Environmental and Social Impact Assessment (ESIA)
For Establishment of the Special Agro-Industrial Processing Zone, Buchanan Special Economic Zone Grand Bassa County, Liberia
ON BEHALF OF THE NATIONAL INVESTMENT COMMISSION (NIC), LIBERIA

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LIST OF ABBREVIATIONS

ACs Aggregation Centers
AfDB African Development Bank
AGENCY Environmental Protection Agency of Liberia
AH Agri Hub
ATCs Agricultural Transformation Centers
BSS Business Support Services
CEAP County Environmental Action Plan
C-ESMP Contractor's Environmental and Social Management Plan
EAR Environmental Audit Report
EIA Environmental Impact Assessment
EIS Environmental Impact Study
EMP Environmental Management Plan
EPA Environmental Protection Agency of Liberia
EPML Environmental Protection and Management Law of Liberia
ESCP Environmental and Social Commitment Plan
ESIA Environmental and Social Impact Assessment
ESMP Environmental and Social Management Plan
FDA Forestry Development Authority
GIIP Good International Industry Practice
GRM Grievance Redress Mechanism
IEE Initial Environmental Examination
IFC International Finance Corporation
LEPDA Liberia Economic Development Activity
LIBA Liberia Business Association
LiMA Liberia Maritime Authority
LLA Liberia Land Authority
LRA Liberia Revenue Authority
LSEZA Liberia Special Economic Zone Authority
MACS Ministries, Agencies, and Commissions
MFDP Ministry of Finance & Development Planning

MIS	Management Information System
MOA	Ministry of Agriculture
MOCI	Ministry of Commerce and Industry
MOH	Ministry of Health
MOL	Ministry of Labor
MOS	Ministry of State
MYS	Ministry of Youth and Sports
NBC	National Bureau of Concession
NEAP	National Environmental Action Plan
NIC	National Investment Commission
NPA	National Port Authority
PDO	Project Development Objective
RAP	Resettlement Action Plan
SAPZ	Special Agro-Industrial Processing Zone
SEP	Stakeholder Engagement Plan
SEZ	Special Economic Zone
TVET	Technical Vocational Education Training
USAID	United States Agency for International Development
WB	World Bank Group
YEEP	youth Entrepreneurship and Employment Project

Contents

EXECUTIVE SUMMARY

PROJECT OVERVIEW

The Government of Liberia through the National Investment Commission have received funding form the African Development Bank (AfDB) towards the preparation and implementation of the Special Agro-Industrial Processing Zone (SAPZ) Project. Previously studies include the Feasibility Study and Master Plans for the SEZ/SAPZ in Liberia January 7, 2021, Feasibility Study for the Special Economic Zone and Port, Buchanan September 22, 2020, Buchanan Special Economic Zone (SEZ) Including Special Agro-Industrial Processing Zones (SAPZ) Final Report, December 2020 Report on Proposed Institutional Structure and Projected Cash flow Model for the Liberia Special Economic Zone Authority (LSEZA) March 2021 were conducted and sponsored by various donors including the World Bank Group, United States Agency for International Development, and African Development Bank Group (AfDB). The Project Development Objective is to facilitate poverty reduction through economic growth and sustainable value-added agricultural development in Liberia and by extension reducing unemployment rate, reduce staple food imports, and providing required infrastructure and enabling economic environment for expanded private sector investment in the agriculture and aro industry. The proposed Special Economic Zone is located in the City of Buchanan, capital of Grand Bassa County.

The overall proposed area for the Buchanan Special Economic Zone (Bu-SEZ) project is 631 ha, however, based on the technical design and Master plan, the Special Agro-Industrial Processing Zone will utilize 200 ha of the SEZ while the remaining area will be utilized for future expansion of the SEZ. The Special Agro-Industrial Processing Zone (SAPZ) project is categorized into two main phases. The African Development Bank (AfDB) intends to make significant efforts and commitments to providing funding for phase one of the project which include ensuring that the Special Agro-Industrial Processing Zone requirements are completed and functional. However, to address issues of productivity, value chain development and competitiveness as well as provision of relevant right skills and required entrepreneurship, the Bank intends to support the development of Agricultural Transformation Centers (ATCs). The ATCs will be located across the country specifically in high agricultural production areas. Currently, the proposed counties for preparation and implementation of the Agricultural Transformation Centers are Grand Cape Mount, Bong and Nimba Counties. Several criteria will be used to select the exact site/location of the ATCS in these Counties during project implementation.

The Special Economic Zone (SEZ) and Special Agro-Industrial Processing Zone (SAPZ) Project Development Objectives (PDO) are to: i) Create a better business environment for increased investment in the agro industrial sector; ii) Create opportunities for investments at the industrial level and coordinate the integration of small holder farms, and agro processing industry into sustained agro value chains and; iii) Improve capacities and skills to benefit from new agribusiness employment and value chain opportunities. The project is structured around three related components; including: a): Support the development of Climate-resilient Infrastructure to attract investments into Agricultural Value addition/industrialization b) Support Business Competitiveness, enable skills and climate-smart agricultural value chain development and strengthen farmer coordination and c) Strengthen Institutional Capacity, Project Coordination & Management.

The development and implementation of the Project's objectives and sub-components under the Special Agro-Processing Zone (SAPZ) are associated with environmental and social risks and impacts and pursuant to the funding requirements as well as the national environmental guidelines, these impacts must be evaluated, identified and mitigated accordingly. In lieu of these requirements, the Environmental and Social Impact Assessment (ESIA) is prepared. The ESIA seeks to assess the project development and identify both the potential negative and positive impacts arising from the construction and operation phases of the project and propose sustainable mitigation measures and environmental management and monitoring programs that addresses these impacts.

OBJECTIVE OF THE ESIA

- Ensure compliance with the national regulations, guidelines and policies
- Analyse the potential environmental impacts of the project taking into consideration key cross cutting issues including Bio-physical Environment, Gender, Climate Change and Social Safeguards.
- Identify and ass environmental and social impacts, both adverse and beneficial in the project's area of influence.
- Ensure open and balanced process through public information by promoting improved social and environmental performance of the SAPZ
- Identify the project stakeholders, including the primary beneficiaries of the project who could positively or negatively be affected by the project
- Assess the direct or indirect Environmental and Social impacts of the project and recommend mitigation measures to address the negative impacts and actions to enhance the positive impacts.
- Determine project compatibility with the surrounding environment.

- Assess the likely risks to climate change and recommend climate change adaptation mitigation and resilience measures for the project
- Incorporate environmental management plans and monitoring mechanisms during construction and operation phases of the Project development.
- Confirm if the project/any of its components and activities will trigger any involuntary resettlement
- Assist decision makers in protecting, conserving and managing the environment.
- Comprehensive Culturally appropriate and accessible Grievance redress mechanisms -GRM- including the cost estimates.
- Evidence of stakeholder's consultation (comprehensive lists of participants with contact, pictures, etc.), including a stakeholders engagement plan (SEP).
- A well-costed environmental and social impact assessment (ESIA), including any relevant specific sub-plan, and summarized in a matrix. Recommend indicators to be used for monitoring of the effectiveness of the mitigation measures.
- Generate baseline data that will be used to monitor and evaluate the mitigation measures implemented during the project cycle.

SCOPE OF THE ESIA

The Environmental and Social Impact Assessment study will describe the environmental and social conditions of the project area of influence, identify environmental, social and economic impacts and benefits of the project, recommend mitigation measures, monitoring and management plans, and solicit public view and opinions relevant to the project development and implementation. The study is been organized in twelve Chapters and tailored in adherence to the Environmental Protection and Management Law of Liberia 2003 and the African Development Bank Environmental and Social Guidelines and Policies. The ESIA will address the following factors;

- Review relevant documentation and literature related to the programme (including the Feasibility Studies and Master Plans) so that the appropriate plans and social and environmental management instruments can be developed and elaborated upon, ensuring that particular attention is given to meeting the objectives of the programme concepts;
- Prepare a stakeholder participation plan including roles and responsibilities and incorporating gender and special needs, and define specific activities so that women and special groups benefit from participation in the programme implementation.
- Develop a procedure to identify potential environmental and social impacts of specific activities, and measures to address and manage these impacts; or whether there are any potentially significant effects upon natural habitats, physical or cultural resources at particular project works sites, which would require further and separate

analysis due to these complexities; Create mitigation measures suitable for incorporation into project contract documents;

- The ESIA should also include institutional arrangements and information on the agency or agencies responsible for supervising project impacts; on the monitoring of the contractor performance by the implementing agency or agencies; and on the reporting of environmental matters to the relevant agencies and administrations.
- Liaise with the project implementers to disclose the ESIA to all interested stakeholders and invite their feedback and suggestions on the scope and adequacy of the proposed assessment, mitigation and benefit enhancement measures.
- Work to incorporate comments into the draft ESIA document from stakeholders including the EPA and the AfDB and prepare draft final for review and input by the Bank; and
- It is a requirement that all deliverables are in compliance with the AfDB's environmental and social policies and guidelines.

STRUCTURE OF THE ESIA

The ESIA report is prepared according to the table illustrated below:
Table 001: 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----Project Description	Describes project location, rationale, activities and components, need and desirability of the project
Chapter 3--- Analysis of Alternatives	Describe and evaluate project activities, development and identify options and alternatives designs
Chapter 4--- Approach and Methodology	The standardized approach to impact assessment in order to make the findings and outcomes more objective and transparent.
Chapter 5----Legal, Policy Framework	Describes the relevant policies of the GoL and African Development Bank's Environmental and Social Guidelines and Policies triggered by the Project.
Chapter 6--- Baseline Environmental & Social Condition	Provides detailed baseline condition of the existing physical, biological and social economic environment of the project area
Chapter 7--- Impact Assessment and Analysis	Presents the predictable impacts to the physical, biological and socio-economic and cultural environment as the result of the proposed Project.
Chapter 8--- Environmental and Social Mitigation Measures	Provides mitigation measures to reduce, alleviate, offset and prevent various impacts as the result of the propose Project during construction and operation
Chapter 9--- Environmental and	Outlines the proposed management measures, cost

Social Management Plan	timeframe and responsible authority/person to implement the mitigation and enhancement measures.
Chapter 10--- Environmental & Social Monitoring Program	Outlines procedures essential for effectively monitoring social and environmental mitigation and management measures.
Chapter 11--- Stakeholder Engagement & Information Disclosure	Summarizes the stakeholder engagement plan, procedure, consultation conducted during the preparation of the project.
Chapter 12--- Conclusion & Recommendation	This chapter provides analysis of the project development and implementation including recommendations where applicable.
Chapter 13--- References	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 Buchanan Special Economic Zone (SEZ) and Special Agro-Industrial Processing Zone (SAPZ) are located within Buchanan, the administrative capital of Grand Bassa County, Liberia. Accordingly, the Government of Liberia through the National Investment Commission, the Liberia Land Authority and others relevant stakeholders have designated 631 hectares of port land for development and utilization of a state of the art SEZ. The primary objective of the SEZ is to stimulate economic growth, reduce poverty and increase employment and add value to locally produced raw materials for shared benefit of the population. The project's technical design and master plan revealed that about 200 ha of the demarcated site will be developed as Special Agro Industrial Processing Zone accounting for phase one of the project development.

The Special Economic Zone/Special Agro-Industrial Processing Zone will contribute to the realization of economic growth and national development goals including a proactive mechanism that enhances domestic investment and increase direct foreign investment opportunities. The main project activities include: Pre-Construction works and mobilization of equipment and machineries, site clearance, excavation and earth works, construction of roads, green spaces, specialized infrastructure, Zone specific infrastructure, industrial zone for target sectors, specialized agro-infrastructure zone, logistic zone, institutional zone, residential zone, multi-facility complex, amenities and utilities zone, transportation and logistics zone and greenery and walkways.

DESCRIPTION OF PROJECT LOCATION

The Government of Liberia through the Liberia Land Authority (LLA) has demarcated and deeded to Liberia Special Economic Zone Authority a Development Grant of Land in Buchanan for the development of a Special Economic Zone (SEZ). Buchanan is the administrative capital of Grand Bassa County and hosts Liberia's second largest seaport. The

deed indicates a tract of 1,552.06 acres with some four towns (Doe-Wehin, Gbeorgbah, Kono, and Penneh) shown within its boundaries[4]. The proposed site for the Special Agro-Industrial Processing Zone (SAPZ) Project accounts for an area of (200 ha) 494.21 acres out of the Buchanan Special Economic Zone SEZ. The Port of Buchanan is currently underutilized, and could offer an appealing alternative to the overcrowded Freeport of Monrovia, particularly for goods originating in or destined for hinterland regions far from the capital[1]. The presence of these towns within the demarcated SEZ land triggered the potential for resettlement which will be investigated by the study. Buchanan has been a major commercial city serving leeward counties in Liberia and acting as the center for timber and logging activities, iron ore, rubber, and palm oil export, flour production, fishing and rail and land transport hubs, respectively, for the northeast interior and south eastern region of the country[2].

Table 002: UTM Coordinates

Site Coordinates		
Points	**UTM Coordinate, 29, WG584**	
	Easting (m)	Northing (m)
A	391085.040	643520.830
B	389260.390	643520.830
C	389260.830	643999.760
D	388277.460	646449.970
E	391029.160	646393.110
F	391002.170	643998.140

Table 003: Geographic Coordinates

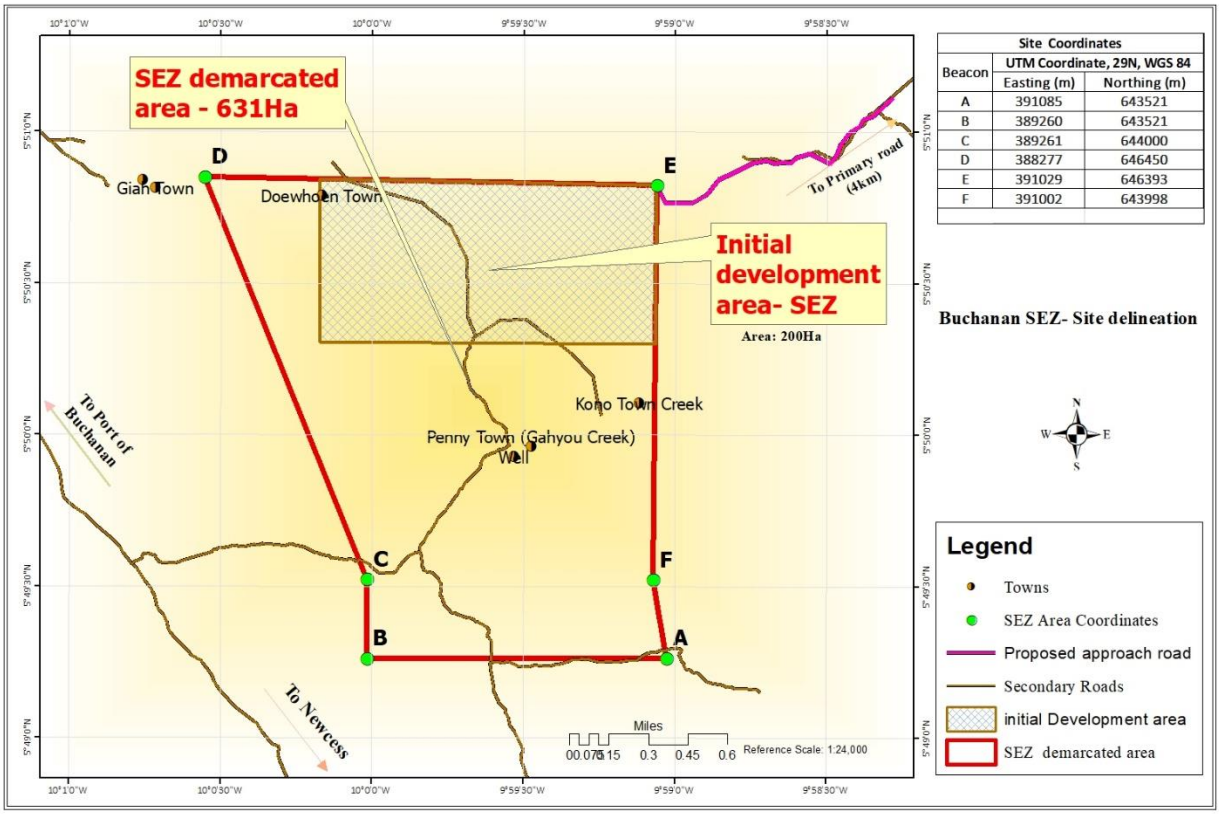
Site Coordinates		
Points	**Geographic Coordinates**	
	Longitude	Latitude
A	9° 59' 01.6189" W	5°49' 15.8738" N
B	10° 00' 00.9455" W	5°49' 15.7694" N
C	10°00' 00.9588" W	5°49' 31.3643" N
D	10° 00' 33.0749" W	5°50' 51.0908" N
E	9°59'03.5989" W	5° 50' 49.3981" N
F	9°59'04.3404" W	5° 50' 31.4113" N

Site Location Coordinates:

Source: Mahindra Consulting Engineers

[1] SEZ & Port Final Feasibility 2020
[2] Buchanan SEZ and Port Feasibility Study

Figure 001: Map of the SAPZ Location and existing villages



PROJECT ACTIVITIES

The development of a Special Economic Zone The project activities comprises of wide range of operations and activities aimed at ensuring that the Special Agro-Industrial Processing Zone is functional and operational. Generally, the main project activities include;

- Pre-Construction Phase
- Mobilization Phase
- Construction Phase
- Operation and Monitoring Phase

PURPOSE AND NEED FOR THE PROJECT

The proposed Special Economic Zone Project is an important pathway that attract investments and generate broad-based economic development, jobs creation, and shared infrastructure investments. The Government of Liberia has committed itself to establishing a strong SEZ regime as an element of its economic development strategy and to build on

lessons learned from successful SEZs around the world and in the region. A vibrant SEZ will transition and substitute Liberia's huge importation demand and expands and diversify its exportation market. The SEZ can help catalyze both strategies by attracting foreign direct investment in manufacturing production for the Liberia domestic market, regional trade partners, and high-income trade. Liberia is well positioned to serve as a focal point for manufacturing, using the country's dual-currency regime, availability of sea and airports for exports, abundance of fertile land for agricultural purposes, and its youthful population[3].

