here ● It will add value for our rice as we can wait for proper prices rather than selling at pressure. ● Employment will be created through this approach. ● Improve delivery of agro-inputs;	●
Nyamigota AC	Regional officials:	● The proposal is acceptable; it seems to have been delayed. ● It is increase sustainable markets for targeted raw materials.	●
	District officials:	● Positively will benefits farmers; It will create employment; private vehicle owners to benefit as their vehicles will get work. ● Risk of inadequate raw materials due to effect of climate change;	●
	Community members:	● Improve the plan by developing a centre for modern crop types; ● Modern livestock species for quality products; Provide incentives for inputs to motivate farmers/pastoralists. ● It is opportunity for Nyamigota communities	●
Kisengi AC	District Officials:	On the overall, the AC project was seen as a welcome boost to the local economy, and the general view was that small-scale producers may benefit from its operations. However, a number of clarifications were requested by the District authorities:	●

Administrative level	Stakeholders consulted	Issues raised	Responses
		● Need to clarify how the District Council will be able to benefit from project revenue ● More information and clarification is required on the management plan of the AC ● Project plans should incorporate capacity building of Agricultural and Livestock Extension Staff so that they are able to improve the quality of products ● How is the AC going to be more attractive than the current livestock market system? The AC may bring positive impacts to the local economy through the following: Introducing indicator prices (*bei elekezi*) for crops. Currently the prices are very low and farmers are at the mercy of middle-persons. Increase the value of hides,	
	Community Members:	More positive than negative implications are envisaged due to the following: ● Employment opportunities for local people especially the youth; ● Secure market for crops, and livestock, and hence a better price for the local producer ● The AC will provide a secure market for sunflower in particular whose quality deteriorates quickly after harvest ● The AC will facilitate a better price negotiation with local producers than is the current system of bargaining with middle-persons ● Women food vendors may secure a better opportunity for their trade especially during crop/livestock collection days ● The AC may stimulate more focused production patterns than the current small-scale for household consumption because of the poor markets The following issues were raised as concerns: ● The government should ensure that products are not collected on credit, because this will discourage them, and the option of selling small with low prices may eventually be resorted to.	●

Administrative level	Stakeholders consulted	Issues raised	Responses
		● The AC will definitely attract large numbers of producers and traders, which may generate a security threat. ● Other threats were directed at young girls and boys from possible sexual molestation. Mechanisms to avoid this threat should be put in place. ● The village will need proper Banking systems to cater for people's needs for savings. The small money vending shops operate with very small capital. ● Health risks are also envisaged because of the expected influx of people, especially STIs and HIV for both men and women. There is a need to have systems that will minimize people's exposure to this risk	
Kindai AC	Regional/District officials:	The proposed Kindai AC is expected to be a positive stimulant to the Municipal economy. It will however face competition from the already established trades in crops and livestock in the Municipal that involves traders from other regions of Tanzania, and from neighbouring Kenya. ● In this case, the AC will have to offer quite attractive prices. ● Design favourable terms to producers, such as contract farming or an out-grower scheme where producers are supported (inputs, credit) to supply quality products to the investor The Municipal has already a network of agricultural crop traders who collect products from the rural producers in the region and store them in town such as at Namfua Stadium. Their biggest challenge was adequate storage capacity. In this case, Traders had already requested the Municipal Council government to secure part of the Kindai grounds for crop storage and marketing facilities. ● The AC thus comes as a positive step in this regard because it will ensure a secure storage for unprocessed crops	●

Administrative level	Stakeholders consulted	Issues raised	Responses
		● A livestock collection centre at Kindai will boost the already thriving trade of livestock at the site Support large-scale and small-scale farmers to ensure sustainable supply of products for the AC. Clarifications were requested on the following: ● More elaboration was need on the intended operational structure for the AC, particularly with regards to the responsibility of the Regional and Municipal governments in running the AC. ● It was proposed that a stakeholders coordination plan should be drawn on the same	
	Community members:	The proposed AC will have the following benefits: ● Stimulate an increase in the volume of livestock trade ● The proposed AC will not interfere with the current activities of the meat (nyama-choma) trade because of the large space available ● However, as a product collection centre, the AC will not be beneficial to other products from livestock – such as hides/skin and milk. ● Hides/skin fetch a discouraging low price hence most of it is discarded, some of it within the Kindai livestock market site. ● The AC should therefore also add some processing facilities for those products that local people also trade with	●
Buchosa FAC	District officials:	The Bukokwa AC is expected to stimulate the local economy in many ways, including ● Increase crop production because of the availability of a reliable market, market prices for the lcal producer ● Raising the profile of crop marketing in the area, which has been surpassed by fish products. For example, it may improve cooperatives and hence a stronger platform for producers	●

Administrative level	Stakeholders consulted	Issues raised	Responses
		● Improve livestock trade and incomes on the local people. Local people however needed skills enhancement to be able to produce quality products. ● Stimulating the development of other social services in the district including the road network, and other services such as education, health care. Clarifications were requested on the following aspects ● Clarity on the ownership of the facility, especially in relation to District Council benefits ● It is not clear what mechanisms will be put in place to handle the competitiveness of crop and livestock marketing in the area, and that will enable the AC to operate as envisaged. The final project write-up should be submitted for scrutiny and approval of the Council Management Team	
	Community members:	The proposed AC facility at Bukokwa will have many positive benefits ● Employment opportunities for the youth, many of whom do not have land for farming ● Improve quality of produce since it is envisaged that the AC will have modern storage facilities Suggestions ● The project should follow a transparent process of intervention at local level in order to will local people's trust ● Need assurance of the benefits to the Ward/village since the livestock auction is one of the biggest sources of revenue	●

9.4 GRIEVANCE MANAGEMENT

Grievance redress mechanism (GRM) is an important aspect of stakeholder engagement activities. A grievance or complaint can be raised by an individual or group of people within the community. The grievance or concern can result from perceived or real impact as a result of Project activities. The SAPZ community grievance redress mechanism should be broadly and regularly publicised, especially during the pre-construction and construction phase to ensure that grievances and concerns are appropriately channelled and registered.

9.4.1 Purpose

The community grievance mechanism enables any stakeholder to make a complaint or a suggestion about the way the Project is being implemented. Grievances may take the form of specific complaints for damages/injury, concerns about routine Project activities, or perceived incidents or impacts.

The purpose of the community grievance mechanism procedure is to implement a formalised process (identification, tracking and redress) to manage complaints/grievances from communities and other local stakeholders in a systematic and transparent manner that could potentially arise from the Project. The grievance mechanism should ensure adequate access to adequate remedy for Project affected individuals.

9.4.2 Scope

In line with the existing procedures, responsibilities for managing grievances during planning and construction are as follows:

- Grievances related to the Project in general and to land acquisition and involuntary resettlement are under the Project proponent responsibility; and
- Grievances directly related to construction activities (such as dust, noise, road safety, health and safety, local recruitment, etc.) are under Contractor responsible for Project construction activities.

9.4.3 Grievance Procedure

The overall Project grievance mechanism that will be followed during planning and construction, to comply with international standards. Project grievance redress mechanism is illustrated in **Error! Reference source not found.** below.

The GRM will include the following five-step procedure:

Step 1: Receipt and Registration

An aggrieved individual may submit a grievance verbally or in writing via Project Grievance Form to their respective village chairperson, village executive officer or other local authority. The aggrieved individual may also choose to directly call a dedicated Project representative.

Step 2: Classification and Prioritization

Grievances that have not been resolved at the local level will be classified and prioritised by the Project team. A dedicated Safeguards team will determine the potential social risk, and subsequent steps for investigation. This may require reviewing records of similar incidents or occurrences, any available evidence, supporting documents, or statements.

Table 9-4: Proposed Grievance Classifications

No.	Classification
Category 1	Safeguards, including compensation disputes, land allocation and delays in compensation
Category 2	Grievances regarding violations of policies, guidelines, and procedures such as Land policies of Tanzania, regulations and misconducts.
Category 3	Grievances regarding contract violations. e.g. between village authorities and the contractor.
Category 4	Grievances regarding abuse of power/intervention by project or government officials
Category 5	Grievances regarding construction misconducts/violation of safety and precautions by the construction personnel.
Category 6	Grievances on sexual abuse/harassment and misconducts by any project related persons
Category 7	Suggestions
Category 8	Appreciation

Step 3: Investigation

The resolution of a grievance may require additional information to clarify the situation and/or improve communication between the complainant and Project safeguards team. In addition, it may be necessary to introduce mitigation measures to prevent the problem from recurring in the future. If the grievance relates to a specific site or location, a safeguards expert will organise a site inspection. The investigation will gather supporting information to identify corrective or preventive measures to properly address the grievance including photographs and/or other documentary evidence.

Step 4: Resolution and Feedback

At the completion of investigations, Project safeguards expert will draft a formal communication to the complainant detailing the investigation findings as well as any proposed response. The expert will communicate the response, discuss any mutual commitments, and ask for the complainants' agreement. If the complainant is not satisfied with the resolution, or the outcome of the agreed corrective actions, the response should be reviewed and (if appropriate) amended in light of further discussion/negotiation.

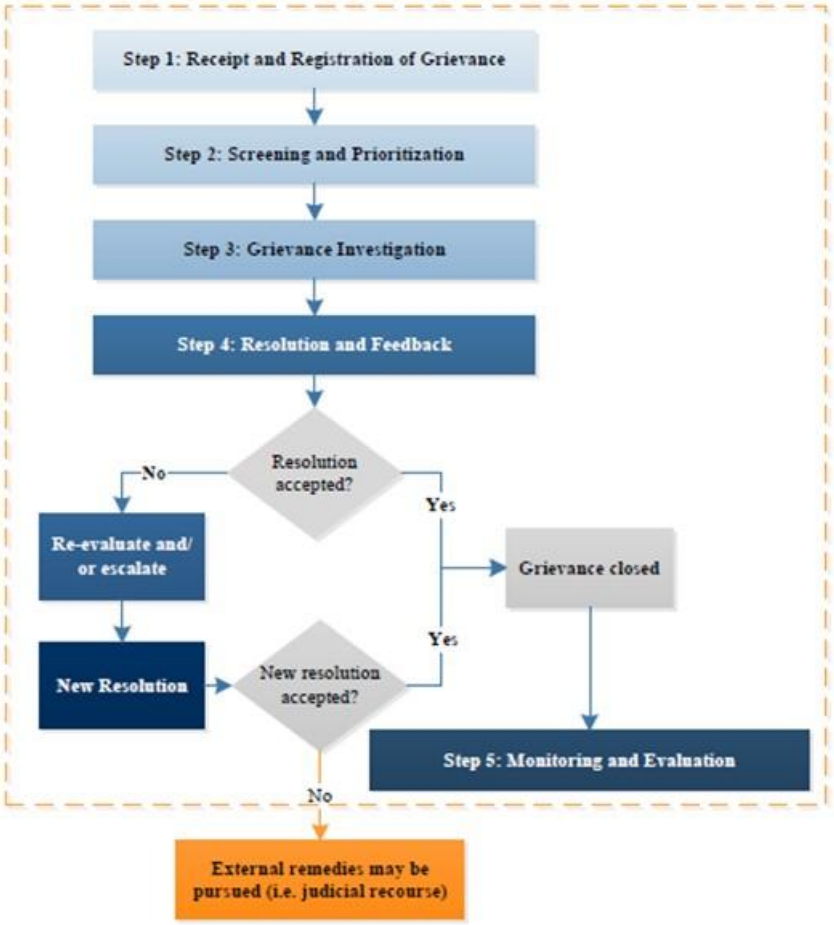
Formal responses will include:

- Compilation of photos or other documentation of the grievance;
- A record of the date and time the resolution was presented, a summary of corrective actions, and the signature of responsible Project staff;
- A record of the meeting with the complainant to form a collective agreement closing out the claim; and
- Where issues are resolved to the satisfaction of the complainants, a confirmation of agreement that will be filed along with the case documentation and the grievance will be closed.

Step 5: Monitoring and Evaluation

All correspondence and corrective actions will be tracked in the grievance database. Reports from the grievance database including resolution and feedback will be used for discussing the effectiveness of the GRM as well as any common or recurrent issues that may indicate the need for structural changes in Project activities. GRM results may be reported back to the community as well as any changes made to the GRM process via village meetings.

Figure 9-1: GRM Procedure during Pre-construction and Construction Phases



10 RESOURCE EVALUATION

10.1 INTRODUCTION

Cost Benefit Analysis is a tool used either to rank projects or to choose the most appropriate option. The ranking or decision making is based on the expected economic costs and benefits. The general rule is that the project should be undertaken if the expected lifetime benefits, both environmentally and socially, exceed all expected environmental and social costs.

The aim of Environmental and Social Cost Benefit Analysis (ESCBA) is to present the lifetime costs and benefits of a project as a single number that can be compared to either the interest rate prevailing or the costs and benefits of environment. To get this indication, the stream of net benefits (benefits minus costs) is discounted.

The process of conducting the environmental cost benefit analysis involves:

- Description of the project and corresponding capital costs.
- Identification of the project consequences in time frame order and obtain their monetary values.
- Determination of the type of Environmental and Social Cost Benefit Analysis

10.2 ENVIRONMENTAL AND SOCIAL COSTS

As presented under Section 7, the project negative impacts during construction and operation of the SAPZ development project will include impacts on air quality for dust and emissions, water resources, public health, soil erosion, loss of flora and fauna due to impact on the natural habitat, impacts solid and liquid waste generation, noise pollution and vibration, impacts on public health (an increase in HIV/AIDs cases) and safety from work camps operations, impacts in traffic management, contamination of water from leakages from oil and grease, any other disruptions of infrastructures(water pipelines, sewerage and drainage systems, electric reticulation facilities etc.) and socio-economic changes and disturbance to cultural and historical sites.

If each one of these negative impacts is assigned a monetary value at current market value, based on a combination of market value methods and one's willingness-to-pay methods for the damage or impact caused, or based on cost for a remedy such as water sprinkling to control dust or provision of PPE, all these impacts (including the monitoring costs estimated under Chapter 9) all are worth about a million dollars. The market prices or monetary values of environmental negative impacts are very difficult to obtain. They cannot be easily calculated as we can do for the project costs. The estimates on environmental costs are based on the assumption that the environmental cost may be equated to the cost of prevention or remedy in terms of providing PPE or health insurance as per common practice.

10.3 INTANGIBLE COSTS OF OTHER ENVIRONMENTAL AND SOCIAL IMPACTS

In the previous section, attempts have been made to assign dollar value on other impacts such as emissions, poor air quality, noise pollution, pollution of soils and ground water, etc, but it has emerged that some of these impacts cannot be quantified in monetary terms. The fact that cost-benefit-analysis seeks to translate all relevant considerations into monetary terms makes the whole analysis complex. In cost –benefit analysis, both the cost of, say, putting a dripping pan under the leaking grader or a front-wheel loader to reduce ground water pollution and the benefits of doing so including saving the human lives and prevention of debilitating and painful cancer diseases from consuming carcinogenic substances, are presented in terms of dollars.

10.4 Environmental and Social Benefits

The Project will open many opportunities to the districts and other neighbouring centres, regions, and nation at large. The Project will allow more agriculture activities, thus boosting local economies within short times and more benefits will be gained.

The Project activities will offer some short-term employments to local community such as construction labourers, security personnel, contractors, Engineers, Environmental Impact Assessment teams, etc.

Many more benefits ranging from taxes on construction materials, availability of good infrastructure in the districts, etc. will be realised. Overall, the project will have great benefits economically and environmentally compared to current status of the districts. Therefore, the benefits to be realised from the project surpass the envisaged environmental and social costs within the lifetime of the project.

10.5 Conclusion

As a conclusion on the proposed project, the environmental and social costs are relatively lower in value and are thus outweighed by the benefits to be realized from the project. The consideration of “No-Project” or “Do-Nothing” option is dismissed as an alternative due to the need and desirability of the system to address the youth unemployment challenge, create an enabling environment in which the private sector, young men and women will be capacitated to undertake agricultural value additions activities along the entire value chain ecosystem, with a view to increase agricultural products production and productivity, adding value, improve household income, generating employment, and increasing domestic consumption and exports. Therefore, the country at large stands to benefit significantly in terms of a thousand million dollars saved, in time and money, if the project is implemented.