The Special Economic Zone will contribute to the realization of economic growth and national development goals including a proactive mechanism that enhance domestic investment and increase direct foreign investment opportunities. The proposed SAPZ project will also provide the following opportunities and social and economic welfare with the youth as primary beneficiaries;

a. Stimulating industrial and commercial growth;
b. Increasing earning potential and improving health and sanitation;
c. Provide food security for the masses
d. Increased capacity building and training initiatives for agro-industrialization;
e. Raises the competitiveness and efficiency of SME opportunities among youth;
f. Establishing major infrastructure for both local and foreign needs;
g. Production and value-added goods and services for the local and foreign markets;
h. Reducing poverty and hunger by restoring hopes and confidence in farmers;
i. Restoring confidence in foreign investors and promoting good doing business climate;
j. Encouraging rural and community development;
k. Decentralization of the economy and nation;
l. Increase in revenue and profitability of the sector thereby encouraging mindset change in youth towards the agribusiness sector;
m. Direct employment in the ACPZ & other industrial raw material procurement zones;
n. Indirect employment in primary, secondary and tertiary sectors including banks, logistics, insurance, manufacturing etc.
o. Contributing to the national treasury through tax payments;
p. Direct employment in Agro industrial zone, farming sector outside the ACPZ, SAPZ & ATCs.

[3] Buchanan SEZ and Port Feasibility Study

ANALYSIS OF ALTERN ATIVES

Base on the standards and regulations of the Environmental Protection Agency of Liberia, several project alternatives were considered and investigated. The alternatives include:

No action alternative;

Alternative for the location of the SEZ/SAPZ

Technological Alternatives

APPROACH AND METHODOLOGY

Environmental and Social Impact Assessment of the proposed project "Special Economic Zone and Liberia Special Agro-Industrial zone Project" required identification and evaluation of various environmental social risks and impacts arising from the project implementation and activities and thus recommendation of mitigation measures and development of environmental and social management plan that eliminate, reduce, prevent or offset these negative impacts. The object of the Environmental and Social Impacts Assessment is to ensure that project development, implementation and operations are environmentally and socially sound and sustainable. The major parameter potentially influence by the project include; the physical environment, biological environment, social-economic and cultural environment. To achieve the Project Development Objectives, the following methodological steps are employed during the studies:

1. **Step 1: Participatory Rural Appraisal Methodology:**
   A. Stakeholder Consultation

a. Regional government authorities
b. Local government authorities
c. Project Affected Parties (PAPs)
d. Private sector industries

2. **Step 2: Data Collection & Surveys**
   A. Primary data Collection

a. Environmental Baseline surveys and assessments
b. Baseline & Technical Physical, Biological and Socio-economic and Cultural environment
c. Land use planning and infrastructure
d. Social and Economic Survey

e. Existing land uses for surrounding area
f. Assessment and analysis
g. Traffic and transportation survey
h. Conduct geological and topographic survey

3. **Step 3: Focus Group Discussion:**
a. Project Affected Community
b. Gender Groups

4. **Step 4: Key Informant Interview:**
a. Traditional leaders
b. Resource personalities
c. Sector experts

5. **Step 5: Desktop Review of Relevant Documents**
a. Relevant study on the SEZ
b. Project Concept Note
c. Feasibility Study & Master Plan for the Buchanan SEZ and SAPZ
d. Liberia Special Economic Zone Act 2017
e. Buchanan SEZ and Port Feasibility Study
f. Legal and Regulatory Instruments

6. **Step 6: Report Compilations, review and submissions**

LEGAL, REGULATORY FRAMEWORK

The ESIA study is conducted in adherence with relevant legal policy and administrative framework of the Republic of Liberia including the Environmental Protection and Management Law of Liberia, Environmental and Social Impact Assessment Procedural Guideline 2017, and the African Development Bank's Environmental and Social Guidelines and Policies, and other Good International Industry Practice (GIIP).

This Environmental and Social Impacts Assessment report is triggered by both national and international regulatory instruments and requirements. In terms of environmental management, the Environmental Protection Agency of Liberia (EPAL) is the statutory institution that regulate, manage and protect the environment and by extension guides the Environmental and Social Impacts Assessment Process (ESIA) and authorize the issuance of environmental permits in a close collaboration and partnership with relevant line ministries, agencies and commission in Liberia.

ENVIRONMENTAL PROTECTION AGENCY OF LIBERIA (EPAL)

The EPA is an autonomous entity by the enactment of the Agency Act of 2002 by the National Legislature as the statutory regulatory institution for environmental management and governance in Liberia. The primary function of the Environmental Protection Agency of Liberia is to regulate, coordinate, monitor, supervise and protect the environment and the resources across the territorial demarcation of Liberia in a closed and collaboration efforts with relevant ministries, agencies and commissions and in partnership with the people of Liberia. The EPA is also responsible to prepare State Of the Environment Report (SoER) every five (5) year that highlights Liberia's environmental issues, threats, opportunities, assessments on biodiversity, ecosystem, vegetation, Land Use and Planning, sustainable and unsustainable development strategic Plan and natural resource planning.

The Environmental Protection Agency of Liberia is the statutory institution clothed with the mandate and authority for the technical and administration of the EIA/ESIA process in Liberia. Thus, the Agency has the oversight function for the issuance of an Environmental Permit for all projects and developments that has the propensity to create adverse environmental, socio-economic, and cultural impacts. The EIA process is implemented through the ESIA Procedural Guideline 2017 (updated). The functions of the EPA are demonstrated both nationally and locally as provided in the following subsequent sections.

- Environmental Committee
- County Environmental Officer
- District Environmental Committee

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 ISS on the basis of the following considerations:

- Commitments in the Bank's existing policies;
- Relevance to key environmental and social issues in the region;
- Lessons learned from applying the environmental and social policies/procedures in the Bank;

- Harmonization with other multilateral development banks and alignment with relevant international conventions and standards;
- Outcomes of stakeholder consultations; and
- Limiting the number of OSs to just what is required to achieve the optimal functioning of the ISS. The OSs are intended to:
- Better integrate considerations of environmental and social impacts into Bank operations to promote sustainability and long-term development in Africa;
- Prevent projects from adversely affecting the environment and local communities or, where prevention is not possible, minimize, mitigate and/or compensate for adverse effects and maximize development benefits;
- Systematically consider the impact of climate change on the sustainability of investment projects and the contribution of projects to global greenhouse gas emissions;
- Delineate the roles and responsibilities of the Bank and its borrowers or clients in implementing projects, achieving sustainable outcomes, and promoting local participation; and
- Assist regional member countries and borrowers/ clients in strengthening their own safeguards systems and their capacity to manage environmental and social risks.
- Relevant Operational Standards (Oss) of the African Development Bank Group that are triggered by the Project are summarized below;

OS 1: ENVIRONMENTAL AND SOCIAL ASSESSMENT – This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements: the scope of application; categorization; use of a SESA and ESIA, where appropriate; Environmental and Social Management Plans; climate change vulnerability assessment; public consultation; community impacts; appraisal and treatment of vulnerable groups; and grievance procedures. It updates and consolidates the policy commitments set out in the Bank's policy on the environment.

OS 2: INVOLUNTARY RESETTLEMENT: Land Acquisition, Population Displacement and Compensation – This safeguard consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement, and it incorporates refinements designed to improve the operational effectiveness of those requirements. In particular, it embraces comprehensive and forward-looking notions of livelihood and assets, accounting for their social, cultural, and economic dimensions. It also adopts a definition of community and common property that emphasizes the need to maintain social cohesion, community structures, and the social interlinkages that common property provides. The safeguard retains the requirement to provide compensation at full replacement cost; reiterates the importance of a resettlement that improves standards of living, income-earning capacity,

and overall means of livelihood; and emphasizes the need to ensure that social considerations, such as gender, age, and stakes in the project outcome, do not disenfranchise particular project-affected people.

OS 3: BIODIVERSITY AND ECOSYSTEM SERVICES – The overarching objective of this safeguard is to conserve biological diversity and promote the sustainable use of natural resources. It translates into OS requirements the Bank's commitments in its policy on integrated water resources management and the UN Convention on Biological Diversity. The safeguard reflects the importance of biodiversity on the African continent and the value of key ecosystems to the population, emphasizing the need to "respect, conserve and maintain [the] knowledge, innovations and practices of indigenous and local communities… [and] to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements3 .

OS 4: POLLUTION PREVENTION AND CONTROL, GREENHOUSE GASES, HAZARDOUS MATERIALS AND RESOURCE EFFICIENCY – This safeguard covers the range of impacts of pollution, waste, and hazardous materials for which there are agreed international conventions and comprehensive industry-specific standards that other multilateral development banks follow. It also introduces vulnerability analysis and monitoring of greenhouse

OS 5: LABOR CONDITIONS, HEALTH AND SAFETY – This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labor

HARMONISATION OF ENVIRONMENTAL AND SOCIAL SAFEGUADS

Development of the Integrated Social Standard has taken place in the context of the Multilateral Funding Institutions' continued harmonization and upgrading of their environmental and social best practices. Following the Paris Declaration on Aid Effectiveness in 2005, there has been greater impetus for development agencies to harmonize environmental and social safeguards. The MFI Working Group on the Environment (MFI-WGE) published a Common Framework for Environmental Assessment in 2005 to encourage greater harmonization of environmental and social safeguards among its members. In the past few years, almost all the MFIs have embarked on or have completed major revisions and upgrading of their environmental and social policies and their safeguard requirements and standards.

BASELINE ENVIRONMENTAL AND SOCIAL CONDITION

TOPOGRAPHY

Grand Bassa has a flat coastline. A narrow coastal plain that extends inland form seashore and The land gradually rises to the hilly hinterland of the County. High elevation regions have forest of evergreen and deciduous trees, including ironwood and mahogany[4]. The county has several major rivers and shorelines broken by estuaries, tidal creeks and rocky capes. The City of Buchanan is prone to inundation and erosion with the Benson River and Merclin River the most noted rivers for overflowing the banks during the peak of the rainy season.

GEOGRAPHY

Buchanan City, is the administrative capital of Grand Bassa County and has 70 miles (110 km) southeast of Monrovia and near the mouth of the Saint John River. . Grand Bassa County is bordered by Margibi County to the Northwest, Bong County to the North, Nimba County to the East, and Rivercess County to the South and East and the Western part by the Atlantic Ocean. The County is located in an area from latitude 6 °45' to latitude 5°30' North, and form longitude 10°30' to longitude 9°00' West (ISO 3166-2 geocode: LR-GB) . The total area of the County 8,759 square kilometers (3,382 sq. mi). The county has eight political districts and several isolated beaches and lagoons. The County has five statutory districts, nine administrative districts, eleven townships, three cities and forty-five clans.

GEOLOGY

The County's soils can be categorized as laterite (55%) which is leached out, alluvial (19%) and sandy and loamy (26%). Alluvial soil is prevalent in the leeward districts. Two onshore sediment-filled basins are located along the coastline; Roberts Basin, which is filled with sediments of the Farmington River formation and Paynesville Sandstone; and the Bassa Basin which is filled with material from the St. John River formation. The project area of influence is forms part of the pan-African Age Province (550my) which forms part of the sedimentary basin of Buchanan, Liberia.

PROTECTED AREA NETWORKS

The proposed Project location is not a protected Area nor a proposed Protected Area Network. The location is considered a flood prone environment during the height of the rainy season. The Project Technical Design and Plan will ensure to address all issues regarding the hydrological environment in close proximity to the project area.

RAINFALL AND PRECIPITATION

The is significant rainfall in most of the months of the year ranging from 100mm to 300mm annually, with the heaviest rains observed through June to October. The short dry season have little effect in on the overall climate. The average temperature is about 25.65 degrees Celsius with precipitation 249.5 mm. There are several green fields and wetland found in the project area of influence as the result of the heavy rainfall.

CLIMATE & METEOROLOGICAL SETTING

The climate in Buchanan, Grand Bassa County is classified according to the Koppen-Geiger Climate classification as Tropical. This classification is as the result of the significant amount of rainfall incurred in most part of the year. The temperature, precipitation/rainfall and humidity of Buchanan, Grand Bassa County are provided in the below table:

HYDROLOGY

The project is located within a Greenfield within the designated Buchanan Special Economic Zone. The county has several major rivers and shorelines broken by estuaries, tidal creeks and rocky capes. The City of Buchanan is prone to inundation and flood with the Benson River and Merclin River the most noted rivers for overflowing the banks during the peak of the rainy season.

AIR QUALITY

Ambient air quality of the proposed SEZ were conducted at designated sampling points. The main air pollution sources associated to the project's construction phase which include movement of transport vehicles, operation of diesel generators, dust emission due to excavation works etc. During operation, the major sources will be industrial/processing plants. These impacts are temporary and will be mitigated according. The results of environmental ambient air quality analysis are provided in table 00XX.

SOIL QUALITY

Baseline soil sample of the proposed project site was conducted to understand and determine the soil characteristics prior to the commencement of construction and operation. Grand Bassa County's soils can be categorized as laterite (55%) which is leached out, alluvial (19%) and sandy and loamy (26%). Alluvial soil is prevalent in the leeward districts. The coastal areas of Grand Bassa is characterized by narrow strip of level more or less cut up by lagoons, tidal creeks, and marches.

NOISE QUALITY

Ambient noise levels at the proposed site were conducted, however due to the low anthropogenic and industrial activities and influences at the area, the result revealed are relatively low. During construction operations, this situation is expected to an exponential shift and would require specific environmental management process and systems to ensure that public health and safety are not compromised and the level is reduced to acceptable limits.

DESCRIPTION OF THE BIOLOGICAL ENVIRONMENT

INTRODUCTION

This sections seeks to provide detailed baseline data on the biological environment which includes; birds, animals, fauna, flora, mammals, reptiles, humans, etc. It seeks to establish the occurrence, prevalence way of life and how the proposed project might influence their existing environment.

BIRDS

The Birds Assessment was conducted to understand bird's population prior to the beginning of the project to enhance and facilitate future monitoring. Liberia has 695 bird species with one endemic, two near endemics found only in less than three African countries, 12 species of the Upper Guinea Forest Bird Areas found in Liberia. Liberia has 11 terrestrial threatened bird species with threat category ranging from critical, endangered, vulnerable, to near threatened (Birdlife International 2000, African Bird Club 2013).

VEGETATION

The proposed site for the SAPZ Project is a green-field, covered by indigenous coastal forest and vegetation. The vegetation assessment was conducted utilizing methods consistent with rapid botanical surveys which involves the determination of plants species distribution from observations along defined transects running perpendicular and parallel. Much of the original forest is thought to have been cleared some three centuries ago due to high population density and rampant cut-and-burn agriculture (Cooper and Record, 1931; Gatter, 1984)

MAMMALS

Mammal's survey were conducted in fulfilment of the ESIA requirement while interview with the locals, farmers, villagers, hunters and resources people were made. The following

mammals species were observed, reported and noted via visual evidences including footprints, fecal droppings and nesting sites: African golden cat, the drill, two species of duiker, the water chevrotain and one species of pangolins. Others are spotted-necked otter (Hydrictis maculicollis) Dephomys defua, Nandinia binotata, Liberlictis kuhni, Tragelaphus scrriptus.

WILDLIFE

Based on the field assessment conducted, there has been no wildlife species found within the radius of the project area of influence. This may be as the result of human occupation, presence and influence over the region. However, there has been reported that few species of wild life are traded by hunters and poachers along the market corridors.

DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

INTRODUCTION

This section seeks to assess, evaluate, identify and the social and economic situation of the proposed project area of influence. It highlights key issues such as livelihood, economy, health, education, demography, income, food, jobs, market, waste, sanitation, hygiene, etc.

LIVELIHOOD

The main source of livelihood for the residents within the project terrain is farming and fishing activities. Several residents are involved in subsistence farming specifically in rice, vegetables cassava, etc. Due to the increase in economic potential and massive construction project ongoing in the city of Buchanan a significant of the community residents are engaged in contractors services to generate funds for their sustainability.