11 DECOMMISSIONING

Decommissioning is the final phase in the life cycle of the project after locating the site, design, construction, commissioning, and operation for the design life. Most often, it is a process involving operations such as dismantling and demolition of structures, and management of resulting demolished materials. All these activities have to take into account of the environmental health and safety requirements for the operating personnel, the general public, and any implications for the environment.

The design life of the project road will be about 20 years or so based on associated infrastructures. The letter may operate for 20 years or so depending on the materials used to construct them.

As long as the community is surrounding the project locations, therefore, decommissioning of the proposed project should be thought in terms of upgrading from the present status to the next higher stage depending on the demand at that time.

If at any one time, the constructed become ineffective such that an upgrade is required, then according to the first schedule of the Environmental Impact Assessment and Audit Regulations of 2018, the project will be falling under the list of projects requiring a fresh Environmental Impact Assessment.

12 CONCLUSIONS AND RECOMMENDATIONS

This Environmental and Social Impact Assessment Study has been conducted in accordance with the Tanzanian Legislations including the Environmental Management Act (2004) and the Environmental Impact Assessment and Audit regulations (2018). The study has involved field surveys to collect environmental and social data through consultations with representatives of local communities along the project area. The stakeholders raised their concerns regarding environmental and social impacts of the project and the proposed mitigation measures. The stakeholders' concerns on proposed mitigation measures will be integrated in the requirements of the project.

The baseline assessment of the characteristics of the area within the proximity of the project area of influence has been adequately carried out. Socio-economic assessment indicate that majority of local population are generally involved in local economic including farming and fishing. Therefore, the proposed project will significantly improve the overall socio-economic well-being of the project area.

The overall impacts of the project are minimum and the recommended mitigation measures are effective to address, reduce, and offset these impacts. Furthermore, during construction phase the impacts identified are direct, indirect, short term, temporary, irreversible, and most often under the proponents' control. Moreover, the impacts during operations are relatively low and adequate environmental management systems will be employed to address and mitigate them.

Therefore, the Consultant asserts that all environmental and social impacts associated with the aggregation centers / fish aggregation centers and connectivity infrastructure have been identified and the recommended mitigation and management measures can adequately addressed the identified impacts when implemented accordingly.

13 APPENDICES

13.1 APPENDIX 1: STAKEHOLDER ENGAGEMENT SIGNATURE SHEET

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE TANZANIA SPECIAL AGRO-INDUSTRIAL PROCESSING ZONE (SAPZ)

STAKEHOLDER CONSULTATION FORM

S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
1	INNOCENT M. MUKANDAGA	BIHARAMULO DC	DED	0784-849699	[signature]
2.	MICHAEL P. MKUTI	B'MULO DC	DSMO	0784-725593	[signature]
3.	BEATHA P. MAGANGA	B'MULO	CDO	0787-~~208-35~~ 203820	[signature]
4	YUSUPH M SAID	B'MULO DC	CAMTO/ARDHI	0756917133	[signature]
5	Bruno Ngawagaba	B'mulo	Ag. DAICO	0767093830	[signature]
6	ANITHA A. PRIMUS	B'MULO VEO-LUSAHUNGA	VEO-LUSAHUNGA	0652188621	[signature]
7	CHARLES NGWANO	Afisa mifugo	LUSAHUNGA	0769929412	[signature]
8	PAULO SYLIVANUSI	KATIBU-MENEJA AMCOS	LUSAHUNGA AMCOS	0753562977	[signature] 16/11/2021
9.	Editha Ngoma	AFDB / PMO	EIA	0677054570	[signature]
10.	Maisory Chacha	AfDB / PMO	Consultant	0767 222367	[signature]
11	GRACE MARANDU	AFDB / PMO	EIA	0765948789	[signature]

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S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
1.	MESHACK K. PAULO	MJUMBE		LUSAHUNGA	[signature]
2	Joel NDABHALIE	MJUMBE		LUSAHUNGA	[signature]
3	CHARLES SEN	-//-		LUSAHUNGA	[signature]
4	SYLIVESTER - PHILIMON	Mjumbe		LUSAHUNGA	[signature]
5	EMANUEL - CHALES	Mjumbe		LUSAHUNGA	E.C
6	Andrea Bernardo	"		LUSAHUNGA	[signature]
7	Elias Byabasiga	Mjumbe		LUSAHUNGA	[signature]
8	YOHANA GEORGE			LUSAHUNGA	[signature]
9	MISHO MAGEZA	—		LUSAHUNGA	[signature]
10	JAKOBO PETULO	—		LUSAHUNGA	J. PETULO
11.	HERENA DEUS	— — —		LUSAHUNGA	H. D.
12	Tilumgany la Athanaz	— — —		LUSAHUNGA	T. A
13.	MATHA STIVIN	— — —		LUSAHUNGA	M. S.
14	RAMADHAN RASHID	MJUMBE		LUSAHUNGA	[signature]

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S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
15	RASHID JAMES	[illegible]	MWANANCHI	LUSAHUNGA	[signature]
16	JOHN MATHAH				JOHN
17	ISACK BUSEGWA		MJUMBE	LUSAHUNGA	[signature]
18	Sofrei Yusuph		MJUMBE	LUSAHUNGA	S.Y
19	LUCAS NYAMC		M/KIT, BARAZA	LUSAHU.	[signature]
20	DAUSON LAURENT		M/Kiti	LuSAHUNGA	[signature]
21	JONH		BAKARIMUJAMAA	LUSAHUNGA	[signature]
22	MATONGO PAULO		MJUMBE	LUSAHUNGA	[signature]
23	ELIZEUS-LUGO		MJUMBE	LUSAHUNGA	Eliz-eus
24	PETER JOSEPH		M/KITI KIJIJI	— " —	[signature]
25	JOHANES M. RWEBUNGURA		WAEO	0762496923	[signature]

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S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
26	ERNESTI RENATUS	MJUMBE		KIKOMA	E.R.
27	LUHUMBIKA MALUNDA	JUMBE		KIKOMA	[signature]
28	MARIAM ABDALLAH	JOHN		NYAMBALE	ABDALLAH
29	SALVATORY.T.ITANISA	MJUMBE		LUSAHUNGA	[signature]
30	EVODIA BURCHAD	MJUMBE		LUSAHUNGA NYAMBALE	E-L
31	COLETHA BARINABA	MJUMBE		LUSAHUNGA	C.BARINABA
32	PETERO MAGWAMI	MJUMBE		LUSAHUNGA	[signature]
33	ZAKAYO TIBANZIGA	MJUMBE		LUSAHUNGA	Z. Tibanziga
34	ALISASI RUBANGIKA		M/H/ KIJIJI	LUSAHUNGA 0683-372611	[signature]
35	Amos Festo	Mjumbe		Lusahunga	[signature]
36	Gerevas John	Mjumbe	MH.	Lusahunga	[signature]
37	DEUS, ETSAU	MJUMBE	4 —	LUSAHUNGA	DAYS
38	YUSUPH Kulwa	MJUMBE	M/H/ KIJIJI	LUSAHUNGA	[signature]
39	MSORA - MAGUMBA	MJUMBE	—	NYAMBARE	M-MAGUMBA

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S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
01	SALUM MTELELA	CENTRAL GOVERNMENT	DAS	0653344495	
02	CHANZUA M. MKAZALA	BUNDA DC	DED	0754-821313	
03	PETRO S. SWEKE	BUNDA DC	Ag DLFSO	0767 979880	
04	ASHELY O. MAHUA	BUNDA DC	DALCO	0767074910	
05.	MOHI NGOMBALWA	BUNDA DC	Ag. DEMO	0766 841739	
06	FREDRICK MABATI	BUNDA DC	TP.O	0764792221	
07	Maiory Chacha	AFDB / PMO	Consultant	0767 222367	
08	Editha Ngaiza	AFDB / PMO	E IA	0677054570	
09.	GRACE MARANDU	AFDB / PMO	EIA	0765948789	
10.	FAUSTINE M. KAMOGA	BUNDA DC	M/KITI MASAHUNGA	0767012666	F. Mango
11.	NDARO M. TAGIRI	BUNDA DC	VEO-MASAHUNG	0763438167	
12	KABUCHE NISANGO	MASAHUNGA BUNDA DC	MJUMBE H/KITI	0752189295	Sangoi Sor
13.	FURAHA MAIGA	MASAHUNGA	MJUMBE	0679985575	F. Maiga
14	MUSIRA MASONGA	MASAHUNGA	MJUMBE	0754500286	M. Masonga

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S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
15	PASKAL BWANAMAIA	MASAHUNGA	MJUMBE	0744-192416	
16	FAUSTINE MBIBI	MASAHUNGA	-11-	0652258510	
17	EMMANUEL NIBIBI	MASAHUNGA	MJUMBE	0655302606	
18	AMOATI MAIGA	MASAHUNGA	MJUMBE	0710957434	A. Maiga
19	PEMDI KELEJA	MASAHUNGA	MJUMBE	—	D. Keleja
20	MIYAGA - MAGEGA	MASAHUNGA	— 11	0762126591	
21	AMINA ADAMU	MASAHUNGA	MJUMBE	0759147924	
22	DEMETRIA KAMG	MASAHUNGA	MJUMBE	0748318109	DEME
23	ADAMU ALLY	MABATINGA	MJUMBE	0757240670	
24	LUKAS MAJURA	MASAHUNGA	MJUMBE	0744944821	
25	WATANDA MUSIMU	MASAHUNGA	MJUMBE	—	Watanda
26	KLEMFRIDA LAMECK	MASAHUNGA	MJUMBE	0747398639	Kl. LAMECK
27	JUDITH KAMBILA	MASAHUNGA	MJUMBE	0788259196	J. KAMBIRA
28	YAIRO J BUJUKO	MASAHUNGA	MJUMBE	0763544710	

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S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
29	MUITARUBI FAUSTINE	MASAHUNGA	MJUMBE	0752997742	Muitaruba.
30	MAGWEGA MASHAURI	MASAHUNGA	MJUMBE	0746130249	Magwega
31	WAJANGA BULUMA	MASAHUNGA	MJUMBE	0756852371	Buluma
32	MASUMBUKO NYAMUYAMA	MASAHUNGA	MJUMBE	0758014158	
33	JAPHET K. KAMBIRA	MASAHUNGA	MJUMBE	0764974340	Kambira
34	DEONATUS MASASI	MASAHUNGA	—	0742094315	Deo
35	MATHEW NYAMUYAMA	MASAHUNGA	—	0753094332	
36.	AMOS MASHAURI	MASAHUNGA	—	0742298641	
37	KONDORO SADICK	MASAHUNGA	—	—	KONDORO
38	RAZARO NYAMBANGA	MASAHUNGA	—	—	Lazaro
39	MERESIANA AZIZI	MASAHUNGA	—	0689252879	mele
40	MGAMBI JASPAR	MASAHUNGA	—	—	Mgambi
41	NYAMBURI SOSPITER	MASAHUNGA	—	0762188465	Nyamburi
42.	MACHUMU MASASI	MASAHUNGA	—	0679458848	M. Masasi

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43	SEVERIN LUBATO	MASAHUNGA	Mjumbe	0714979410	
44	CHIDADI BWIRE	MASAHUNGA	MJUMBE	0743055984	
45	NYABUEKE LEONARD	MASAHUNGA	MJUMBE	0744708759	N. Leonard
46	PETER FAUSTINE	MASAHUNGA	- / - / -	0744280742.	
47	MAYUYA MASASI	MASAHUNGA	- / - / -	0746188771	Masasi
48	PRISICA BANDOMA	MASAHUNGA	MJUMBE	0742524388	P. bandoma
49	ELIZABETH	MASAHUNGA	MJUMBE	—	ELIZABETH
50	MARIA SAKOINE	MASAHUNGA	MJUMBE	—	MARIA
51	Leolendia Magesa	Masahunga	Mjumbe	0753225390	LMagesa
52	DEVOTHA D. TAGA	MASAHUNGA	Mjumbe	0768250017	Dtaga
53	IMACULATH LUGEMBE	MASAHUNGA	mjumbe	0757661338	I. Lugembe
54.	AVELINA FABIANI	MASAHUNGA	Mjumbe	0768317575	Avelina
55	Veronica Revocatus	Masahunga	Mjumbe	0748152566	Veronica
56	Agnes John	masahunga	mjumbe	0767324384	Agnes

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STAKEHOLDER CONSULTATION FORM

S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
56	VERONICA JULIUS	MASAHUNGA	MJUMBE	0769898153	Julius
57	NYANDARO MORIYO	MASAHUNGA	MJUMBE	0787583719	nyandaro
58	MONUGA JACKISON	MASAHUNGA	MJUMBE		Monica
59	RAMADHAN KATIRA	MASAHUNGA	MJUMBE	0765386456	Rkatira
60	JACKSON KELELE	MALAHUNGA	MJUMBE	0752817405	JKeleje
61	MGETA PITER	MASAHUNGA	—11—	0763458984	Mgeta
62	BARAKA MGEWA	MASAHUNGA	—11—	0755227897	Baraka
63	PIUS MAGESA	MASAHUNGA	—11—	0762300620	P. Magesa
64	MODESTA MABAGARA	MASAHUNGA	MJUMBE	07633798844	Modesta
65	MAGESA JARON	MASAHUNGA	—11—	0710927922	J.J.
66	STEVEN IGWABI	—11—	—11—	D767694880	SIR
67	DAUDI NYAKOSE	MASAHUNGA	—	0768595474	
68	BOAZI NKLASTA	MASAHUNGA	—11—	0752 98 66 67.	Boazi
69	JARON JAPHET	MASAHUNGA	—11—	0754 055185	JR

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE TANZANIA SPECIAL AGRO-INDUSTRIAL PROCESSING ZONE (SAPZ)

STAKEHOLDER CONSULTATION FORM

S/N	NAME	INSTITUTION / TAASISI	POSITION / NAFASI	PHONE NUMBER & EMAIL ADDRESS	SIGNATURE / SAHIHI
70	SALAPHINA MAGESA	MASAHUNGA	MJUMBE	—	Salphina
71	DICKSON - DELIS	MASAHUNGA	MJUMBE	0743-142332	Dks
72	PASTORY MPANZU	MASAHUNGA	MJUMBE	0747887356	P. mpanzu
73	BENADETA LWITAKUBI	MASAHUNGA	MJUMBE	—	Bdeta
74	TELESPHORY MUONA	MASAHUNGA	MJUMBE	0769214153	
75	DINA EMANUEL	MASAHUNGA	MJUMBE		Dina
76	LWITAKUBI W. CHINUMO	MASAHUNGA	MJUMBE	0863441956	Chinumo

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE TANZANIA SPECIAL AGRO-INDUSTRIAL PROCESSING ZONE (SAPZ)