TRANSPORTATION

The proposed Project location does not have well established access road and during the raining season, the SAPZ becomes nearly inaccessible during to the competing natural drainages, wetlands, swamps and others. The survey revealed that transportation sector has huge economic potential and dividend when prioritized by the national government. The transportation sector may offer service through air, rivers, land etc. and due to the strategic location of Buchanan, Grand Bassa County and as the second major sea port of Liberia.

DEMOGRAPHICS

Grand Bassa County is the fifth most populous county in Liberia and housed Liberia second largest sea port. According to Household Income and Expenditure Survey (HIES) 2016, the

population of Grand Bassa County is 270,594 which accounts for 6.4% of Liberia's population. The male population constitute 137,792 accounting for 50.9% of Grand Bassa's population while the female constitutes 132,802 and accounts for 49.1% of Grand Bassa County's population. Grand Bassa County was traditionally inhabited by the Bassa ethnic speaking group which are the most dominant and make up 94% of the county's population. Other ethnic groups in the County include the Kpelle (5%) and the Kissi (1%) and small numbers of other groups[7]. The Christian religion is the dominant at 93%, followed by an estimated 5% Muslim and 2% animist.

WASTE GENERATION AND DISPOSAL

There are no specialized waste disposal sites within Buchanan City, Grand Bassa County. Municipal wastes and other commercial waste generated are usually buried, burnt or dumped in the open or wastelands. Given the prospects of the proposed Special Agri-Industrial Processing Zone, waste generation, collection and management will be eminent during both the construction phase and the operational phase of the project development. Therefore, it is imperative to begin conversation relative to the plans, development and design of a future landfill site that would complement the SEZ activities.

HEALTH CARE

The health care delivery system in Liberia is a daunting reality that continue to impede the fabric of the population. Poor and lack of primary health care system is unequivocally an urgent threats to a healthy society and by extension a great fraction of the poorer population. The 75-bed Government-owned hospital is fair condition and continues to play an important role in the health sector. The second hospital is presently managed by ArcelorMittal. The governmental hospital as well as all other clinics in the County is supported by international non-governmental organizations, with the government playing a leading role through the Ministry of Health and Social Welfare (MoHSW). There are 31 functional health facilities in the County according to the County Health Team. The Barconi's Community Clinic is the only health center situated within the project surrounding however, its current functional and operational status is poor due to staffing gaps, drugs availability, power struggles, logistics among others.

EDUCATION

Literacy attainment among the population varies, and shows significant inequality, by gender, locality and income (ES-B). People who are female, poor, and living in rural areas are less likely to be literate than their male, wealthy and urban counterparts. Strikingly, as

illustrated in the figure below, in the three middle age cohorts (cohorts 25 to 34, 35 to 44 and 45 to 54 years of age) literacy gaps remain almost constant over time.

ENERGY

The electricity supply system in Liberia is operated by the Liberia Electricity Corporation (LEC). It is based on a Central Monrovia City System with radial lines extending into the country and independent isolated grids. A typical rural Liberian County, Grand Bassa does not have any access to public electricity. Private generators are the main sources of power, available only to the few who can underwrite the fueling and servicing costs. The main source of energy is charcoal made from the wood of local trees. However, over the past few year, the Transco CLSG Project has engaged into development of Liberia component (transmission) and Distribution lines across the County. Moreover, these sub-stations construction and logistical arrangements have not yielded into power supply to local residents yet.

WATER SUPPLY

The Liberia Water and Sewer Corporation (LWSC) is charge with the mandate of providing water supply for urban communities and the Ministry of Rural Development to rural communities. Prior to the civil war precisely 1990, there were 11 cities with piped water supply systems in Liberia. Four of these were based on groundwater sources. The destruction of most of these facilities means that today over 90% of the population has to rely on groundwater for water supply. The Monrovia urban area had the most sophisticated system with an impounding reservoir, water treatment plant and distribution network

ECONOMY & MARKET

Widespread poverty remains a considerable socioeconomic challenge for Liberia. Approximately 70 percent of the population lives on less than $1.90 per day, which is, on average, 20 percentage points higher than other developing countries in sub-Saharan Africa. .Buchanan is the Capital of Grand Bassa County and has the second largest seaport of Liberia. The County produces the majority of iron ore and the facilities of the counties are used to serve the export needs of timber, iron ore, rubber & palm oil export and flour production & fishing needs. Poverty and economic inequality are deeply rooted in the bifurcated structure of the Liberian economy. Prior to the civil war, Buchanan has been an economic and industrial hub where several companies including the famous LAMCO, Liberia Mining Company, Palm oil Liberian Incorporated (LIBINC) etc., contributed toward diversifying the economy

The Liberia economy faces numerous, longstanding constraints to economic growth, including weak transportation infrastructure, unreliable utilities, and inefficient bureaucracy. However, the country as a whole and Buchanan in particular do offer certain comparative advantages which the SEZ can capitalize on. Opportunities exist for import substitution and /or export promotion for select industries, with agro-processing, packaging, and limited manufacturing activities all realistic possibilities for the zone. Based on an existing resources and enterprises, as well as local, regional, and global market demand, the strongest candidate industries for the Buchanan SEZ include food processing for fisheries and palm oil; additional processing and manufacturing of wood products; and packaging and labelling for various imparted and exported products

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LAND RESOURCES

Since the end of the civil unrest in Liberia, Land resources and associated conflicts has been a frequent and permanent social crisis nationwide. The Liberia Land Rights Act (LRA) was passed into law in September 2018 and passed on October 10, 2018 was printed into handbill. The Act defines and delineates the different categories of land in Liberia into Private Land, Public Land, Government Land and Customary Land. The Land Rights Act of 2018 regulates the form and manner of land acquisition, ownership, use, and management in Liberia. While the Liberia Land Authority has confirmed approximately 631 hectares GOL deeds of land to LSEZA for the establishment of the Special Economic Zone, the ESIA seeks to determine the status of the acclaimed property considering the potential for customary, private land rights, concession agreement overlaps and potential resettlement requirement.

IMPACT ASSESSMENT AND ANALYSIS

ENVIRONMENTAL AND SOCIAL RISKS, IMPACTS AND MITIGATIONS MEASURES

SUMMARY OF POSITIVE IMPACTS OF THE SEZ-SAZP

The Development, implementation and operation of the SEZ/SAZP Project would contribute to the creation of new jobs opportunities, Capacity Building, Skill Transfer, for the skilled, unskilled labor, casual laborer, and by extension the project affected communities.

EMPLOYMENT OPPORTUNITIES

The project is envisaged to provide direct employment in the ACPZ & other industrial raw material procurement zones including direct employment in Agro industrial zone, farming sector outside the ACPZ, SAPZ & ATCs. The SAPZ project will also provide indirect employment in primary, secondary and tertiary sectors including banks, logistics, insurance, manufacturing etc. of the Project Area of Influence.

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.

SKILL 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.

INCREASE PUBLIC 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;

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 and wouldn't have to worry about the available market for purchasing and storing their products.

ECONOMY

The SEZ/SAPZ 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 raises the competitiveness and efficiency of SME opportunities among youth and significantly increase earning potential and improving health and sanitation.

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 development will decentralize the country and improve the physical and aesthetic outlook of the county. The project is envisaged to accelerate the infrastructure development in the City of Buchanan and make Buchanan the second commercial hub in Liberia.

SUMMARY OF NEGATIVE IMPACTS OF THE SEZ-SAZP

IMPACTS ON AIR QUALITY

It is important to note that the project takes place in rural areas where air quality is usually good. 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, the potential impacts of the project activities on air quality is associated with dust emissions and an increase the following combustion pollutant concentration (CO, NO_X, SO_2 and PM). This impact is localized and not significant.

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. In proper handling of lubricants, hazardous substances and hydrocarbons (fuels, gasoline, etc.) may also cause water pollution of surface and ground water. However, the quantities required for used are small and not expected to affect surface and ground water as long as good management practices are applied.

SURFACE WATER

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 SEZ. Construction activities and operation phase may cause increased soil erosion and sediment loading of nearby streams, while accidental leaks or spills of hydrocarbons (oil, fuel or other substances) can also pollute surface water and impact on ground water. During operations, the major threats to surface water quality is likely to be pollution form pesticides, fertilizers, sewage, effluents from operations and processing plants etc. Gradually seepage of improperly stored materials, chemicals, and products from storage continent may also continue to contaminate surface.

GROUND WATER

The construction works at the SAPZ may have significant impacts on ground water hydrology and quality. Potential chemicals and improper handling of lubricating slurry, fertilizers and other toxic substances during construction and operation may cause groundwater pollution thus through gradual seepage.

IMPACTS ON SOIL QUALITY

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 cease if mitigation measures are not carefully management.

IMPACTS FROM 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 the EPA standards.

In addition to these wastes generated during construction phase, the operational phase would produce huge volume of waste from key sectors, zones, processing and value added streams within the Special Economic Zone and the Special Agro-Industrial Processing Zone. Wastes expected to be generated during this period include; raw materials from farmlands,

plantations, concessions areas and their cumulative wastes generated as well as effluents and wastewater from the processing and value added streams.

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 increases the project performance and acceptability.

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.

IMPACTS OF VISUAL

Construction activities at SAPZ facility may be include construction of campsites, recruitment and mobilization of equipment and machineries transportation and other operations carried out at both day and night. Lighting at night can result in visual impact on local communities and sensitive fauna species. Unobtrusive lighting disrupt critical behavior of biodiversity. It can stall the recovery of threatened species and interfere with their ability to undertake long-distance migrations, reduce breeding success and their chances of survival. Lighting should be kept to the minimum requirement for safety at nighttime.

IMPACTS ON FAUNA AND FLORA

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.

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 substances during construction and operations should said materials not stored and handled in the appropriate manner and form. The risks and impacts on health and safety are increased if contractors and employees do not adhere to the administration of the Personal Protection Equipment (PPEs) relative to their respective scope of work and not 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.

IMPACTS FROM TRAFFIC

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.

SOCIO-ECONOMIC IMPACTS

EMPLOYMENT

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.

IMPACTS TO CULTURAL RESOURCES

Based on the field survey, no activities under the project are expected to take place near any cultural or archaeological resources. Advoiding cultural resources during planning stages and ensuring equal representation and participation of relevant project affected persons and communities in decision making process helps to mitigate impacts to cultural resources. Damage to cultural resources constitute threat to social cohesion and would lead to resentment of the proposed project. However, should any cultural site or resources be found, the appropriate standard for chance finds will be applied.

SUMMARY OF POTENTIAL IMPACTS:

Table 003 : Summary of potential impacts & their possible receptors

Impact	Sources of Impacts/Risk	Potential Receptors
Biophysical		
Air Quality	• Reduce air quality due to increase traffic flow • Dust emissions form earthworks and transport of materials • Pollutant emission form fuel generators and transport vehicles • Reduced air quality due to unsustainable waste management practices • Air pollution due to open burning of	• Local communities • Employees/Staff • Local fauna and flora

	excavated substances • Reduce air quality due to bad smell and odor	
Water Resources	• Degradation of surface water from construction associated activities • Increase turbidity in surface water from potential soil erosion • Changes in downstream rivers due to water pollution and wetland dumping • Degradation of water quality and indirect negative effects on ecology due to sedimentation of downstream water resources • Potential pollution of surface and ground water resources form waste generation accidental spills/leaks and incorrect handling of lubricants • Potential waste water and effluent from industrial processing of raw materials • Pollution of water bodies due to surface runoff from construction sites •	• Local communities • Water resources
Aquatic Ecology	• Alteration of aquatic habitat due to construction waste and oil spills • Loss of downstream aquatic habitat and species due to reduced water quality as the result of flood and erosion from construction and operations • Loss of viable aquatic species due to oil spillages •	• Local fauna • Local communities
Terrestrial Ecology	• Displacement and loss of fauna due to disturbance from excavation and site clearance • Loss of vegetation due to construction of the SEZ • Risk of physical injury to wildlife species	• Local fauna and flora
Biodiversity	• Increased pressure on natural resources due to increase ease of access as a result of construction and operation of new access road • Risk of increased incidence of invasive and alien plant species due to	Fauna and flora Local communities

	construction of the SEZ and associated activities • Increase level of noise and disturbance that potentially cause involuntary migration of animals species • Loss of biodiversity and destruction of critical habitat during to excavation and site clearing	
Soil	• Increase erosion from vegetation clearing and earthworks • Risk of soil contamination from waste generation and accidental spills • Increase sedimentation due to construction activities • Impact of change in land use and capability for construction and operation • Loss of fertile soil for the construction of the ZEZ	Land Local communities
Noise	• Increase risks of noise and vibration pollution due equipment and earthworks operations • Increase risk of noise from transportation activities • Potential impacts of noise on fauna and flora from construction and operations • Potential uninterrupted noise generation both at day and night • Increase risk of noise due to poorly service machines and equipment	• Communities • Fauna and flora • Employees
Socio-Economic		
Macro-economy	• Increased employment, skills enhancement and local business due to the construction of the SEZ and association works • Increase opportunities of the project affected communities in capacity building and skills enhancement • Potential social friction and altered social dynamics form influx of workers from other areas • Positive impact from employment	• Local communities • Project Affected Parties

	opportunities arising from the project • Increase risks of occurrence of infectious diseases form influx of workers • Potential negative impacts where project designated area is inhabited by farming activities • Increase infrastructure development and trade activities at the project communities	
Land and Land Use	• Potential for resettlement or relocation where designated site is inhabited by people • Impact of change in land use as result of the construction of the SAPZ	• Local communities
Waste Generation	• Potential soil and /or water contamination form mishandling of generated solid waste, construction waste, operation waste and sewer created by the project • Potential adverse effect from unsustainable management of effluent and wastewater generated from operations •	• Local communities • Employees • Fauna and flora
Health and Safety	• Increase risk of workers exposure to hazards due to lack of relevant PPEs • Risk of injury during onsite construction, excavation and preparatory work • Risk of fall from high heights during construction and operations • Potential traffic related accidents • Risk of accidental exposure to hazardous materials • Potential of intoxicated workers conducting delicate operations • Increase risk of occurrence of infectious diseases from influx of employees • Risk of injury and accident during operations • Risk of fire explosion due to improper management of hydrocarbons (fuel, gas etc.)	• Employees • Local communities • Fauna and flora

	• Risk of workers exposure to unsafe and dangerous working environment without PPEs • Risk of workers exposure to high vibrating equipment and substances • Risk of accident from being struck of machinery or moving equipment • Potential risk of lack of safe drinking water and sanitation facilities at work place • Risk of electrocution due to exposed to faulty electrical devices • Lack of emergency treatment for injured workers and contractors • Risk of child abuse and child labor • Potential threats to workers as the result of raising workplace concerns • Potential risks of failure to investigate accident and unsustainable activities • Risk of discrimination on the basis of religion, race, ethnicity or creed • Lack of awareness among workers on ESHS risks and requirements of the project	
Public Infrastructure	• Increase pressure on local infrastructure and services including health facilities, water resources, etc.	Local communities
Cultural Heritage	• Risk of loss of Cultural Heritage due to construction of the SAPZ	Local communities
Accident	• Risk of loss of life due to lack of training or application of relevant PPEs • Risk of injury as the result of poor system of operation • Risk of explosion due to unsafe storage of chemicals • Potential risks of fall from heights • Increased risk of vehicular cohesion due to poor maintenance of equipment and machineries • Risk of fire due to use of faulty cables and plugs • Oil spills due to leakage of containers • Risk of accidents from being struck of	Local communities Employees Fauna and flora

	machinery or moving equipment • Risk of exposed to faulty electrical devices, such as cables, cords, hand tools • Risk of failure to conduct incidents investigations	

STAKEHOLDER ENGAGEMENT

Consistent with the African Development Bank Group Environmental and Social Policies and Guidelines, The Environmental Protection and Management Law of Liberia, 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. It is an essential aspect of good project management and provides opportunities to:

- 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 a an early stage and manage stakeholders' expectations;
- Assess and mitigate project environmental and social impacts and risks;
- Enhance project benefits;
- Address project grievance;

During the ESIA process, stakeholders from all levels (national, local government and residents in the project affected area) were consulted and views were sought through interviews, group discussions and a number of public meetings. The SAPZ Project Stakeholder's consulted include:

1. Ministry of Finance Development and Planning (MFDP);
2. National Investment Commission (NIC);
3. Environmental Protection Agency of Liberia (EPA);
4. Liberia Land Authority (LLA);
5. Liberia Revenue Authority (LRA);
6. Ministry of Agriculture (MOA);
7. Ministry of Commerce & Industry (MOCI);
8. Ministry of State (MOS);

9. National Port Authority (NPA);
10. Forestry Development Authority (FDA):
11. Liberia Maritime Authority (LMA);
12. Liberia Chamber of Commerce (LCC);
13. Liberia Business Association (LIBA).
14. Ministry of State for Presidential Affairs
15. USAID

SUMMARY OF FINDINGS

The SAPZ Project Stakeholder Consultation encompasses two group of stakeholders process; consultative meeting with relevant stakeholders from level I (national, government, donor partner in Montserrado County while level II comprises of two distinctive consultative meetings with the local county authorities and subsequently with the project affected communities, local rural people, parties, interest and non-interested party. Due to the Government of Liberia Health Protocols and restrictions imposed as the result of the resurgence of Covid 19, stakeholder's consultations were conducted through cell-meetings and at random times and places.