STAKEHOLDER CONSULTATION FORM

S/N	NAME	INSTITUTION/ TAASISI	POSITION /NAFASI	PHONE NUMBER& EMAIL ADDRESS	SIGNATURE /SAHIHI
1.	RICK KADIRI	BUNDA TC	TLFO	0784392029 rickkadiri@gmail.com	[signature]
2	GERALD M. MAAGI	BUNDA TC	AGRIC OFFICER	0766508242 geraldmaagi300@yahoo	
3.	STELLA S. KAZINJA	— " —	CDO	0756-509454	[signature]
4	WEREMA M. MUGANDA	BUNDA TC	Ag TEMO	0752788407	[signature]
5	PETER LUKAS	BUNDA TC	ARDHI	0769624619	[signature]
6.	EMMANUEL J. MKONGO	BUNDA TC	TD	0765657797	[signature]
7.	JOSEPH M GULAKA	— " —	MEO	0762738224	[signature]
8.	RENATUS MAKONE	KILIMO-BUNDA TC	WAEO	0744-425465	[signature]
9.	Marlony Chacha	AFDB/PMU	Consultant	0767 222367	[signature]
10.	NYERERE MURUMBE	BUNDA	MKITI	0757435320	[signature]
11.	JOSEPH M. MWITA	BUNDA	MJUMBE	0757421792	[signature]
12	[illegible] Zadock	Bunda	mjumbe	0765535085	[signature]
13	MRUNGO SURA	BUNDA	—	0759-776815	[signature]
14	MATHIAS - MASHAKU	—		0745031785	MATHIAS
15	AMOSY - WAHEKE	BUNDA	—	0768-803797	Amosy
16	EMMANUEL N. Chacha	Bunda	— —	0745399638	[signature]
17	PETER WAITIRIGWA	— —	— " —	0684 493 493	[signature]
18	MWITA CHACHA		-	0759658267	[signature]
19.	CHACHA WEREMA	— " —	— " —	0676632594	[signature]
20	MARWA NYAMATWI	—	—	0764325075	[signature]
21	Kiboko Bukama	— —	—	0787639613.	
22	SAMWELI MARWA	— - -	- - -	0765441047	[signature]

STAKEHOLDER CONSULTATION FORM

S/N	NAME	INSTITUTION/ TAASISI	POSITION /NAFASI	PHONE NUMBER& EMAIL ADDRESS	SIGNATURE /SAHIHI
1	Simon Bereje	MASWA	DED	674510044 0	
2	ROBERT E. URASSA	MASWA	DAICO	0784 593057	
3	DUTU LUBINZA	MASWA	DEMO	0786632781	
4	VIVIAN M. CHRISTIAN	MASWA	DLMRO	0755 986038	
5	EMMANUEL C. LUDONGA	MASWA	ECONOMIST	0765 35 39 18	
6.	MERCY D. NDUTU	MASWA	AgDCDO	0752555030	
7	DAUD S. DILA	DIWANI	DIWANI	0689 897487	
8.	ANGELINA NKOJA		MJUMBE	0683 795715	A. N
9.	VICENT. D. MAKEJA	VEO - Isubi	VEO	0762162055	
10.	VELONICA SHIJA	–	Mjumbe	—	V. S. Shija
11.	SIMON K. KAYINGI	mjumbe	—	0756-825196	Kayingi
12	AMOS LUTAMBI	m/kitongoji	—	0685893544	Amos
13	PAUL SAMBAKI	MJUMBE		0678399994	
14	ELIZABETH L. MAGANGA	MWAMASHIMBA	WAEO	0618447858	
15.	VIANEY. K. MSHOBOZI	MWAMASHIMBA	WEO	0679 997830	
16	MUNDESTER SALU	—	MJUMBE	0682455041	
17	MARIA COSMAS	–	MJUMBE	0767502453	
18	JULIUS M. KAPANDA	IKUNGULYABASHASHI	M/KITI	0758080537	
19	Marjory Chacha	AFDB/PMO	Consultant	0767 222367	
20.	Editha Ngaiza	AFDB/PMO	Consultant	0677054570	
21.	GRACE MARANDU	AFDB/PMO	Consultant	0765 94 8789	Maranda

UNITED REPUBLIC OF TANZANIA

PRIME MINISTERS OFFICE

LIST OF STAKEHOLDERS CONSULTED FOR THE PROPOSED AGGREGATION CENTRE (AC) AT

1. MSALALA DC 2. GEITA 3. NYANGWALE [2]

S/N	Name	Institution	Title	Phone	Signature
1.	JOHN P. WANGA	GEITA DC	DED	0754895245	phone discussion
2.	DAUD J. LUSTENIA	GEITA DC	DAICO	0752996381	
3.	HELEN EUSTUS	GEITA DC	A. MAZINGIRA	0620557594	phone discussion
4.	FAIAJA KALUA	GEITA DC	A. ARDHI	0622271371	Phone Discussion
5.	FURAHA CHIWILE	GEITA DC	M/JAMII	0755909184	Phone discussion
6	JOHN B. LUPAMA	GEITA DC	VEO	0752416223	
7.	KAZIMIRI P. MALINDI	GEITA DC	WEO-NYAMIGOTA	0756814545	
8.	HADIJA S. JOSEPH	GEITA DC	DIWANI NYAMIGOTA	0763620667	Phone discussion
9.	MESHACK M. SIYANTEMI	GEITA DC	MWENYEKITI KITONGOJI	0765358132	
10	KALOLI B. LUSHINIKA	GEITA DC	AFISA KILIMO	0625543551	

UNITED REPUBLIC OF TANZANIA

PRIME MINISTERS OFFICE

LIST OF STAKEHOLDERS CONSULTED FOR THE PROPOSED AGGREGATIC CENTRE (AC) AT

1. MSALALA DC 2. GEITA 3. NYANGWALE [3]

S/N	Name	Institution	Title	Phone	Signat
01	Rajabu [illegible]	Nyang'hwale DC	Ag. DED	0753820348	
02	Scholastica J. Kaishu	Nyang'hwale	DAICO	0752378092	
03	Dickson Mshumari	Nyang'hwale DC	DLFO	0766429215	
04	Sara U. Seme	Nyang'hwale DC	STP	0763460874	
05	Ntinyo Ezekiel	Nyanghwale DC	DEMO/DESO	0759480290	
01	DAUD MAKUNGU	NYANGHWALE	VEO - KIJIJI	0743620422	
02	LAZARO MONGO	NYANGHWALE	M/KITI S/KIJIJI	0753-03-8849	
03	CLEAH CLUFUNGA	NYANGHWALE	MJUMBE	0762078766	
04	MADUKWA P. BULUBA	NYANG'HWALE	M/KITI KITONGOSI	0744918291	
05	JOSEPH. M. IYEBO	NYANG'HWALE	M/KITONGOJI	0757316253	
06	MEDARD MAKALE	NYANG'HWALE	MJUMBE	0757321807	
07	KABIGA M.	NYANGHWALE	MJUMBE	0765685[illegible]	
08	MLYOMI D. TILONZO	NYANGHWALE DC	WAEO	0755015309	

UNITED REPUBLIC OF TANZANIA

PRIME MINISTERS OFFICE

LIST OF STAKEHOLDERS CONSULTED FOR THE PROPOSED AGGREGATION CENTRE (AC) AT

1. MSALALA DC 2. GEITA 3. NYANGWALE [1]

S/N	Name	Institution	Title	Phone	Signature
1.	Charles Fussi	DED Mcalala	DED	0744270868.	Phone discussion.
2.	Elikana Zabron	DPLO - Msalala	DPLO	0692689005	— " —
3.	Solomon Osano.	DAICO - agricultural, Irrigation and Cooperatives.		0762168274.	— " —
4.	Dr Ntanwa Kilaguile	Msalala DC	Livestock & Fisheries.	0759290894	— " —
5.	Goodluck Temba	Msalala DC.	DEO	0755944652	
6.	Gaspar Kiyabo	Msalala DC	FP	0757-162519	
7.	George Magenda	Msdala DC	Economist	0769-330088	
8.	ACCEN C. MAHEGA	M/KITI/BUJIJI	M/KITI	0746021272	
9	FANUEL M. MPINGA	MJUMBE	Mjumbe	0786218366	
10	JANE J MAGESA	VEO - BULIGE	VEO	0764077552	
11	MAZI KW.J.B.	M/KIJOMONI	mjumbe	0786113777	

JAMHURI YA MUUNGANO WA TANZANIA

SPECIAL AGRO – INDUSTRIAL DEVELOPMENT PROGRAMME

TATHMINI YA KIMAZINGIRA NA JAMII

S/N	JINA KAMILI	JINSIA	WADHIFA	MAHALI	ANUANI/SIMU	SAINI	TAREHE
1	NASSOR . O KASHESHELA	ME	MW/KITI	KIZENGI	0629680643	[illegible]	19/11/2021
2	HAFSA . S. MGASA	KE	WEO KIZENGI	KIZENGI	0628 247615	[illegible]	19/11/2021
3	BONIPHACE. N. MTEMBEZI	ME	K/UEO KIZENGI	KIZENGI	0628571842	[illegible]	19/11/2021
4	MARUNDE SHABANI	ME	K. KITONGOJI	KIZENGI	0623.849468	[illegible]	19/11/2021
5	ROSE H. MTEMBEZI	KE	MJUMBE	KIZENGI	0627329844	[illegible]	19/11/2021
6	NIIE KALGBE NTENGWALE	KE	MJUMBE	KIZENGI	0622058554	[illegible]	19/11/2021
7	SAIMON W. CHABAWAN	ME	MJUMBE	KIZENGI	0628388664	[illegible]	19/11/2021
8	MUSSA O. KASHESHELA	ME	MJUMBE	KIZENGI	0629530507	[illegible]	19/11/2021
9	GEORGE J. KAGOMA	ME	MJUMBE	KIZENGI	0625194322	Kagoma	19/11/2021
10	TAUSI M. MRISHO	ME	MJUMBE	KIZENGI	0625339805	[illegible]	19-11/2021

JAMHURI YA MUUNGANO WA TANZANIA

SPECIAL AGRO – INDUSTRIAL DEVELOPMENT PROGRAMME

TATHMINI YA KIMAZINGIRA NA JAMII

S/N	JINA KAMILI	JINSIA	WADHIFA	MAHALI	ANUANI/SIMU	SAINI	TAREHE
1	LUCAS P. MKUKI	ME	Ag. AAS - Uchumi	RS-SINGIDA	0752626150		20/11/2021
2	DR. DAVID E. MRIMA	ME	Mradigu	RS-SINGIDA	0659099735		23/11/2021
3	FAUSTINE F. KIYUI	ME	MAICO-	SINGIDA MC	0754531067		20/11/2021
4	DR. ADRIANUS R. KALEKEZI	ME	MLFDO	SINGIDA MC	0756868096		20/11/2021
5	MUSA SHABANI	ME	M'KITI GULIO	KINDAI	0755391164		20/11/2021
6	ZAINABU RAMADHANI	KE	KATIBU GULIO	KINDAI	0765755900		20/11/2021
7	[illegible] USIADAH JUMA	ME	MUUMBE	KINDAI	0755391164		20/11/2021
8							
9							
10							

JAMHURI YA MUUNGANO WA TANZANIA

AGRO – INDUSTRIAL DEVELOPMENT PROGRAM

TATHMINI YA KIJAMII NA KIUCHUMI

NO.	JINA KAMILI	WADHIFA	MAHALI	ANUANI/SIMU	SAHIHI	TAREHE
1.	PAULO S. MAKALA	DED	BUCHOSA DC	BOX 141 SENGEREMA / 0767633415		16/11/2021
2	CANDIDAH KYAMANI	AFMI FILO	RS-MZA	0784762287		16/11/2021
3	MARENZI INNOCENT KEYA	AFISA KILIMO	RS- MWANZA	0767 500 826		16-11-2021
4	TITUS KILO	AFISA UVUVI	RS-MWANZA	0764 969532		16-11-2021
5	MANGABE MNILAGO	RFO	RS-Mwanza	0735-539155		16/11/2021
6.	EMIL KASAGARA	AGS-UCHUMI	RS-Mwanza	0754972849		16/11/2021
7	YUSUPH F. BUSUMBA	DIWANI	BUKOKWA	0767 930601		16/11/2021
8.	JOSEPH T. BAHEGWA	WEO	BUKOKWA	0743756034		16/11/2021

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13.3 TERMS OF REFERENCE

TERMS OF REFERENCE

UNITED REPUBLIC OF TANZANIA

THE AGRO-INDUSTRIAL DEVELOPMENT PROGRAM,

Standard Terms of Reference

Environmental and Social Impact Analysis

September 2021

1 Introduction

The African Development Bank supports the Agro-industrial Development Program which is a comprehensive program that is geared to create an enabling environment in which the private sector, young men and women will be capacitated to undertake agricultural value additions activities along the entire value chain ecosystem. The latter is expected to improve program beneficiaries' income level as well as address the youth unemployment challenge. The Government of the United Republic of Tanzania (URT) is among the countries on the continent that expressed strong interest in participating in agro-industrialization development through Special Agro-industrial Processing Zones and requested Bank's support for financing.

The main objective of the proposed SAPZ in Tanzania is to support structural transformation of Tanzanian economy through agro-industrialisation with a view to increasing production and productivity, adding value, household income, generating employment, and increasing domestic consumption and exports. Specifically, the program will support the establishment of the integrated Lake Zone Special Agro-industrial Processing Zone comprising: i) a main agro processing hub (APH) located in Shinyanga; ii) three major agricultural transformation centres (ATCs) tentatively located in Geita, Tabora and Mwanza regions; and iii) a network of Aggregations centres (ACs) and Fish Aggregation Centres (FACs) to located in the procurement zones around the ATCs.

In other words, the proposed SAPZ will be developed in accordance with best industry practices and using eco-industrial parks standards. To ensure its social, economic and environmental sustainability, the proposed design will take into account all external dependencies and will seek to (i) establish agro-industrial infrastructure; (ii) build capacity of stakeholders in entrepreneurship; (iii) strengthen institutional capacity and develop innovative marketing incentives; (iv) identify potential and existing risks for development of sustainable agribusiness; (v) enhance the quality of procurement zone in terms of youth employment and skills development; (vi) create youth employment opportunites; (vii) create feasible business opportunities for SME's; (viii) help towards achieving food security; and (ix) leverage private sector resources for investments within the SAPZ.

The Project will be implemented in selected districts through the development of APH, ATC, AC and FAC with, Shinyanga, Tabora, Geita, Simiyu, Mwanza, Mara, Singida, Kagera, Arusha, Kigoma and Manyara to be considered as procurement zones for the programme. The beneficiaries will include; crop farming households, livestock farm households, fisherfolks, Small and Medium Enterprises (SMEs) involved in crops, livestock and fisheries processing, other agro-allied industries, traders, transporters, consumers, youth & women entrepreneurs, among others. Other beneficiaries are expected to include; agricultural extension workers, research institutions,

government institutions, traders; financial institutions and private sector companies dealing in agricultural technologies and inputs; veterinary extension workers, consumers, local government through enhanced revenue, contractors, input suppliers and the general public.

NOTE: see annex one for detailed description of project components, sub-components and activities and annex two for the SAPZ concept note.

Based on the AfDB's quality at entry requirements and in line with the environmental and social assessment procedures (ESAP), the United Republic of Tanzania (the borrower) is required to ensure the proposed program comply with the environmental regulations and policies of the United Republic of Tanzania and the African Development Bank's Integrated Safeguards System.

Hence, the United Republic of Tanzania with support from AfDB, is seeking to engage 3 National Environmental and Social Safeguards Consultants to carry out the detailed Environmental and Social Impact Assessment with respect to the safeguards requirements of the program.

2 Study Description

This being a category 1 project in accordance with the AfDB E&S risk categorization procedures, the consultants will conduct a full Environmental and Social Impact Assessment (ESIA) and prepare an Environmental and Social Management Plans (ESMPs) in accordance with the lenders' policies and Environmental and Social Assessment Procedures. This will comprise all the tasks that are required for a full environmental assessment, as described hereafter. The Consultants will be responsible for gathering, reviewing and analyzing all necessary data and information. Where these are insufficient, the Consultants shall make all practical efforts to produce the missing information/data including professional estimates and predictions based on the most likely conditions at the project area, reliable information and data from similar situations and conditions, etc.

The Consultants shall characterize the extent and quality of available data and describe the key data gaps and the uncertainties associated with estimates, predictions, and data used from similar situations. The methods of accommodating these gaps and uncertainties in the ESIA should be well stated and presented by the Consultant. When estimated values are used in place of data, the Consultant will be required to provide the uncertainty limits associated with these values and perform an appropriate sensitivity analysis. The work will also include thorough consultations and meetings with all parties concerned affected population or their representatives; local, regional, and national authorities; representatives of the scientific community; NGOs; etc.); in strict accordance with the requirements of the Palestinian Authority the (donor name or other) policies and procedures.