The first Stakeholder Consultation Meeting was held between 22 July 2021 to 28 July 2021 at various MACs locations and the total of 8 MACs were consulted and views, comments and inputs received. The Local county authorities stakeholders meeting was held at the Superintendent Office, Buchanan City, Grand Bassa County. While the local project affected people meeting was organized within Bleewein Town, with the twelve (12) village's leadership in attendance. The meeting provided a wide platform for all the relevant stakeholders to raise their concerns, highlight the project related environmental, social, economic and risk impacts and issues of significant. The total of twenty-eight (28) persons attended the consultative meeting held in Bleewein Town, Buchanan, Grand Bassa County.

ISSUES ARTICULATED DURING THE STAKEHOLDER MEETING (LOCAL AUTHORITY AND PAP) AT BUCHANAN, GRAND BASSA COUNTY, LIBERIA

The major issues highlighted during the meeting are summarized below:

- The local county leadership is in support of the proposed project
- That the selection of project communities be done in consultation with project communities at local level.
- Liberians' owned businesses be giving priority
- Avoid involuntary resettlement and if avoidance is impossible, compensate for private properties affected by the project.

- Government has not been fair to us regarding the proposed site; they remove us from our settlement. We experience this with previous companies.
- Government should incorporate the local people into every aspect of the project development and implementation.
- We are currently conducting a customary land survey in the entire project location because the site belongs to us not the Government.
- Intend to complete the ongoing land survey before any agreement with the Government.
- We were never involved in the previous survey done by the Government, were overlooked and left out. Therefore, we are generously glad about the project development but our interest and concerns are legitimate and must be address.
- The act of the Government of Liberia to conduct survey without our involvement brought fear to us about our future and the communities.

GRIEVANCE MECHANISM

The National Investment Commission will establish a grievance mechanism procedures that will provide a means for the public to communicate problems, file in complaints and relate issues arising from the project for timely and effective. The grievance procedural is conducted as part of the ESIA study. The Contractor will also have a Grievance Mechanism in place to resolve any employment and contractors related grievances.

The strategic objectives of the Feedback and Grievance Redress Mechanism (FGRM) is to identify and address potential problems, prevent recurring or escalating grievances, and ensure timely achievement of the SAPZ Project Development objectives through the promotion of accountability among stakeholders. The purpose of the FGRM is to establish a two-way communication with stakeholders for the maximization of the project benefits for people and country. It is also intended to facilitate safeguarding and mitigation of potential adverse impacts of the project activities on land related issues and concerns and as well as operational activities.

INSTITUTIONAL ARRANGEMENTS

The project will be managed by the National Investment Commission Project Implementing Unit (PIC) within close collaboration will 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.

ENVIRONMENTAL & SOCIAL MITIGATION MEASURES

INTRODUCTION

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. Summary of proposed mitigation measures are provided in the below table:

Table 004: Summary of Adverse Environmental and Social Risks, and Mitigation Measures

Receptor	Summary of Mitigation Measures During Construction
Biophysical	
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 • Water surfaces to control dust emissions • 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 • Ensure that construction materials and hazardous substances are well handled • Cover all vehicles hauling materials likely to give off excessive dust emissions • Regularly water spray surfaces to control dust emissions
Water Resources	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate cleanup 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 •
Aquatic Ecology	• Schedule construction activity to avoid heavy rainfall • Ensure that hazardous materials are not discharge in aquatic ecosystems • Ensure to construct fence at the perimeter of construction site to avoid cross pollution with aquatic resources • Ensure to prevent dumping of oil, filter cans and other substances into aquatic ecosystem
Terrestrial Ecology	• Cautions must be accorded during vegetation clearing to minimize species loss and destruction • Ensure that all species of conservation values are enumerated, conserved and reported to the designated conservation authority •
Waste Water	• Ensure to obtain required permit for discharge of effluent and chemical wastes • Ensure that all effluent and chemical waste water meets at acceptable levels for discharging • Ensure that the point of discharge of effluent and wastewater is approved prior to any discharge • Ensure to adopt good house keep during construction phase and operation phase • Ensure that washing water from vehicles is drained in a sand/silt
Biodiversity (Fauna and flora)	• 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 • Ensure outdoor construction lighting is unobtrusive and turn off when not required
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
Hydrocarbons and Hazardous Materials	• Ensure that disposal of obsolete chemicals, fertilizers, and other industrial processing chemicals occurs according to the EPA's standards • Ensure that all chemicals are clearly label and stored in accordance with their respective Material Safety Data Sheet (MSDS) • Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Carefully fuel/refuel vehicles, and machineries to avoid spillage
Noise	• Choose inherently quiet equipment • 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 ae 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
Socio-Economic	• 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 labor • 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

Macro-economy	
Land and Land Use	• Conduct assessment to verify if project do not trigger relocation/resettlement • Conduct thorough assessment of project area of influence to understand and address relevant environmental and social risks • Utilize alternative designs to reduce and minimize land use impacts • Adopt Chance Find Procedures for unanticipated discovery of finding of archaeological or historical significance
Waste Generation	• Promote recycling and reuse of general refuse • Ensure that disposal of obsolete chemicals, fertilizers, and other industrial processing chemicals occurs according to the EPA's standards • Prohibit the burning of refuse on the construction and operation site • Ensure to obtain required authorization from the EPA for disposal of hazardous waste generated onsite • Segregate chemical wastes and properly store and dispose hazardous waste according to the EPA's standards • 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 • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site
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 Corvid 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 can be stored for proper disposal according to the EPA's standards • 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
Traffic	• 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 channeling 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
Visual Amenity	• Ensure that site cleanliness and sanitation is maintained • Ensure outdoor construction lighting is unobtrusive and turn off when not required
Accident	• Ensure that all accidents and incidents are report and investigated • Ensure that all workers are qualified, ell trained and instructed in handling their equipment, including health protection equipment • Implement speed limits for trucks entering and exiting the construction facility • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste separation • Adopt good housekeeping practices during all phases of the project • Ensure the presence of an onsite First Aid Provider • Ensure that safety specialist is recruited to manage the preparation, implementation and maintenance of a comprehensive safety program • 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 • 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 Corvid 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
Cultural Heritage	• Ensure to apply the standard Procedures for Chance Finds

ENVIRONMENTAL MONITORING PLAN

INTRODUCTION

The primary object of environmental monitoring is to ensure that mitigation measures are implemented and the potential negative impacts are reduced, minimized to acceptable levels. The primary objective of the Special Agro-Industrial Processing Zone Monitoring Plan include the following:

- To assess the changes in environmental conditions
- To assess performance and the effectiveness of the mitigation measures adopted

- To determine project compliance with regulatory requirements and adopt remedial action
- To identify potential gaps and promptly implement of corrective measures

The project monitoring scope is divided into two (2) main phases namely;

1. Impact detection monitoring which includes periodic sampling to assess the impact of project operations on the environment and human health, and to ensure progress towards minimizing project's negative impact. This is also referred to as Institutional monitoring which be conduct by the project Environmental Officer and team of sustainable staff.
2. Compliance monitoring is conducted to ensure that all project and sub-project activities are in full compliance with the Environmental Protection Agency regulations and standards. It is usually commissioned by a Third Party Evaluator accredited by the EPA.

MONITORING PARAMETERS

The receptors required monitoring include:

a. Air Quality
b. Water Resources
c. Occupational Health and Safety
d. Odor
e. Noise Quality
f. Soil Quality
g. Waste Generation & Management
h. Landscape and Visual
i. Biodiversity

Table 005: Environmental Monitoring and associated Cost

Monitoring Activity	Monitoring parameter	Monitoring location	Phase	Frequency	Cost	Cost Responsibility	Implementation responsibility
Air Quality							
Visual Assessment, routine and if necessary, in response to a compliant through the Grievance Mechanism	Dust levels in the atmosphere	Construction areas, places of heavy traffic flow	Construction	Daily & during period of dust generating activity or in response to a compliant through the Grievance Mechanism	Under the general responsibilities of the construction supervisor --No material additional costs associated with this activity	Construction Contractor (CC)	Construction Contractor (CC)
Soil Quality							

Soil sampling	Soil contaminants including heavy metals, non-metallic contaminants, organic and non-organic compounds, pesticides, and biological organisms	Specific sampling points identified at the project locations and areas where dangerous activities are ongoing	Construction	Prior to construction and after remediation of contaminated sites	Laboratory fees US$8,000.00	NIC	NIC Environmental Manager
Water Resources							
Surface water	pH, Conductivity, RCRA, COC, SVDC, Suspended solids,	Lake/River in closed proximity to the project location to be	Construction	Quarterly	Laboratory Fees	NIC	NIC Environmental

	dissolved solids, oil and grease, BTEX	identified as monitoring point			US$8,000.00		Manager
Ground water **Ground Water**	pH, Conductivity, Dissolved Oxygen, Temperature, & Turbidity	Groundwater wells in or around project location	Operation	Prior to commencement of construction, during and then quarterly during operations	Capital cost of Multiparameter probe US$40,000 ($10,000X4)	NIC	NIC Environmental Manager
	RCRA, VOC, Suspended solids, dissolved solids oil and grease BTEX	Ground water samples in close proximity to the project location	Operation	Quarterly	Laboratory Fees US$8,000.00	NIC	NIC Environmental Manager
Health and Safety							

Health and Safety surveys, documentation of injuries and accidents	Proper use of PPEs, Presence of signs, First Aid Kit, and Firefighting Devices	Construction and operation sites where activities are undertaking	Construction & Operation	Continuous	Under the general responsibilities of the Environmental Manager—No significant material costs associated with this activity	NIC	Contractor and/ or NIC Environmental Manager
Solid Waste							
Solid Waste Generation and Disposal	Visual inspection and photographic documentation and audit	Project site and disposal sites	Construction & Operation	Continuous	Under the General responsibilities of the Environmental Manager--- No significant material costs associated with this	NIC	NIC Environmental Manager

					activity		
Landscape and Visual Amenity							
Monitor to ensure that dust control and visual screening measures are implemented effectively	Ensure the effective implementation of mitigation measures	Entire project area where activities are undertaking	Construction & Operation	Quarterly	Under the General responsibilities of the Environmental Manager—No significant material costs associated with this activity	NIC	NIC Environmental Manager
Noise							
Measurements of existing ambient noise will be carried	Noise level, LAeq, 1 hour	Nearest houses to the project constructio	Construction	Prior to construction and during activities that	Capital costs (onsite noise monitoring meter-	NIC	Qualified Acoustic Survey Technicians

out at the most sensitive locations prior to the start of the construction		n sites		are likely to produce the highest noise outputs	US$3,50000) Monitoring Cost (US$500.00 X1)		

CHAPTER 1: INTRODUCTION

1.1 PROJECT PROPONENT

The Project's Proponent is the Government of Liberia and Implemented through the Liberia National Investment Commission (NIC).

1.2 BACKGROUND

The Government of Liberia through the National Investment Commission has receive funding form the African Development Bank (AfDB) towards the preparation and implementation of the Special Agro-Industrial Processing Zone (SAPZ) Project. Previously studies include the Feasibility Study and Master Plans for the SEZ/SAPZ in Liberia January 7, 2021, Feasibility Study for the Special Economic Zone and Port, Buchanan September 22, 2020, Buchanan Special Economic Zone (SEZ) Including Special Agro-Industrial Processing Zones (SAPZ) Final Report, December 2020 Report on Proposed Institutional Structure and Projected Cash flow Model for the Liberia Special Economic Zone Authority (LSEZA) March 2021 were conducted and sponsored by various donors including the World Bank Group, United States Agency for International Development, and African Development Bank Group (AfDB). The Project Development Objective is to facilitate poverty reduction through economic growth and sustainable value added agricultural development in Liberia and by extension reducing unemployment rate, reduce staple food imports, and providing required infrastructure and enabling economic environment for expanded private sector investment in the agriculture and agro industry. The proposed Special Economic Zone is located in the City of Buchanan, capital of Grand Bassa County.

The overall proposed area for the Buchanan Special Economic Zone (Bu-SEZ) project is 631 ha, however, based on the technical design and Master plan, the Special Agro-Industrial Processing Zone will utilize 200 ha of the SEZ while the remaining area will be utilized for future expansion of the SEZ. The Special Agro-Industrial Processing Zone (SAPZ) project is categorized into two main phases. The African Development Bank (AfDB) intends to make significant efforts and commitments to providing funding for phase one of the project which include ensuring that the Special Agro-Industrial Processing Zone requirements are completed and functional. However, to address issues of productivity, value chain development and competitiveness as well as provision of relevant right skills and required entrepreneurship, the Bank intends to support the development of Agricultural Transformation Centers (ATCs). The ATCs will be located across the country specifically in high agricultural production areas. Currently, the proposed counties for preparation and implementation of the Agricultural Transformation Centers activities are Grand Cape Mount,

Bong and Nimba Counties. Several criteria will be used to select the exact site/location of the ATCS in these Counties during project implementation.

The Special Economic Zone (SEZ) and Special Agro-Industrial Processing Zone (SAPZ) Project Development Objectives (PDO) are to: i) Create a better business environment for increased investment in the agro industrial sector; ii) Create opportunities for investments at the industrial level and coordinate the integration of small holder farms, and agro processing industry into sustained agro value chains and; iii) Improve capacities and skills to benefit from new agribusiness employment and value chain opportunities. The project is structured around three related components; including: a): Support the development of Climate-resilient Infrastructure to attract investments into Agricultural Value addition/industrialization b) Support Business Competitiveness, Enable skills and climate-smart agricultural value chain development and strengthen farmer coordination and c) Strengthen Institutional Capacity, Project Coordination & Management.

The development and implementation of the Project's objectives and sub-components under the Special Agro-Processing Zone (SAPZ) are associated with environmental and social risks and impacts and pursuant to the funding requirements as well as the national environmental guidelines, these impacts must be evaluated, identified and mitigated accordingly. In lieu of these requirements, this Environmental and Social Management Plan (ESMP) is prepared. The ESMP seeks to assess the project development and identify both the potential negative and positive impacts arising from the construction and operation phases of the project and propose sustainable mitigation measures and environmental management and monitoring programs that addresses these impacts.

1.3 PURPOSE AND NEED FOR THE PROJECT

The proposed Special Economic Zone Project is an important pathway that attract investments and generate broad-based economic development, jobs creation, and shared infrastructure investments. The Government of Liberia has committed itself to establishing a strong SEZ regime as an element of its economic development strategy and to build on lessons learned from successful SEZs around the world and in the region. A vibrant SEZ will transition and substitute Liberia's huge importation demand and expands and diversify its exportation market. The SEZ can help catalyze both strategies by attracting foreign direct investment in manufacturing production for the Liberia domestic market, regional trade partners, and high-income trade.

Liberia is well positioned to serve as a focal point for manufacturing, using the country's dual-currency regime, availability of sea and airports for exports, abundance of fertile land for agricultural purposes, and its youthful population[1].

The World Bank's Doing Business Report of 2020, Liberia is ranked 175th out of 190 countries with 43.2 out of 100 points. The country fare worst in the categories of trading across borders 9184TH), REGISTERING PORPERTY (180th), protecting minority investors (1766th), enforcing contracts (175th), and getting electricity (175th). In an effort to promote economic growth, the GOL has expressed its intention to establish and SEZ with a professionally managed port to create an enabling environment for private sector investment. The development of an SEZ regime is aimed at strengthening the country's workforce and generating employment opportunities essential to address the high level of unemployment, with an emphasis on Liberia's youth, who make up over 70 percent of the country's population. The Economic opportunities and disparities amongst the population mainly the rich and the poor, low-skilled workers, rural workers, physically-challenged, uneducated and women is exponentially low, development and implementation of SEZ and SAPZ is an essential mechanism to add value to local raw material usage, spur domestic and export opportunities, and increase local produce with specific emphasis on women, youth and the vulnerable groups and population.

The Special Economic Zone will contribute to the realization of economic growth and national development goals including a proactive mechanism that enhance domestic investment and increase direct foreign investment opportunities. The proposed SAPZ project will also provide the following opportunities and social and economic welfare with the youth as primary beneficiaries;

a. Stimulating industrial and commercial growth;
b. Increasing earning potential and improving health and sanitation;
c. Provide food security for the masses
d. Increased capacity building and training initiatives for agro-industrialization;
e. Raises the competitiveness and efficiency of SME opportunities among youth;
f. Establishing major infrastructure for both local and foreign needs;
g. Production and value-added goods and services for the local and foreign markets;
h. Reducing poverty and hunger by restoring hopes and confidence in farmers;
i. Restoring confidence in foreign investors and promoting good doing business climate;
j. Encouraging rural and community development;
k. Decentralization of the economy and nation;
l. Increase in revenue and profitability of the sector thereby encouraging mindset change in youth towards the agribusiness sector;

[1] Buchanan SEZ and Port Feasibility Study

m. Direct employment in the ACPZ & other industrial raw material procurement zones;
n. Indirect employment in primary, secondary and tertiary sectors including banks, logistics, insurance, manufacturing etc.
o. Contributing to the national treasury through tax payments;
p. Direct employment in Agro industrial zone, farming sector outside the ACPZ, SAPZ & ATCs.