2.1 Structure and scope of the ESIAs

Because of the nature, structure and scope of the proposed activities, the ESA work will be divided into three volumes as follows;

No.	Document	Area of coverage/Scope
1.	ESIA Volume 1	APH & Connectivity Infrastructure
2.	ESIA Volume 2	3 ATC's & Connectivity Infrastructure
3.	ESIA Volume 3	AC's/FAC's & Connectivity Infrastructure

Each of these work streams will be assigned to one individual consultant.

3 Scope of the Consultancy Services

The consultants are expected to undertake investigations on social aspects, economic activities, and conservation of natural resources, historical and anthropological heritages, public consultations and disclosures. The proposed project site and associated facilities will be provided to give a guideline of the facilities to be studied. The scope of services to be undertaken by each Consultant shall include the following tasks.

Task 1. Detailed Desktop Review

The Consultant will review all existing documentation, and any previous feasibility reports, EIA, RAP and ESMP reports. The consultant shall further undertake a detailed study of the proposed (project), mapping on actual map of appropriate scale. The Consultant shall then concisely describe each facility assessed, its geographic, ecological, general layout of facilities including maps at appropriate scale where necessary information on size, capacity, facilities and services should also be provided

Task 2. Description of the Baseline Environment

The Consultant is required to collect, collate and present baseline information on the environmental characteristics of the existing situation around each facility. This description should involve but not limited to:

i. Physical environment (topography, land cover, geology, climate and meteorology air quality, hydrology, etc.)
ii. Biological environment (i.e., flora and fauna types and diversity, endangered species, sensitive habitats etc.)
iii. Social and cultural environment, including present and projected. Where appropriate (i.e., population, land use, planned development activities, community social structure, employment and labor market, sources and distribution of income, cultural/religious sites and properties, vulnerable groups and indigenous populations etc.)
iv. Economic activities, agriculture, livestock, fisheries, small scale industries etc.

Task 3. Legislation and Regulatory Framework

The Consultant shall identify and describe the pertinent regulations and standards – both local and international, governing the environmental quality, health and safety, protection of sensitive areas, land use control at the national and local levels and ecological and socioeconomic issues. Thereafter, the Consultant shall identify the project activities that should comply with the identified regulations.

Task 4. Determination of impacts of project facilities and activities

From the detailed field study, the Consultant shall analyze and describe all significant changes brought about by each facility/activity. These would encompass environmental, ecological and social impacts, both positive and negative, as a result of each facility/activity intervention that are likely to bring about changes in the baseline environmental and social conditions discussed in Task 2.

The Consultant will make a prioritization of all concerns identified and differentiate between short, medium, long-term and cumulative impacts during construction, operation and decommissioning. The Consultant shall also identify both temporary and permanent impacts. A detailed outline and discussion of specific conditions that might affect the environment which are unique to the type of facility and/or operation being audited should be provided.

Task 5. Occupational health and safety concerns

The Consultant shall analyze and describe all occupational health and safety concerns brought about by activities during all the phases of the project. The Consultant shall make recommendations on corrective and remedial measures to be implemented under the environmental management plan.

Task 6. Development of management plan to mitigate negative impacts

The Consultant shall develop a comprehensive environmental management plan. The plan should recommend a set of mitigation, monitoring and institutional measures to eliminate, minimize or reduce to acceptable levels of adverse environmental impacts and/or maximize socio-economic benefits. The Consultant should provide cost outlays for the proposed mitigation measures as well as their institutional and financial support, time frame and responsibility. This shall be provided for all the project phases.

Task 7. Development of monitoring plan

The Consultant is required to give a specific description, and technical details, of monitoring measures for both ESMP and RAP, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, definition of thresholds that will signal the need for corrective actions as well as deliver a monitoring and reporting procedure. The Consultant should provide a time frame and implementation mechanism, staffing requirements, training and cost outlays

Task 8. Comparison

The consultant shall undertake a comparison of any other options that have been considered and studied. These other alternatives shall be compared to the proposed final concept; and pros/cons of each proposal detailed.

Task 9. Study Reports

The output will be an Environmental and Social Impact Assessment report prepared in accordance with the regulatory provisions. The report shall be in the English and be clear and concise. The report/s should be in a format acceptable to local competent authorities, international environmental standards and development partners. In coordination with the Prime Minister's office, the Consultant shall present the reports to relevant environmental authorities for approval in the required number of copies. The costs associated with registration of the project with NEMC and seeking all the necessary approvals from the relevant environmental authorities shall be met by the Prime Ministers office, who are the executing and coordination agency for this project.

Task 10: Approvals

The Consultant shall present the report prepared under Task 9 for approval by the relevant authorities. The Consultant shall be responsible for making any modifications that the authorities may demand before approval of the report.

Counterpart Staff

For the purpose of capacity building the Consultant shall undertake the study together with counterpart staff seconded by the United Republic of Tanzania.

4 Additional Details on Tasks

ESIA Methodology used

As a chapter of the ESIA report the consultant will describe the methods used for conducting the ESIA (scoping and bounding, impact analysis and public consultation process, etc.). The

consultant will include a public participation plan to include stakeholder identification process, stakeholders identified, stages within the ESIA process where stakeholders have participated, and the different levels of participation used. Identification of impacts will include the identification of the important environmental components, and selection criteria used for identifying the significant impacts (positive and negative) whenever possible. Significant levels may be determined through the application of scoring system if the consultant is of the opinion that such an approach is warranted. The consultant will employ environmental economic analysis where applicable, particularly to justify significant impacts to be mitigated.

Public consultation process: The consultant will:

- Identify all affected people (e.g., people affected by construction activities and during operation) and will facilitate dissemination of information to relevant authorities and interested and affected parties (IAPs) concerning the proposed project NGOs and government departments and agencies that may have a stake in the Project and its effects should be consulted.
- Prepare a Stakeholder Consultation Plan, providing an opportunity for the relevant authorities and IAPs to raise issues and concern pertaining to the proposed project and allow the identification of the additional alternatives and recommendations.
- Describe a schedule for public consultation with these different groups, including number and timing of public input, and the methods to be employed (e.g., media announcements. town hall meetings questionnaires, one-on-one meetings, public EA steering committees). Public consultation should occur, at least, during the inception and collection of baseline information, and at the draft report stage. An annex of ESIA should summarize the public consultation process and the results of the consultation process.
- Gather more detailed information through which the study team could anticipate issues not raised by the IAPs that will be addressed by the environmental impact assessment report.
- Focus the study on relevant issues and recommend specific investigations, such that the resulting ESIA is useful to decision makers and it addresses the concerns of IAPs

Legal and Administrative Framework

- The Consultant will describe the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas, protection of endangered species, land use control, etc., at national and local levels.
- Describe the current administrative arrangements for environmental regulation, enforcement and management in the Palestinian Authority, and more specifically, within (name governorate or other government agency)
- Provide a general assessment of the (name of agency who will be managing the project) and relevant government agencies involved in environmental and social management issues, to ensure that the EMP will be effectively implemented. The agencies may need strengthening through capacity building measures to be specified in the Environmental management Plan.

Description of the environment/project setting

The Consultant will assemble, evaluate and present baseline data on the relevant environmental and social characteristics of the study area. In addition to the data being used for determining and assessing impacts it will be used as a baseline against which future changes caused by the Project can be measured and monitored. The data should include any information on changes

anticipated before the Project commences. The description should contain relevant descriptions of the following:

- Physical environment: geology, topography, soils, climate and meteorology; ground water and surface hydrology
- Biological environment: flora; fauna; forests; rare or endangered (maybe name anything specific, if known, or create Appendix) significant natural sites, etc.; species of commercial importance, and species with potential to become nuisances, vectors or dangerous.
- Socio-cultural environment: (include both present and projected where appropriate); population affected (numbers and subsistence systems), land use where appropriate and property (including houses, crops trees, plants, other properties. etc.); planned development activities; public health; cultural characteristics (including cultural property and heritage); and gender differentiation.
- Economic activities: livelihood; employment; gender composition cross border migration. Some examples of the specific activities are: recording plant species that may be affected, based on field surveys; identification of any species of special concern, namely species with conservation status or endemic to the area; commentary on conservation status of specific species; compilation of a broad scale vegetation or habitat map of the area indicating the extent to which the project would affect each vegetation or habitat type; description of current land use and compilation of a broad land use map.