1.4 THE ESIA PROCESS OF LIBERIA

The legal reliance and guidance for the administration of the EIA process in Liberia is the Environmental Social Impacts Assessment Procedural Guidelines of 2006, updated in 2017 and the Environmental Protection & Management Law of Liberia 2002/03 (EPML 2003). These legal instruments calls for the conduct of Environmental Impact Assessment in compliance with the requirement established under section 37 of the Agency Act that provides a mechanism for balancing development and environmental concerns. The objective of the EIA is to ensure effective environmental resource management and governance throughout the territorial demarcation of Liberia. In 2006 the EPAL developed the EIA Procedural Guidelines and eventually updated in 2017 which provides the legal guidance on the procedures and steps involved in conducting an environmental impact assessment. The Environmental Protection & Management Law of Liberia (EPML 2003) in its administration is guided by the following general principles and objectives:

a) The principle of sustainable development;
b) The pre-cautionary principle
c) The polluter - pays principle
d) The principle of inter-generational equity
e) The principle of public participation
f) The principle of international co-operation in the management of environmental resources shared by two or more states; and other principles of natural resources and environmental management (EPML, 2002/03)

The Environmental Social Impacts Assessment Procedural guideline is a product of the joint effort of the Environmental Protection Agency of Liberia and multi-national stakeholders including line ministries, agencies, commissions and the private sectors to set up appropriate and approved guidelines and standards for the conduct and review of Environmental Social Impacts Assessments (ESIA) in Liberia. Given the trends of globalization and emerging developments and projects activities across the world, the guidelines is clearly design and subject to periodic review and modifications when necessary. The Environmental Protection

and Management Law of Liberia (EPML) 2002/03 provides that all projects and activities specified under Annex I (section 6) of this Law are mandatory for the conduct of an ESIA.

1.5 STAGES OF THE ESIA PROCESS:

The administration of the ESIA process is guided by the ESIA Procedural Guideline 2017 and regulated by the ESIA Technical Review Committee of the Environmental Protection Agency of Liberia in close collaboration with a cross sectoral technical committee members from relevant line ministries, agencies and commissions (MACs).

Given the multi-disciplinary approach and nature of EIA, the composition of the technical committee comprises of professional experts from various technical and academic backgrounds that helps contribute to evaluations and revision of project's proposal and development policy across the Country. The maximum period allotted by the Agency to approve or deny a project is three (3) months.

During the course of the ESIA process, project design decisions are made, taking into account the need to firstly avoid, minimize and reduce negative environmental, socio-economic and health impacts, and the opportunity to enhance positive impacts. Full detailed of the Environmental & Social Impacts Assessment Process is provided as follows;

APPLICATION & PROJECT PROPOSAL:

The ESIA process begins with an application from project's proponent and developer for an EIA License/permit prior to the commencement of any work and activity specified in Annex I, Section 6 of the Environmental Protection & Management Law of Liberia (EPML2003)

NOTE OF INTENT:

The Proponent is required to publish Information in the local dailies, journals, radio stations and community explaining the overview of the project and enabling stakeholders to identify their interest in the proposed project.

SUBMISSION OF PROJECT BRIEF:

The stage where the project proponent is required to hired qualified EIA accredited professionals Evaluator to develop and submit the required environmental impact statement or project brief and in adherence to the Environmental Protection Agency's prescribed reporting formats. The project document preparatory cost and the permit processing fees is borne by the applicant. The Agency is required to review and provide feedback to the proponent within 14 working days.

SCREENING

The Agency's Technical Review Committee review the application and Project Brief and evaluate it base on its undertakings in accordance with standard requirements**.** The screening process determines whether the project requires a full EIS or not. The Screening is vitally important tool for predicting and understanding whether potential adverse impacts such as environmental, socio-economic, health and safety requirements and assessments are necessary. The Screening process is also called the Initial Environmental Examination.

- The Initial Environmental Examination (IEE) also suggests whether in-depth studies are needed.
- When an Initial Environmental Examination (IEE) satisfied and addresses all concerns of the project and EIA is not necessary including impact mitigation methods are adequate, the EPA is required to issue the permit within 15 days.
- In situation where full EIA is not required but there are concerns about environmental management, the proponent is required to develop the Environmental Management Plan for approval and Implementation.
- If the EPA determines that the project will not have significant environmental impacts, the Agency will issue a "Finding of No Significant Impact" (FONSI). FONSI is a document that presents the reasons why the Agency has concluded that there are no significant environmental impacts projected to occur upon implementation of the project. Such projects are thereby approved by the Agency.
- If the Initial Environmental Examination (IEE) determines that the environmental impacts of a proposed project will be significant, an Environmental Statement is prepared but beginning with the scoping process.

SCOPING PROCESS:

Scoping is used to identify key issues of concern at an early stage in the planning process (Ahmed & Sammy, 1987). The result of the scoping will determine the scope, depth and terms of reference to be addressed within the Environmental Statement. Usually, this is conducted prior to preparation of an environmental review and impact statement. It is an eminent process that determines and narrow the scope of the issues, significant environmental issues, problems and alternatives to be addressed in the environmental impact assessment and ensure public participation early in the EIA process. The scoping process serves as the foundation for the EIS and encompasses the following;

- Description of the scoping process
- Identify concerns and issues for consideration in an EIA;
- Result of the scoping process d parties;
- Publishing of the Notice of Intent of the project in the district media;
- Holding of stakeholder consultations
- Identification, information and inputs of affected stakeholders & interested parties;

- Save time and money;
- Prepare Term of Reference (TOR) for EIA study;
- EIA Plan and methodology;
- Establish the constituents of the EIA Team;
- Identify Project Affected Parties livelihoods and activities;
- Conduct Baseline Studies on soil, air, water, noise and ecological biodiversity (relevant data on the status of the environment);
- Impact Prediction (forecasting the likely changes in the environment as a result of the development);
- Impacts Identification and Evaluation
- Mitigation (evaluation of the significance of the identified impacts);

ENVIRONMENTAL REVIEW:

- Draft of the Scoping and Environmental review is submitted to the Environmental Protection Agency of Liberia;
- The Agency formally disseminates guidelines of the contents and format of the environmental review;
- The Agency evaluate and approve the TOR and environmental review if it satisfies all relevant issues and impacts;;
- The Agency request for the conduct of the Environmental Impact Study and Report;

ENVIRONMENTAL IMPACT STUDY/REPORT:

An Environmental Impact Study and Report is prepared in accordance with the TOR developed by the project's proponent based on the scoping activities and in consultation with the Agency. It highlight technical details such as the nature and magnitude of the anticipated impacts, prediction of the extent, scale and location of impacts, the duration and stage of anticipated impacts as well as prediction of reversible or irreversible impacts.

ENVIRONMENTAL IMPACT STATEMENT:

The outcome of an Environmental Impact Assessment (EIA) process is usually a formal document, known as an Environmental Impact Statement (EIS). It sets out factual information relating to the Executive Summary, project background, need and relevance of the project, and all the information gathered relating to screening, scoping, legal & institutional framework, baseline study, impact prediction and assessment, socio-economic impacts, mitigation, management plans and monitoring measures. The content and format of Environmental Impact Assessment is set out in the Environmental Social Impact Assessment (ESIA) Procedural Guidelines 2017.

An Environmental Impacts Study is a summary of the information contained within the EIS, presented in a concise non-technical format, for those who do not wish to read the detailed

documents. This is very important, as EISs are public documents intended to inform the public of the nature and likely consequences of a development in time to comment and or participated in the final project design.

DEVELOPMENT OF ENVIRONMENTAL MITIGATION & MANAGEMENT PLAN (INCLUSIVE IN ESIA)

Once the EIA has been prepared, the significant impacts identified, it is necessary to prepare an Environmental Management Plan (EMP) or Environmental Social Management Plan (ESMP). However, some EIS contain an Environmental Social Management Plan. An Independent Environmental Social Management Plan (ESMP) could be required by the Agency based on the nature of the project, the anticipated impacts, location, population exposed to these impacts, equipment and technology employed, and activities. An Environmental Social Management Plan ESMP includes measures and plans for reduction, mitigation and/or compensation of unavoidable adverse risks and impacts, rules for estimating and budgeting costs of such measures, as well as information on the institution, department, personnel or agencies responsible to address project risks and impacts including the stipulated time required to address specific impacts. An environmental management plan is a detailed plan or process or schedule of measures necessary to minimize, mitigate and remedy any potential impacts identified by the EIA (**World Bank, 1999**).

The Environmental and Social Management Framework (ESMF) is a technical document that provides general policies, guidelines, codes of practice and procedures that will be in place during the implementation of the project to meet both the national requirement and donor's requirements. It defines the step, processes, and procedures for sub-project screening, assessment, management and monitoring of environmental and social risks and impacts of the sub-projects.

TECHNICAL REVIEW OF EIA/ESIA & RAP

- The EPA conducts joint stakeholders review and evaluation of various submissions including Environmental Project Brief (EPB), Environmental Social Impacts Assessment (ESIA), Resettlement Action Plan (RAP), Environmental Social Management Plan (ESMP) Reports etc. by circulating copies with various stakeholders prior to the date of the review to solicit their expert inputs;
- Stakeholders that participate in the ESIA Technical Review Process derives from relevant Ministries, Agencies and Commissions (MACs), Civil Society Organizations & Non-governmental Organizations, media etc. given the nature of project and associated impacts.
- The ESIA Technical Review Committee ensures report completeness and validate the report prior to proceeding to the next stage;

PUBLIC HEARING & CONSULTATION:

- THE Agency conducts public hearing at the proposed project affected community to evaluate, authenticate and validate all key components, issues and concerns highlighted by the study report;
- It is the stage where the Agency seek to ascertain the consent, interest, concerns and views of the project affect parties.
- Public hearing play a vital role in the Agency's decision for authorization, amends or denial of the project;
- At the end of the program, various stakeholder including MACs and others are allowed to present their view, approval, interest, and concerns relevant to the proposed development;
- All concerns generated during the public hearing are recorded and considered for redressed by the project developer.

DECISION OF THE AGENCY:

- Determination of project's feasibility is rendered based on the environmental impact statement, the comments from the public and inputs made from various line Ministries, Agencies and Commissions.
- The Agency will use this information, in combination with all the other details to decide one of the following;
  - Approve application unconditionally if project's activities satisfied and has no adverse consequences.
  - Approve the project conditionally by requiring the developer to redesign or follow consider specific environmental condition (s);
  - Request applicant or proponent for additional studies, documents or information
  - Deny the project where it is of the opinion that the project may cause significant or irreversible damage to the environment.

FOLLOW-UP:

This stage is critical and usually conducted during the post-approval phase of the ESIA process. It comprises of monitoring of impacts, institution of effective mitigation measures, environmental management of project and compliance auditing.

Follow up are important step toward achieving environmental protection and sustainable development. It presents an opportunity to control environmental impacts and to understand the processes and cause effect relationship. Ideally, data generated by monitoring and other aspects of follow-up should be compared with the original predictions and mitigations measures in the EIA to determine;

- The accuracy of the original predictions
- The degree of the deviation from the predictions

- Compliance posture of the project in line with conditions enshrined in the permit and the ESMP
- The possible reasons for any deviation from established baseline data
- Whether mitigation measures have achieved their objective of reducing or eliminating project's impacts

1.8 ESIA REPORT FORMAT

The ESIA is categorized into eleven (11) Chapters which are summarized below:

Table: 006: ESIA Report Structure and Format

CHAPTER	CONTENT
Chapter 1—Introduction	Presents a brief background of the project, and purpose, methodology and structure of the report
Chapter 2----Project Description	Describes project location, rationale, activities and components, need and desirability of the project
Chapter 3--- Analysis Of Alternatives	Describe and evaluate project activities, development and identify options and alternatives designs
Chapter 4--- Approach and Methodology	The standardized approach to impact assessment in order to make the findings and outcomes more objective and transparent.
Chapter 5----Legal, Policy Framework	Describes the relevant policies of the GoL and African Development Bank's Environmental and Social Guidelines and Policies triggered by the Project.
Chapter 6--- Baseline Environmental & Social Condition	Provides detailed baseline condition of the existing physical, biological and social economic environment of the project area
Chapter 7--- Impact Assessment And Analysis	Presents the predictable impacts to the physical, biological and socio-economic and cultural environment as the result of the proposed Project.
Chapter 8--- Environmental And Social Mitigation Measures	Provides mitigation measures to reduce, alleviate, offset and prevent various impacts as the result of the propose Project during construction and operation
Chapter 9--- Environmental And Social Management Plan	Outlines the proposed management measures, cost timeframe and responsible authority/person to implement the mitigation and enhancement measures.
Chapter 10--- Environmental & Social Monitoring Program	Outlines procedures essential for effectively monitoring social and environmental mitigation and management measures.
Chapter 11--- Stakeholder Engagement & Information Disclosure	Summarizes the stakeholder engagement plan, procedure, consultation conducted during the preparation of the project.

Chapter 11--- Conclusion & Recommendation	This chapter provides analysis of the project development and implementation including recommendations where applicable.
Chapter 12--- References	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.

CHAPTER 2: PROJECT DESCRIPTION

The Buchanan Special Economic Zone (SEZ) and Special Agro-Industrial Processing Zone (SAPZ) are located in a region considered as a Greenfield within Buchanan, the administrative capital of Grand Bassa County, Liberia. Accordingly, the Government of Liberia through the National Investment Commission, Ministry of Finance Development Planning, Ministry of Commerce and Industry, the Liberia Land Authority and others relevant stakeholders have designated 631 hectares of port land for development and utilization of a state of the art SEZ. The primary objective of the SEZ is to stimulate economic growth, reduce poverty and increase employment and add value to locally produced raw materials for shared benefit of the population. The project's technical design and master plan revealed that about 200 ha of the demarcated site will be developed as Special Agro Industrial Processing Zone accounting for phase one of the project development.

. The project activities associated to the development of the Special Agro-Industrial Processing Zone include preconstruction works and mobilization of equipment and machineries, site clearing and excavation, dredging and earth works, construction of special infrastructure, operation and maintenance.

The Special Economic Zone/Special Agro-Industrial Processing Zone will contribute to the realization of economic growth and national development goals including a proactive mechanism that enhances domestic investment and increase direct foreign investment opportunities. The main project activities include: Pre-Construction works and mobilization of equipment and machineries, site clearance, excavation and earth works, construction of roads, green spaces, specialized infrastructure, Zone specific infrastructure, industrial zone for target sectors, specialized agro-infrastructure zone, logistic zone, institutional zone, residential zone, multi-facility complex, amenities and utilities zone, transportation and logistics zone and greenery and walkways.

2.1 DESCRIPTION OF PROJECT LOCATION

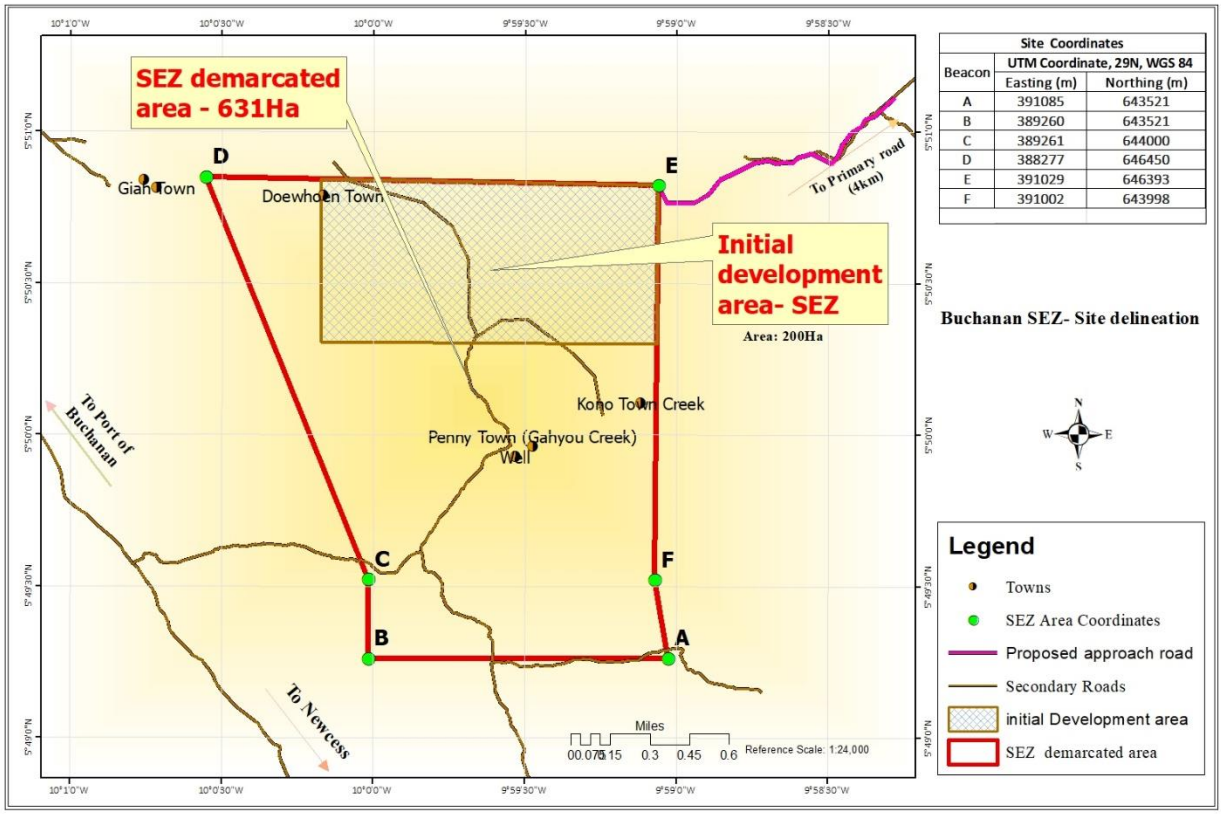
The proposed site for the Special Agro-Industrial Processing Zone (SAPZ) Project is situated east of Buchanan and predominately a Greenfield site, characterized by coastal forest, savannah and shallow vegetation. The SAPZ Project represents phase I of the SEZ Project and accounts for an area of (200 ha) out of the 631 ha of GoL deeded and designated land. Buchanan City, is the administrative capital of Grand Bassa County and hosts Liberia's second largest seaport. The site is difficult and challenging to be reached by road. There are few existing settlements and villages present in the proposed site. Villages identified within the proposed project location include; Doewhoen Town, Giah Town, Penny Town, Kono Town, Massah Town etc. Additionally, according to the Mahindra report, the GoL deed indicates a tract of 1,552.06 acres with some four towns (Doe-Wehin, Gbeorgbah, Kono, and Penneh) shown within its boundaries[2]. The proposed project site is situated east of Buchanan with high expansion potential. The Port of Buchanan is currently underutilized, and could offer an appealing alternative to the overcrowded Freeport of Monrovia, particularly for goods originating in or destined for hinterland regions far from the capital[3]. The presence of these towns within the demarcated SEZ land triggered the potential for resettlement which will be investigated by the study. The deeded land is reportedly located on a flood-plain or flood –prone area approximately three miles from both the Buchanan City center and the Buchanan Port and has no existing access road, no infrastructure.

Site Location Coordinates: Source: Mahindra Consulting Engineers

Site Coordinates		
Points	**UTM Coordinate, 29, WG584**	
	Easting (m)	Northing (m)
A	391085.040	643520.830
B	389260.390	643520.830
C	389260.830	643999.760
D	388277.460	646449.970
E	391029.160	646393.110
F	391002.170	643998.140

[2, 3] SEZ & Port Final Feasibility 2020

Figure 002: Map showing SAPZ Site and corresponding villages



2.2 PROJECT COMPONENTS

The Special Agro-Industrial Processing Zone (SAPZ) Project is tailored around three major components;

- To support the development of Climate-resilient Infrastructure to attract investments into Agricultural Value addition/industrialization
- To support Business Competitiveness, Enable skills and climate-smart agricultural value chain development and strengthen farmer coordination and
- To strengthen Institutional Capacity, Project Coordination & Management.

1. **SUPPORT THE DEVELOPMENT OF INFRASTRUCTURE TO ATTRACT INVESTMENTS INTO AGRICULTURAL VALUE ADDITION:**
   This component comprises of the following Project activities (a) the provision of basic climate resilient infrastructure including roads (link road and internal roads in the Agri hub (AH), Water and water conveyance systems in MEP mode), Drainage,

Energy (link power line & reticulation in the AH and solar powered street lighting), Sewage treatment plant, Industrial Waste Management, ICT Infrastructure, Fencing and HSE Infrastructure. The AH is expected to offer associated services such as one stop shops, business support services (BSS), laboratory and certificate services, training center/facilities and logistic facilities required for agribusiness activities; (b) support the development of enabling social and support infrastructure (housing, commercial and health facilities, recreational facilities etc.) under a private sector concession. The AH and related ATSs will be private sector operated and that the Special Economic Zone Authority (SEZA) will regulate the operations of the Park when fully operational. In the interim, the first phase of the roll out of the SEZ will be under the purview of the National Investment Commission (NIC) and the Inter-ministerial committee.

2. ENABLING CLIMATE RESILIENT AGRICULTURAL VALUE CHAIN DEVELOPMENT AND STRENGTHEN FARMER COORDINATION:

This component composed of two sub-components which include; (a) Enhancing Climate Resilient Agricultural Production and Job Creation. The first subcomponent will focus on Enhancing climate resilient Agricultural Production and Productivity in proximity to Agricultural Transformation Centers (ATCs) include (a) activities to support and upgrade the development productivity enhancing infrastructure at the farm level in agribusiness zones; (b) provision of enabling infrastructure for value chain development (Including the development and operationalizing of Agricultural Transformation Centers (ATCs) and Aggregation Centers (ACs). The ATCs and ACs would be strategically located within the farm communities around the AIH and would be responsible for facilitation of farmers' access to essential inputs such as climate resilient quality seeds, agro-chemicals, farm mechanization and primary handing facilities. ATCs will be private sector managed facilities therefore strong cooperatives and private entities can be sought through a competitive bidding process. The project will leverage on previous activities on the Bank (SAPEC) as well as various related ongoing activities of other donors such as the World Bank, European Union and the USAID in Agricultural Value Chain and Commercialization projects. The project will also leverage on the Bank's Regional Technology Delivery Infrastructure of TAAT to deploy technology toolkits for relevant commodity value chains to enhance productivity and ensure consistent supply of agricultural raw materials.

The second subcomponent will focus on Enhancing employability and skills development for youth and women. This sub-component will include the following interventions;

(i) Enhance the skills training to produce the right set of skills which are demand driven with the aim of strengthening the school to work transition; i.e. linking SAPZ with training institutions including Technical Vocational Education Training (TVET) centers as well as enhancing in-service training within the

ASPZ. This is especially through s Cooperative and strengthening the existing Women Cooperatives and Youth to enable the climate-resilient production and aggregation of commodities bound for the factories in the AH. This activity will also be leverage on the Bank supported Youth Entrepreneurship and Employment Project (YEEP) at the Ministry of Youth and Sports (MYS). This subcomponent of the Project will assist address the high rate of youth unemployment, reduce fragility and build resilient to maintain the peace and stability in the country.

(ii) Business Development services and technical training for youth and women-led business and MSMEs in the climate-resilient agriculture value chain to stimulate productivity, competitiveness, and job creation. The project will equip the target group with technical business skill for growth (such as financial literacy, business management, marketing) to enhance their efficiency and ability to invest in the SEZ and participate in the related value chain trade. The subcomponent will also support a digital Management Information System (MIS) database on credit and business credential for Women, Youth Led Start Ups / MSMEs to encourage their formalization and capacity to access key market information and finance as a way to develop the local private sector.

3. STRENGTHEN INSTITUTIONAL CAPACITY, PROJECT COORDINATION AND MANAGEMENT:

This is made up of two sub-components which include: 1) Enabling institutions, policy, regulatory and business environment framework for climate-resilient agribusiness through the implementation of the following; a) provide technical assistance towards the development of the Special Economic Zone Authority; b) leverage the activities of the NIC to provide the enabling business environment and relevant incentives to support private sector investments including one-stop shops, infrastructure, customs office, immigration support, etc. in the Agro-Industrial hub, (c) coordinate investment promotion, branding and marketing of the agro industrial zones; and 2) Support the establishment of PIU within the National Investment Commission (NIC) for project implementation and coordination.

4. GENDER MAINSTREAMING:

The project has the potential to reduce gender gap in all there components. In this component of strengthening the enabling environment, the project will support gender balanced training of staff with a target ration of 50/50 men and women and ensure that new policies, regulations and business reforms will respond to the specific needs of women MSMEs and cooperatives in agriculture and agro-industries. Efforts will be made to explore more avenues for greater access to affordable financial products for women and youth. In skills development, women's cooperatives ad women's MSMEs that could benefit from the SEZ/SAPZs, will receive specific training to enable them to manage and grow their enterprises profitably.

TVETs and other public institutions will be encouraged to find ways of having more women trained in ono-traditionally defined gender skills in agro-industries and link them to various industries in the SAPZ. Infrastructure development will be gender sensitive and contribute to increased and safe access to health, sanitation, education and market facilities for women and their households.

The project will adopt an approach for zero tolerance for sexual exploitation, abuse and harassment across its activities and will engage the Ministry of Gender and Social Development (MGSD) on identifying a referral system for cases of gender-based violence (GBV) that may occur during the project's duration. More consultations are required to obtain a deeper understanding of gender issues and what can be achieved through this project and with which actors. The project was prepared before the launch of the Bank's Gender Marker System (GMS) and a current review of the project's results framework and proposed project components places that project in a positon to attain a GEN II score on the GMS. Outstanding activities to attain this score include preparing a gender analysis, a gender action plan with a budget for implementation.

5. ENVIRONMENT AND SOCIAL SAFEGUARDS:

The project Environmental and Social Impact Assessment (ESIA) need to be prepared. Physical site visit will be conducted on behalf of the Team by a consultant to identify, evaluate and assess the environmental, social risks and impacts of the proposed project site and recommending mitigation measures that reduce, offset these impacts and ensuring that the location is government land. The ESIA and site specific ESMP will be prepared in adherence to the Bank environmental policies and guideline and the Environmental Protection and Management Law 2003. These instrument are required to be disclosed on both the borrower (NIC) and AfDB websites before the African Development Bank Board Meeting consistent with Category 2 project on or before the 31st of August 2021.

6. CLIMATE CHANGE:

The project is classified under category 2 of the Bank's Climate Safeguard System which means that the project may be vulnerable to climatic impacts. To address these potential climatic challenges, the project will ensure the infrastructure built under component 1 are climate-proofed and renewable energy options explored e.g. solar power. Component 2 activities will ensure climate resilient agricultural production and including climate-skills training for capacity building efforts. Support to the enabling environment policy and institutional environment will also take into account climatic factors to enhance resilience. Given the effect of industrial activities, the greenhouse gas emission potential of the project will be estimated, and mitigation measures will be proposed to eliminate GHG effects.

7. PROJECT INSTITUTIONAL ARRANGEMENTS:

The Project Implementation Unit (PIU) of the National Investment Commission will housed the project and ensure effective the day-to-day management and coordination of the project. The PIU Team will comprise of professional and competent experts encompassing of a Project Coordinator, Procurement officer, Project accountant, Project Engineer, Financial Management Officer, M&E Officer, Value Chain Development Officer, Policy and Economic Adviser and a Project Assistant. The project will second existing staff in these positions in Liberia National Investment Commission for this purpose. The PIU will report progress of activities in the SEZ ad related Agricultural Transformation Centers on a regular basis to the Inter-Ministerial Committee. They will also draw on the convening power of the Inter-Ministerial Committee to leverage technical support from other Agencies of Government. The capacity needs assessment will be conducted on the Commission as the Executing Agency of the Project to address gaps where applicable.

2.3 PROJECT ACTIVITIES

The development of a Special Economic Zone The project activities comprises of wide range of operations and activities aimed at ensuring that the Special Agro-Industrial Processing Zone is functional and operational. Generally, the main project activities include;

a. Pre-Construction Phase
b. Mobilization Phase
c. Construction Phase
d. Operation and Monitoring Phase

CHAPTER 3: ANALYSIS OF ALTERNATIVES

Base on the standards and regulations of the Environmental Protection Agency of Liberia, several project alternatives were considered and investigated. The alternatives include:

a. No Project Alternative;
b. Alternative for the location of the SAPZ
c. Technological Alternatives

3.1 NO PROJECT ALTERNATIVE

The no-action alternative (i.e. no construct & operation of the SAPZ) 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 SAPZ Project, many Liberians 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.

3.2 ALTERNATIVE FOR THE 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 GOL has designated the Buchanan SEZ area as its preferred location for the first SEZ under its revised SEZ initiative. It is understood that the preference for Buchanan is based on the aim to accelerate economic development in Liberia outside the metropolitan area limits of Monrovia. Other motivations for Buchanan as SEZ location include the following;

- Rebalancing national transport. Monrovia presently is the hub of transport and logistics activity. There is potential to reduce the national transport bill (transportation costs, congestion costs, infrastructure investment costs, etc.) by integrating existing transport assets and their associated corridors.
- Provide hinterlands not well served by Monrovia with access to other port options. Buchanan is more accessible to the rubber production areas and to forest area resources such as timber, cocoa, and coffee. It serves a larger hinterland of traditional (cassava, rice, etc.) and commercial crops (palm oil) than does Monrovia.
- Reduce port investment. Buchanan port is underutilized while Monrovia Freeport is stressed. There will be a net benefit of optimizing investment and effort across the ports network rather than just focusing on adding capacity and making improvements to the port of Monrovia.
- Realize the advantage of Buchanan's resource potential not available in Monrovia. This includes space (land), access roads, rail links, power capacity, and readily-available water resources. Dropping in an SEZ-type undertaking will improve use and increase economies of scale, rather than further over-burdening services in Monrovia.

3.3 DESIGN ALTERNATIVES

The potential site options and design that have been considered or recommended based on the feasibility analysis for SEZ in Buchanan. The economic objectives of the Buchanan SEZ and likely mixture of businesses accommodated 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.

Outward-looking SEZ: Such a SEZ would aim to produce exports for the external market and generate foreign exchange earnings to improve Liberia's balance of payments. The outward-looking SEZ would rely on seamless trade connectivity and would therefore, likely be located close to a sea port or airport. (A sub-category under this type of SEZ would include an SEZ that transforms and /or transships imported inputs, but that type of SEZ would also need to be close to a port

Inward-looking SEZ: This type of SEZ would serve the domestic market primarily, probably focusing on substituting imports to improve the national payments position. 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[3].

CHAPTER 4: APPROACH AND METHODOLOGY

4.1 ESIA METHODOLOGY

Environmental and Social Impact Assessment of the proposed project "Special Economic Zone and Liberia Special Agro-Industrial zone Project" required identification and evaluation of various environmental social risks and impacts arising from the project implementation and activities and thus recommendation of mitigation measures and development of environmental and social management plan that eliminate, reduce, prevent or offset these negative impacts. The object of the Environmental and Social Impacts Assessment is to ensure that project development, implementation and operations are environmentally and socially sound and sustainable. The major parameter potentially influences by the project include; the physical environment, biological environment, social-economic and cultural environment. To achieve the Project Development Objectives, the following methodological steps are employed during the studies:

Step 1: The Participatory Rural Appraisal (PRA) methodology -was applied in working with community members in the project affected area to better understand their interests and perspective. A robust public and stakeholder consultation was initiated in order to inform local people and their authorities of the various activities involved in the construction, operation and management of the proposed project. The consultations were meant to solicit views, concerns, comments and inputs regarding the project. A number of identified stakeholders and concerned institutions were written and informed about the project;

Step 2: Data Collection Techniques Household *Questionnaire Survey*-Questionnaires were tailored for primary data collection. Questionnaires were structure with two types of questions-- an "open-ended questions" to give respondents an opportunity to freely express their views and "closed-ended questions"-one which allows respondents to answer with Yes

or No or with a list of possible answers to each question. The questionnaires were structured into sections designed to measure the following points; demography and livelihood activities (household size, income level, primary livelihood options, expenditure, education, portable water sources, energy sources, waste management, and health), use of natural resources, local people relationship, attitudes, perception and views toward project users in regard to access and use of forest resources, etc.;

Step 3: Focus Group Discussions-The focus group discussion were conducted to collect primary data. The focus group discussion was organized with a cross section of community members including Chiefs, Elders, Women groups, farmers, teachers, hunters, farmers, fisherman, herbalist, motor bike riders, gender groups and others. The focus group discussions were intended to grasp information from community about their history, community profile, livelihoods activities, resources accessibility, constraints and problems, local institutions etc. The focus group discussions were organized in a form of a deliberative forum where the research team will ask the questions to the PAPs and several answers are given which will then be deliberated upon to have the most reliable answers. The focus group discussions were conducted both during morning and in the evening period to accommodate large numbers of the PAPs presence which lasted for two and half hours each. The deliberations were in English and interpreted in the local language where necessary;

Step 4: Key Informant Interview-Key informants' interviews were used which encompasses informal interviews and discussions with the key local government officials, prominent people and institutions within the radius of the proposed SAPZ, CLSG officials, traditional chiefs and elders, District representative, County Superintendent, some government officers, and other resource persons in the area;

Step 5: Field Observation-The ESIA Team conducted field assessment and survey to obtain relevant baseline data and information on the physical environment (topographic, geology, air quality, noise quality, water quality, land resources, temperature, rainfall, land uses etc.); biological environment (vegetation, fauna, flora, mammals, amphibian, wildlife, reptile, etc.); socio-economic environment (employment, education, healthcare, infrastructure, roads, water supply, energy, livelihood, transportation, religion, economy etc.)

Step 6: Secondary Data-Secondary data was obtained from literature reviews of relevant document which include; Feasibility Study & Master Plan for the Buchanan SEZ and SAPZ, Liberia Special Economic Zone Act 2017, Buchanan SEZ and Port Feasibility Study, Environmental Protection and Management Law of Liberia 2003, Liberia National Biodiversity Strategic Action Plan, Aide Memoire-SEZ/SAPZ, and others.