The Consultant will take a systematic approach to identification mitigation and evaluation of all impacts and will identify potential changes which the Project may cause. These would include, but not be limited to, changes in the following:

- Physical environment
- Biological environment
- Socio-cultural environment
- Economic activities.
- Employment opportunities
- Safety issues, including (i) measures to assure safety of local residents with respect to exposure to electromagnetic radiation, (ii) measures to ensure transformers and equipment at the substations do not contain PCBs; (iii) ensure that the safety and health concerns of temporary and migrant workers are addressed, and (iv) an HIV, AIDS program for workers and affected communities.
- Construction phase impacts
- Impacts of work camps.
- Waste management for the entire project, including the work camps and construction sites. Changes in land use, land tenure patterns and land grabbing as a consequence of improved access: (i) residential patterns; (ii} agricultural practice; (iii) livestock management (pastoralism); (iv) commercial use; (v) traditional use (herb, firewood collection, sacred sites etc.); (vi) access to public services (health, education etc.).
- Impacts of access roads and how to manage these impacts and if needed closure or immobilization of access roads. In case of improved access to sensitive natural and critical natural habitats through access road to be constructed under the project, an Induced Access Management Plan needs to be prepared, in order to manage longer term impacts on natural habitat.
- Traffic density, safety and dust control
- Land acquisition and settlement and per (donor /Bank) Guidelines

- The Consultant will analyze

Analysis of Positive and negative impacts

- Direct and indirect impacts, short term and long term
- Impacts those are avoidable/unavoidable - reversible/irreversible
- Pre-construction actions to avoid or minimize negative impacts
- Construction and operational phase impacts
- Cumulative impacts occurring as a consequence of other activities in the project area: existing activities, projects under construction or planned activities within a reasonable time frame.
- Impacts in critical and non-critical habitats.
- Identify the potential risk of the spread of HIV/AIDS and other sexually transmitted diseases during the construction period, and prepare a detailed plan for awareness and prevention including resource implications

Wherever possible, the consultant will describe impacts quantitatively. In terms of environmental costs and benefits, and assign economic values when feasible. Impact analysis should be divided between construction and operation impacts.

Environmental and Social Management Plan

An Environmental and Social Management Plan (ESMP) that addresses the following aspects should be prepared and should include:

Predicted adverse environmental and social impacts (and any uncertainties about their effects) for which mitigation is necessary should be identified and summarized. Effective measures to prevent or reduce significant negative impacts to acceptable levels during (i) construction and (ii) operation. Estimate the impacts and costs of those measures. Estimate the costs of any residual impacts. Another area of impacts that could contribute substantially is the cumulative effects of construction and operational phases of the Project. Most of these, if not all, can be avoided by following a set of best practices that the consultant will prepare.

Description of implementation and monitoring program

Prepare detailed institutional arrangements (responsibilities) for implementing and for monitoring implementation of mitigation measures and the impacts of the project during construction and operation and maintenance. This will include a description of monitoring methodology, specific operations and features to be monitored, monitoring reporting relationships, and arrangements to ensure that monitoring is effective and leads to modifications where required to ensure minimal impact on the environment. Include in the plan an estimate of costs and description of other inputs such as training and institutional strengthening to ensure effective monitoring. An indication of what performance indicators to be used is to be provided.

Institutional strengthening and training

Identification of institutional needs to implement environmental recommendations: Review the authority and capability of (implementing agent) and other relevant institutions and recommend steps to strengthen or expand these institutions to ensure that effective environmental management and monitoring will occur.

Reports

1. The consultant will produce the following reports in draft and final versions:
2. Inception Report including a detailed work plan (if completed)
3. Environmental and Social Impact Assessment.
4. Induced Access Management Plan (If needed).
5. Environmental Management Plan.
6. Resettlement Action Plan (if needed).
7. Stakeholder Consultation Plan.
8. Others (to be specified)

Additional Information

Project Components: The proposed components of the Project are: (i) Development of infrastructure for agro-industrialisation including; the APH, ATC and AC/FAC, (ii) External infrastructure & linkages to the APH, ATC, AC) and FAC) (iii) Ecosystem development/SAPZ program enablers; and (iv) Project Coordination and Management. Thus, the following provisions under these components have been agreed for implementation under the Program:

Component 1: **Development of infrastructure for agro-industrialization** (**Budget US$ 96.22 Million**)**:** The components include the development of infrastructure including all APH, ATC, AC and FAC as well as rehabilitation of the existing abattoirs and meat processing factory as detailed below.

Agricultural Processing (Hub) APH: The Project will establish an APH along the Old Shinyanga road. The site is spread across an area of 426.08 ha and it is located within the Tanganyika Parker, Shinyanga District, Shinyanga region.

Agricutural Transformation Centre (ATC): Three ATCs are planned to be established at Ng'ombe, Iborogero and Nyamigota in Mwanza, Tabora and Geita regions respectively and the detailed indicative locations is shown below:

Particulars	Nearest town/village/division	District	Region	Distance from APH in Shinyanga (kms)
ATC - I	Nyamigota	Geita	Geita	253 km from TP-APH
ATC - II	Ng'ombe	Misungwe	Mwanza	105 km from TP-APH
ATC - III	Ibologero	Igunga	Tabora	122 km from TP-APH

However, the Tabora regional administrative government requested to be given time to carry out additional consultations in view to proposing an alternative ATC site. The final site will be communicated to the PMO's office as soon as possible.

Aggregation Centres *(*ACs): For ensuring adequate supply of raw material to the proposed APH, it is required to create a network of ATC's and AC's/FAC's in the production zone. The indicative locations of ACs, which will be verified during field visits to take place in the coming weeks are proposed below:

Sn.	Nearest town/ village/ Traditional authority/Sub chief	District	Region
1	Ushirombo	Bukombe	Geita
2	Ruhuma	Chato	Kagera
3	Kalebezo	Sengarema	Mwanza
4	Bunda	Bunda	Mara
5	Bariadi	Bariadi	Simiyu
6	Nyankurukuru	Ilemea	Geita
7	Kisengi	Uyui	Tabora
8	Iguguno	Iramba	Singida
9	Igombe	Kahama Rural	Shinyanga
10	Mbalagane	Maswa	Simiyu

Fish Aggregation Centre *(*FACs) - The concept of FAC is uniquely configured for leveraging the enormous potential of the fisheries sector in Tanzania and the locations are as below: The PMO's office requested the mission for sometime to confirm if the fisheries sector will be covered under this program, given the limited resources under this program but also given that the government is already working with the IFAD funded AFDP project targeting the fisheries sector.

Sn	Nearest town/ village/ Traditional authority/Sub chief	District	Region
1	Kasalazi	Buchosa	Mwanza
2	Kayenze	Magu	Mwanza
3	Masahunga	Bunda	Mara

***Component 2*: External Infrastructure & linkages to APH, ATC, AC and FAC (Budget US$ 2 Million):** The external infrastructure is one of the pre-requisites for the development of an SAPZ and the required linkages are envisioned to be provided by the government through their nodal agencies which includes enhancing and improving (i) road connectivity (ii) water connectivity (iii) telecommunication and (iv) power connectivity to the APH, ATC, FAC and AC.

***Component 3:* Ecosystem development/SAPZ program enablers (Budget US$ 18 Million):** This component will (i) enhance production, productivity and support the development of agricultural value chains, (ii) enable policy environment, institutional capacity smallholder farmers and TVET skills/agripreneurship development for youth employment, and (iii) provide for governance.

Component 4: Program Management and Coordination; a PCU with dedicated staff will be established within the PMO's office for project implementation including monitoring and evaluation,

procurement, financial management and a project coordinator. Investment promotion will also be coordinated through this component.

Investment by private sector within APH, ATC, AC and production farms (Budget USD 343 million) – This component depends on the outcome of the previous components in order to achieve the required investment by the private sector. However, the budget is an estimate and can vary with the extent of branding and marketing done for the project as well as depending upon the extent of incentives offered to attract the private sector into the SAPZ.