Step 7: Data Analysis-Comprises of report compilations, review and submission

The responses generated from the questionnaires were analyzed using appropriate data analysis computer packages (MS Excel). The following statistical tools were used.

- Descriptive statistical tools such as means and standard deviation.
- Frequency distribution tables and computation of proportions in percentage to investigate the most dominant responses amongst several choices given by respondents/
- The socio-economic surveys provide insight to the impacts of the project on the local communities and livelihood conditions, community's perception and expectation.
- Additionally, the surveys inform recommendations for social harmony and cohesion between the GoL/NIC and project host communities in the interest of sustainable development.
- The ESIA/ESMP was prepared in accordance with:
    - The Environmental Protection Management Law of Liberia (EPAL 2002, Part II Section 5, Part V Section 37, Section 32, Section 38, Section 62, Section 5.7and Section39
    - EIA Procedural Guidelines, 2006
    - The African Development Bank Group

A multi-methodological approach was used for the ESMP study to cover the following principal areas:

- Project organization
- Planning; Environmental Assessment;
- Socio-economic Assessment

Details of the assessment methodologies are as follows:

4.2 ORGANIZATION AND PLANNING

Project organization and planning was undertaken by collecting relevant materials and information about the project; and a desk review of the literatures.

The materials collected and reviewed include:

- African Development Bank Environmental and Social Framework (ESF)
- The National Environmental Policy of the Republic of Liberia,
- The Environmental Protection and Management Law of Liberia, 2002
- Fisheries and Aquaculture Policy & Strategy, 2014

- Liberia Special Economic Zone Act 2017
- Aide Memoire
- Feasibility study and master plan for the Buchanan SEZ and SAPZ in Liberia
- Buchanan SEZ and Port Feasibility Study
- Environmental and Social Impacts Assessment Procedural Guidelines 2017
- Land Rights Act, 2015
- National Biodiversity Strategy and Action Plan (2017)
- United Nations Convention on Biological Diversity
- RAMSAR Convention on Wetlands
- Convention on the Conservation of Migratory Species
- EAC Protocol on Environment
- United Nations Framework Convention on Climate Change (UNFCCC)
- United Nations Convention to Combat Desertification
- Montreal Protocol on Substances that Deplete the Ozone Layer
- Food and Agriculture Organization's International Code of Conduct
- United Nations Convention on the Law of the Sea (UNCLOS)

4.2 FIELD SURVEY

One week of field visit to the project area to familiarize with the proposed facility and assess the geo-physical, biological and socio-economic conditions of the project area. It also included stakeholder consultation with the project-affected communities and local authorities and subsequently conducted the socio-economic survey.

4.3 WATER QUALITY SAMPLING AND ANALYSIS

Water samples for analysis were collected precisely four (4) samples of surface water and two (2) samples of ground water. At each time of water collection, three separate sets of water tests were done at 30-minute intervals to determine the turbidity, PH, TDS, and other physic-chemical parameters. Water samples were collected in plastic containers after being rinsed with ambient water and labeled accordingly with GPS coordinates. Water quality analysis in relation to the study were analyzed based on the parameters of concerns for the project undertaking.

Quality control was demonstrated during the period of samples collections to ensure:

- Only QC professionals are allowed to collect water samples;
- Wearing hand gloves during the process of sample collections;
- Immersing the container inside the water and stoppering below surface water
- Transporting samples to laboratory for analysis within 24 hours of collection;

4.4 SOIL SAMPLING AND ANALYSIS

Soil samples were collected from five (5) towns within the project site. Quality control of soil collection entailed: removing the topsoil and collecting soil below 2cm from the surface soil-level, air drying soil samples, labeling of each soil sample, and transporting samples to laboratory for analysis within 24 hours of collection.

4.5 AIR AND NOISE QUALITY

Using air and noise quality equipment, the team assessed the ambient air and noise characteristics of the project area. The analysis was subjected to the standards given by the Environmental Protection Agency of Liberia.

4.6 SOCIAL, ECONOMIC AND HEALTH STUDY

The first step adopted was to visit stakeholders, authorities, parties and communities that this project would be impacting directly or indirectly as well as those who have interest into the project. The community consultation as a tool of social study would not only support community participation and sustainable development, but was used to create awareness of the questionnaire to be administered to the households in the project areas; and at the same time was useful for eliciting the communicable health concerns of the project communities. Participatory Rural Appraisal (PRA) was used for data collection from the respondents. To ensure quality control of the field work, the following steps were taken:

4.7 FIELD INTERVIEWERS FOR SOCIOECONOMIC DATA

The instrument was administered by well-trained and tested research assistants and enumerators, under close supervision.

- Detailed explanation of the entire project;
- The importance, and how to administer the questionnaires;
- Field practices/ reconnaissance survey using the Participatory Rural Appraisal (PRA) approach;
- Cross Checking of questionnaire filled by the research assistants' enumerators during the field practice to ascertain their ability to use them.

4.8 OBJECTIVE OF THE ESIA

- Ensure compliance with the national regulations, guidelines and policies
- Analyse the potential environmental impacts of the project taking into consideration key cross cutting issues including Bio-physical Environment, Gender, Climate Change and Social Safeguards.
- Identify and ass environmental and social impacts, both adverse and beneficial in the project's area of influence.
- Ensure open and balanced process through public information by promoting improved social and environmental performance of the SAPZ
- Identify the project stakeholders, including the primary beneficiaries of the project who could positively or negatively be affected by the project
- Assess the direct or indirect Environmental and Social impacts of the project and recommend mitigation measures to address the negative impacts and actions to enhance the positive impacts.
- Determine project compatibility with the surrounding environment.
- Assess the likely risks to climate change and recommend climate change adaptation mitigation and resilience measures for the project
- Incorporate environmental management plans and monitoring mechanisms during construction and operation phases of the Project development.
- Confirm if the project/any of its components and activities will trigger any involuntary resettlement
- Assist decision makers in protecting, conserving and managing the environment.
- Comprehensive Culturally appropriate and accessible Grievance redress mechanisms - GRM- including the cost estimates.
- Evidence of stakeholder's consultation (comprehensive lists of participants with contact, pictures, etc.), including a stakeholders engagement plan (SEP).
- A well-costed environmental and social impact assessment (ESIA), including any relevant specific sub-plan, and summarized in a matrix. Recommend indicators to be used for monitoring of the effectiveness of the mitigation measures.
- Generate baseline data that will be used to monitor and evaluate the mitigation measures implemented during the project cycle.

4.9 SCOPE OF THE ESIA

The Environmental and Social Impact Assessment (ESIA) study will describe the environmental and social conditions of the project area of influence, identify environmental, social and economic impacts and benefits of the project, recommend mitigation measures,

monitoring and management plans, and solicit public view and opinions relevant to the project development and implementation. The study is been organized in twelve Chapters and tailored in adherence to the Environmental Protection and Management Law of Liberia 2003 and the African Development Bank Environmental and Social Guidelines and Policies. The ESIA will address the following factors;

- Review relevant documentation and literature related to the programme (including the Feasibility Studies and Master Plans) so that the appropriate plans and social and environmental management instruments can be developed and elaborated upon, ensuring that particular attention is given to meeting the objectives of the programme concepts;
- Prepare a stakeholder participation plan including roles and responsibilities and incorporating gender and special needs, and define specific activities so that women and special groups benefit from participation in the programme implementation.
- Develop a procedure to identify potential environmental and social impacts of specific activities, and measures to address and manage these impacts; or whether there are any potentially significant effects upon natural habitats, physical or cultural resources at particular project works sites, which would require further and separate analysis due to these complexities;
- Create mitigation measures suitable for incorporation into project contract documents.
- The ESMP should also include institutional arrangements and information on the agency or agencies responsible for supervising project impacts; on the monitoring of the contractor performance by the implementing agency or agencies; and on the reporting of environmental matters to the relevant agencies and administrations.
- Liaise with the project implementers to disclose the ESIA to all interested stakeholders and invite their feedback and suggestions on the scope and adequacy of the proposed assessment, mitigation and benefit enhancement measures.
- Work to incorporate comments into the draft ESIA document from stakeholders including the EPA and the AfDB and prepare draft final for review and input by the Bank; and
- It is a requirement that all deliverables are in compliance with the AfDB's environmental and social policies and guidelines.

CHAPTER 5: LEGISLATIVE AND INSTITUTIONAL FRAMEWORK

5.1 INTRODUCTION

This chapter describes the applicable legal, policies, laws and administrative frameworks of the Government of Liberia and the African Development Bank's Environmental and Social Guidelines regarding the project development and implementation. It also emphasizes on

other international best practices and standards including the International Finance Corporation (IFC), Good International Industrial Practice (GIIP) and EHSH Standards.

This Environmental and Social Impacts Assessment report is triggered by both national and international regulatory instruments and requirements. The Environmental Protection Agency of Liberia is the statutory national institution that regulate, manage and protect the environment and by extension guides the ESIA process and authorize the issuance of environmental permits in a close collaboration and partnership with relevant line ministries, agencies and commissions in Liberia.

5.2 GOVERNMENT ORGANIZATION AND POLITICAL STRUCTURE

5.2 NATIONAL GOVERNMENT

Liberia is one of the oldest African nation to have obtained its independence. By virtue of the National Constitution, Liberia is democratic secular nation and has three distinct branches of government with independent functions. These includes the Executive, Legislature and Judiciary branches of government. Article 7 of the 1986 Constitution of the Republic of Liberia sets the fundamental basis for constitutional, legislative and institutional frameworks for the protection and management of the environment and natural resources. The House of Representatives comprises of 73 seats with each county being apportioned a number of seats base on its population while the Upper House, Senate comprises of 30 members with two Senators representing each County all elected based on popular vote. Liberia has a dual system comprising of statutory law based on Anglo-American common law, which is practiced mostly in the urban areas and customary law based on unwritten tribal practices for the rural areas.

5.2.1 LOCAL GOVERNMENT

The Government of Liberia has 15 political administrative sub-divisions known as counties that are governed by Superintendents. The counties are further subdivided into districts and headed by District Commissioners. Districts divided into Chiefdom and headed by Paramount Chief. The Chiefdoms subdivided into Clans and headed by the Clan Chiefs and Towns by Town's Chiefs.

5.3 CATEGORIES OF LEGISLATIONS IN LIBERIA

a. Law:

Laws are passed by the National Legislature of Liberia comprising of the Senate and the House of Representatives. Any citizens, Cabinet Ministers, Managing Directors of public corporations or agencies can propose a bill to the National Legislature for enactment. The

draft bill is first passed over the appropriate Steering Committee of the Legislature. In case of environmental bill, this committee is generally the Committee on Natural Resources and the Environment. The Committee reviews, assess and presents the bill to the Legislative plenary with appropriate amendments for debate, public hearing and subsequent enactment by the Legislature. (Constitution of Liberia, 1986).

b. Executive Order:

The Executive Branch of government headed by the President can issue an Executive Order without the approval of the National Legislature. The Executive orders have the power of a law provided that they do not contravene the existing law. The power of such orders has a limited time of existence.

c. Regulations:

The National Legislature has empowered Cabinet Ministers and Managing Directors of public corporations and agencies to issue regulations for their respective functionaries without legislative approval or supervision, provided that such regulations are consistent with the statutory laws and the constitution of Liberia.

5.3.1 LEGISLATIVE & ADMINISTRATIVE FRAMEWORK

5.3.10 CONSTITUTION OF THE REPUBLIC OF LIBERIA 1986

Article 7 of the 1986 Constitution of the Republic of Liberia sets the fundamental basis for constitution, legislative and institutional frameworks for the protection and management of the environment. It also attached significance to public participation and involvement in the management and use of natural resources in Liberia.

5.3.11 THE ENVIRONMENTAL PROTECTION AGENCY ACT 2002 (EPAA)

The Environmental Protection Agency Act of 2002 provides for the establishment of the EPA as the competent statutory authority of government for the protection and management of the environment and natural resources in Liberia. Part V, Section 32 calls for the Right and Responsibility to a Clean and Healthy Environment while Section 33 calls for the establishment of the Environmental Court of Appeals. Section 33 of the Agency Act calls for the establishment of the Environmental Court of Appeals to hear from aggrieved parties regarding environmental crime, litigations, abuses and render legal judgement based n violations, and others. The Act requires that an Environmental Impact Assessment (EIA) be carried out for all activities and projects likely to have adverse impacts on the environment. The EPA became functional entity in 2006 following the appointment of the Executive Board of Directors and the Policy Council.

5.3.14 ENVIRONMENTAL PROTECTION AGENCY OF LIBERIA (EPAL)

The Environmental Protection Agency of Liberia EPA is an autonomous entity by the enactment of the Agency Act of 2002 by the National Legislature as the statutory regulatory institution for environmental management and governance in Liberia. The primary function of the Environmental Protection Agency of Liberia is to regulate, coordinate, monitor, supervise and protect the environment and the resources across the territorial demarcation of Liberia in a closed and collaboration efforts with relevant ministries, agencies and commissions and in partnership with the people of Liberia. The EPA is also responsible to prepare State Of the Environment Report (SoER) every five (5) year that highlights Liberia's environmental issues, threats, opportunities, assessments on biodiversity, ecosystem, vegetation, Land Use and Planning, sustainable and unsustainable development strategic Plan and natural resource planning.

The Environmental Protection Agency of Liberia is the statutory institution clothed with the mandate and authority for the technical and administration of the EIA/ESIA process in Liberia. Thus, the Agency has the oversight function for the issuance of an Environmental Permit for all projects and developments that has the propensity to create adverse environmental, socio-economic, and cultural impacts. The EIA process is implemented through the ESIA Procedural Guideline 2017 (updated). The functions of the EPA are demonstrated both nationally and locally as provided in the following subsequent sections.

- Environmental Committee
- County Environmental Officer
- District Environmental Committee
- District Environmental Officer

5.3.14.0 ROLES AND RESPONSIBILITIES

5.3.14. 1 COUNTY ENVIRONMENT COMMITTEES[4]

Part III, Section 24(1) & (2) of the Agency Act provides that the policy Council shall provide guidelines to the Agency for the establishment of a committee on the environment in every County, in this Act referred to as a County Environment Committee and the County Environment Committee shall consist of members as set out in Annex III of this Act. The functions of the County Environment Committee shall include the following:

- Collaborate with and facilitate the activities of the Line Ministries in the County relating to the management of the environment and natural resources;
- Ensure that the environmental concerns of the County and the local populations are integrated in all plans and projects approved by the Government at County level;

- Promote disseminati5.3.14…on of information about the environment through education and outreach programme;
- Coordinate with the Agency on the design and implementation of community environmental projects and all issues relating to environmental management;
- Create District Environmental Committees within the County to enable it to carry out its functions at community level;

[4] The Environmental Protection Agency Act 2002

- Advise and receive reports of the District Environmental Committees on environmental outreach programme and other matters pursuant to this Act;
- Prepare a state of the environment report of the County every 5 years;
- Prepare a County Environment Action Plan in accordance with this Act;
- Report to the Agency on all matters relating to the environment and natural resources in the County under its jurisdiction; and
- Submit such reports as the Agency may require.

5.3.14. 1 COUNTY ENVIRONMENTAL OFFICER[5]

The functions of the County environmental Officer shall be to:

- Function as the Secretary to the County Environment Committee;
- Liaise with the Agency on all matters relating to the environment;
- Advise the County Environmental Committee on all matters relating to the management of the environment and natural resources
- Compile such reports to the Agency as may be prescribed;
- Promote environmental awareness through dissemination of information, public education and campaigns;
- Conduct public hearings on environmental impact assessment in the County and the District as prescribed in this Act;
- Ensure that the views and concerns of all groups within the local population are represented at public hearings on environment and natural resource management decisions; and
- Assist the District Environmental Committee in the performance of their functions;

5.3.14. 2 DISTRICT ENVIRONMENT COMMITTEES[6]

Part III, Section 26 (1 & 2) provides that the County Environment Committee shall create District Environmental Committees in accordance with the guidelines provided by the Agency to enable it to carry out its functions at community level. The District Environmental Committees shall consist of members as set out in the Annex IV of the Agency Act.

[5, 6] Environmental Protection Agency Act, 2002

The functions of the District Environmental Committees shall include the following:

- Promote environmental awareness through dissemination of information and public education campaigns;
- Mobilize the people within the district to conserve natural resources through self-help;
- Mobilize the people within the district to restore degraded environmental resources through self-help;
- Mobilize the people within the district to improve their natural environment through self-help;
- Create awareness of the people within the district to enhance, preserve and protect their indigenous knowledge and the cultural and spiritual values on biodiversity;
- Monitor all activities within the district to ensure that such activities do not have any significant impact on the environment;
- Report any events or activities which have or are likely to have significant impact on the environment to the District Environment Officer; and
- Perform such other functions as may be prescribed by the County Environment Committee in consultation with the Agency.
- The District Environmental Committee shall elect its officials from amongst members which shall include the Chairman, Vice Chairman, Treasurer;
- The members and officials shall be elected every 3 years and may be eligible for re-election; and elections shall be conducted by, and under the supervision of the County Environmental Officer; and
- The District Environment Committee shall meet at least once in every three months.

5.3.14. 3 DISTRICT ENVIRONMENT OFFICER[7]

Part III Section 27, (1 & 2) of the Agency Act, provides that the Agency shall appoint a District Environmental Officer for each District and the functions of the District Environment Officer shall include the following:

- To advise the district Environment Committee on all matters relating to the management of the environment and natural resources;
- To function as the Secretary to the District Environment Committee;
- To liaise with the County Environment Officer and agency on all matters relating to the environment;

[7] Environmental Protection Agency Act, 2002

- To compile such reports to the Agency as may be prescribed;
- To promote environmental awareness through dissemination of information, public education and campaigns;
- To assist the County Environment Officer to conduct public hearings on environmental impact assessment in the County and the district as prescribed in this Act; and
- To ensure that the views and concerns of all groups within the District are represented at public hearings on environment and natural resource management decisions.

5.3.15 ENVIRONMENTAL PROTECTION & MANAGEMENT LAW OF LIBERIA (EPML) 2003

The Environmental Protection and Management Law of Liberia (EPML) 2002/03 calls for all projects and activities specified under Annex I (section 6) of this Law to conduct mandatory Environmental and Social Impact Assessment (EIA/ESIA) prior to commencement. The EPML arranges the rules, regulations and procedures for the conduct of EIA. It establishes environmental quality standards, pollution control and licensing among others. The EPML provides a legal framework for the sustainable development, management and protection of the environment by the EPA in partnership with regulated MACs and in close & responsive relationship with the people of Liberia, to provide high quality information and advice on the state of the environment. The EPML gives the EPA the power to take care of the environment and punish people who pollute, violate the regulations or contaminate the environment.

5.3. 15THE NATIONAL ENVIRONMENTAL ACTION PLAN (NEAP)

Part IV, Section 30 (1&2) of the Environmental Protection Agency Act (EPAA) states that in consultation with Line Ministries and the County Environmental Committees, the Agency will prepare a National Environmental Action Plan (NEAP) every five years and submit to the Executive Policy Council; and the National Environmental Action Plan will:

- Contain all matters affecting the environment and provide general guidelines for the management and protection of the environment and natural resources of Liberia as well as the strategies for preventing, controlling, or mitigating any deleterious effects;
- Be the basis for national environment planning and implementation of development programs;
- Recommend appropriate economic and fiscal incentives as instruments for environmental protection to be incorporated into the planning and operational processes of the economy;
- Recommend areas for environmental research outlining methods of utilizing research information;
- Recommend methods for building national awareness on the importance of sustainable use of the environment and natural resources for national development;
- Take into account County Environment Action Plans (CEAP) as provided for under section (311) of this Act;
- Identify and recommend policy and legislative approaches for preventing, controlling or mitigating specific as well as general adverse impacts on the environment.
- Be disseminated to the public;
- Without prejudice to subsection (1), be reviewed and modified from time to time to take into account emerging knowledge and realities;
- Be in such form and contain other matters as the Agency may prescribe.

5.3.16 NATIONAL ENVIRONMENTAL POLICY OF LIBERIA (2003)

The National Environmental Policy of Liberia was formulated in recognition of the sever impact of man's activities on all components of the natural environment, especially the influences of population dynamics, high density urbanization, resource exploitation and the further realization regarding the critical importance of restoring and maintaining environmental quality to the over-all welfare and development of the people. Additionally,

section 4.7 of the Policy requires ESIA for all development, socio-economic, and land-use activities of any form, have impacts on the environment to one degree or another.

5.3.17 ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURAL GUIDELINES (2006)

The Environmental Protection and Management Law (2003) mandate the EPAL to develop administrative procedures for the preparation of EIA to ensure effective environmental governance. In 2006 the EPAL developed the EIA Procedural Guidelines to provide guidance on the procedures and steps involved in conducting an environmental impact assessment. The ESIA Procedural Guideline 2017 (updated) is the legal instrument and reliance for the preparation and administration of the EIA process in Liberia. Steps involved in the ESIA process includes;

The guidelines list the steps involved in the ESIA process as follows:

- **Applications for EIA/Project proposal** –Formal application for environmental permit
- **Notice of Intent--**Public notification of project undertaking through relevant media, newspaper, radio stations
- **Submission of Project Brief**—Introduction of project background, undertaking, proponent, activities, location, preliminary screening of impacts etc.
- **Screening** --Preliminary evaluation of the project by the EPAL to determine the need for an EIA
- **Scoping** Process--Defines the key issues and establish the Terms of Reference (TOR) of the EIA
- **Environmental Review**-- To validate the scoping process and approve the TOR.
- **Environmental Impact study (EIS)** --Evaluation of the nature and magnitude of the anticipated impacts, prediction of the extent, scale and location of impacts, duration and stage of anticipated impacts.
- **Environmental Impact Statement** (EIS) -Encompasses the executive summary, project background, need and relevant of project, screening scoping, baseline study, impact prediction and assessment, mitigation, management plans and monitoring measures, stakeholder consultations and recommendation etc.
- **Environmental Mitigation and Management Plan** --Establish measures to reduce, offset or mitigate impacts identified in the study.
- **Review of the EIS** --Review of the report to ensure completeness, adequacy and compliance to full standard of reporting.

- **Public Hearing/Consultation** --Conducted by the EPA to consult with affected community and evaluate, authenticate and validate all key components, issues and concerns highlighted by the study report and the affected community (ies).
- **Decision Making** – to approve or reject the proposal and to establish the terms and conditions for its implementation.
- **Follow up** – compliance monitoring of the project during its life cycle

5.3.18 LIBERIA SPECIAL ECONOMIC ZONE AUTHORITY (LSEZA)

The Liberia Special Economic Zone Authority (LSEZA) has remained inactive since the passing of the SEZ Act in 2017, pending appointment of the Board by the President. In the absence of these appointments, Liberia's national SEZ regime remains dormant. In the interim, the National Investment Commission Project Implementation Unit (PIU) is designated as the project Implementer and shall report progress of activities in the SEZ/SAPZ and related Agricultural Transformation Centers on a regular basis to the Inter-ministerial Committee. The Liberia Special Economic Zone Authority is responsible for planning, coordinating, and administering the implementation of Liberia's national SEZ regime. Its board of directors (Board) is responsible for developing and implementing policies and procedures to create world-class business environments in Liberia[8]. The board is also responsible for designing a special cadre system for LSEZA employees, since they are exempted from the standing orders that govern Liberia's civil service[9]. The administrative policy of the LSEZ Authority under the Act include achieving the following objectives:

- To create new job opportunities in Liberia in the SEZs;
- To increase the supply of serviced lands throughout the country and each political subdivision;
- To promote effective and efficient development of SEZs in Liberia including integrated tourism resorts;
- To encourage the private sector participate in the development, operation, maintenance, and management of SEZs in Liberia including the provision of infrastructure;
- To coordinate with the private sector to train and improve the capacity of the Liberian workforce, and ensure the protection of workers' rights;
- To develop a high-quality business and residential climate in each SEZ that protects the environment, water supply, natural resources, biological diversity, labor resources, and public health, safety, and welfare consistent with international conventions;

- To streamline business-registration licensing, and permit procedures, encourage competition within a SEZ or promote a SEZ enterprise that can compete effectively internationally;
- To pilot land, labor environment, and security reform the national level;
- To minimize the administrative burden and costs for the SEZ Enterprise Developers and Operators to achieve full compliance with the Liberian laws and regulations and the terms of the associated agreements (SEZ License, Development Agreement, Operator Agreement);
- To negotiate SEZ related Tax and investment Agreements with prospective SEZ Enterprises (Developers and Operators) to attract the investment capital to Liberia to realize the objectives of the SEZ and the SEZ Enterprise;
- To negotiate and provide a legal framework for final dispute resolution for SEZ related Investment, Development, and Operating Agreements based on dispute resolution mechanism in accordance with Section 35 of this Act (Settlement of Disputes).

[8] SEZ Act, Section 13(2)

[9] Ibid., Section 12(1)

5.3.18 LIBERIA SPECIAL ECONOMIC ZONE ACT 2017

The Liberia Special Economic Zone Act creates a national special economic zone regime in the Republic of Liberia to be administered by the Liberian Special Economic Zone Authority (LSEZA) established under section 7 of this Act. The SEZA repeal Chapter 5 of the Public Authorities Law creating the Liberia Industrial Free Zone Authority, and to enact in lieu thereof a new Chapter 5 to be known as the special Economic Zone Act of 2017. The Purpose of the Liberia Special Economic Zone Act include the following;

- To regulate the establishment, development, operation, maintenance, and management of single, multiple, and mixed-use Special Economic Zones (SEZs) in Liberia;
- To increase cross-border investment opportunities;
- To act as a platform to strengthen the competitiveness of the nation's economy;
- To create new employment opportunities, improve Liberian's skills and upgrade the country's infrastructure
- To encourage private-sector development, promote land reform, carry out de-urbanization of highly populated cities, achieve long-term environmental, labor, and gender sustainability;
- To promote the advancement of human rights increase its standard of living reduce poverty levels and achieve sustainable economic development;

- Aims to foster and facilitate entrepreneurial activity by granting the SEZ Authority the delegated powers of all the ministries and agencies of the Government of Liberia to engage prospective SEZ Enterprises to finalize investment agreements and operating agreements from a holistic basis out of one centralized authority to launch new businesses;

5.3.19 NATIONAL INVESTMENT COMMISSION (NIC)

The Liberia National Investment Commission is the entity of the Government of Liberia established by the Liberian National Legislature in 1979 to regulate and promote investment opportunities, attract and support the growth of value-adding foreign direct investment (FDIs) and advocate for and strengthen the domestic private sector. Functional role of the NIC include:

- The NIC is a member of the Liberia Better Business Forum, which works to create an investment environment that makes it easy and predictable to do business in Liberia.
- The NIC chair's the Inter-Ministerial Concessions Committee (IMCC), which includes permanent committee members from the Ministries of State, Finance, Justice, and Planning and Economic Affairs, as well as other key stakeholder ministries and agencies.
- The NIC is also chair of the Commissioner's meeting which approves investment inventive contracts above 10 million.

5.3.20 FORESTRY DEVELOPMENT AUTHORITY (FDA)

The Forestry Development Authority (FDA) was established in 1976 as the entity of government responsible for sustainable management of forest and associated resources. The FDA is charged with the statutory responsibility to protect, manage, conserve and preserve the forest and its resources for sustainability as well as provide medium and long term planning, preparation and development of forestry policy, law and administration of the forestry sector. . It also has the power to grant concession agreement for commercial value and determine forestry species values, evaluate investment proposals and execute reforestation and forest research training activities.

5.3.21 NATIONAL FORESTRY REFORM LAW 2006

The National Forestry Reform Law was enacted by the Liberian National Legislature in 2006 granting the Forestry Development Authority the statutory power under the law to ensure sustainable management of the forestland, wildlife and forest resources, promotion of conservation programme, protection of the environment and critical ecosystems, promotion

of sustainable economic development with the participation of and for the benefit of all Liberians and contribute to poverty reduction/alleviation in the country.

5.3.22 THE NATIONAL FORESTRY POLICY

The aim of the forestry policy of Liberia is to conserve and sustainably manage all forest areas, so that they will continue to produce a complete range of goods and services for the benefit of all Liberians and contribute to poverty alleviation in the nation, while maintaining environmental stability and fulfilling Liberia's commitments under international agreements and conventions. In order to achieve this aim, the following specific objectives will be pursued:

- To ensure that commercial forestry, community forestry and forest conservation activities are integrated and balanced to optimize the economic, social and environmental benefits from the forest resource.
- To conserve a representative sample of forest ecosystems so that important environmental functions are maintained.
- To contribute to the national development goals of poverty alleviation and increased food security by increasing the opportunities for forest-based income generating activities.
- To grant more equitable access to forest resources so that the potential for future conflict is reduced and the benefits from forestry development are shared throughout Liberian society.
- To ensure that all stakeholders participate in the formulation of forestry policies and in the conservation and management of the forest resource.
- To maximize the contribution of the sector to income, Employment and trade through the development of appropriate processing activities.
- To ensure that forestry development contributes to national development goals and international commitments (including regional cooperation and trans-boundary issues) and is coordinated with other relevant branches of government.
- To ensure that activities in the forestry sector (including forest management, plantation development, harvesting, conservation and industrial development) are based on sound scientific and technical principles.

5.3.23 NATIONAL WILDLIFE CONSERVATION AND PROTECTED AREAS MANAGEMENT ACT 2014

The National Wildlife Conservation and Protected Areas Management Act of 2014 was established for the protection of wildlife and wildlife management, conservation of areas on

state land, private land and community lands and critical ecosystem and habitats. It promotes sustainable utilization of conservation areas for the benefit of people in a manner that would preserve the ecological character of such areas and promote participation of local communities in the management and conservation of areas and wildlife.

5.3.24 LIBERIA LAND AUTHORITY (LLA)

The Liberia Land Authority (LLA) is a product of the policy, legal and intuitional reform of the land sector of Liberia led by the erstwhile Liberia Land commission. The LLA was established by an Act of the National Legislature on October 6, 2016, as an autonomous agency of the Government of Liberia with operational independence, subsumes land functions that were performs by several agencies of government. Its primary mandate is to develop policies on continuous basis, undertake actions and implement programs in support of land governance, including land administration and management.

5.3.25 LIBERIA LAND RIGHTS ACT 2018

The land Rights Act of 2018 regulates the form and manner of land acquisition, ownership, use, and management in Liberia. The Land Rights Act was signed into law in September, 2018 by the Government of Liberia and establishes the legal framework for securing customary collective community land and resource rights. The law became a landmark victory for activists and traditional people across the nation. The Act is ambitious and clearly asserts the rights to what is known as customary land, -- a territory that can be claimed through oral testimony and community agreement.

5.3.26 LIBERIA LAND COMMISSION ACT 2009

The Liberia Land Commission Act seeks to propose, advocate and coordinate reforms of land policy, laws and programs in Liberia. It does not have adjuratory or implementation role. The object of the Commission is to develop comprehensive national land tenure and land use system that will provide equitable access to land and security in addition to facilitate sustainable growth and development.

5.3.27 MINISTRY OF AGRICULTURE (MOA)

The Ministry of Agriculture is the statutory institution established for the regulation of plant and food crop related plantations, agro-forestry, fishery, animal husbandry etc. The Ministry of Agriculture amongst other things is responsible to plan, executes, administers, manages and supervises agriculture programs and provide extension services including training local

and artisanal farmers improved cultural practices, fertilizers usages and applications, and provision of seedlings and grains for food security.

5.3.28 FOOD AND AGRICULTURE POLICY AND STRATEGY (FAPS)

The goal of the Food and Agriculture Policy and Strategy (FAPS) is: A revitalized modernized agriculture that is contributing to shared, inclusive and sustainable economic development and growth of Liberia'**.** The Food Agriculture Policy and Strategy recognizes the priority of the private sector in the productive sector while the government regulates and promotes growth through the provision of access to smallholders and women. The FAPS focuses on three broad sector objectives:

- Safe and nutritious foods are available in sufficient quantity and quality at all times to satisfy the nutrition needs for optimal health of all Liberians throughout their life cycles;
- Enhanced inclusive and pro-poor growth in agricultural production, productivity, competitiveness, value addition and diversification;
- Strong and efficient human and institutional capacities of the public sector, private sector, civil society organizations, especially grassroots, capable and carrying out effective planning, delivery of services, investment and monitoring activities in the sector; sustaining natural resources, mitigating risks to producers and mainstreaming gender considerations in planning and implementing activities in the sector; The FAPS has a number of policy objectives that address environmental and biodiversity issues.

5.3.29 LIBERIA MARITIME AUTHORITY (LiMA)

The Liberian Maritime Program was established in 1948 with strong support from the United States of America. In 1949, Liberia became a founding member of the International Maritime Organization (IMO) and has over the years played a critical role in promulgating maritime safety, security and environmental protection. Prior to the establishment of the Liberia Maritime Authority, the Bureau of Maritime Affairs (BMA) administered the program under the supervision of the Ministry of Finance and later the Ministry of Transport. With the passage of the Liberia Maritime Authority Act of 2010, the BMA then transitioned into the Liberian Maritime Authority (LiMA).

The Liberia Maritime Authority under the LiMA Act of 2010 is mandated to perform the following functions for and on behalf of the government of the Republic of Liberia;

- Administer, secure, promote, regulate, enforce design, and execute policies, strategies, laws and regulations, plans and programs relating, directly and indirectly to the functioning, growth and development of the maritime sector, and national maritime awareness;
- Collaborate, coordinate, and consult with the Ministry of National Defense (specifically the Coast Guard0, the Ministry of Justice (police, immigration and other relevant law enforcement agencies0, the Ministry of Finance, now Liberia Revenue Authority) Customs, National Port Authority, the Ministry of Agriculture (Bureau of Fisheries, now National Fisheries and Aquaculture Authority), the National Oil Company of Liberia, the Ministry of Transport and other government institutions engage in activities related to the maritime sector to collaborate in promoting the country's social and economic development associated with or growing out of the national maritime, marine and related programs and activities;
- Introduce and promote the enactment of national legislations in the exercise of the rights and discharge of the responsibilities of the Republic of Liberia under the United Nations Convention on the Law of the Sea of 1982 and any other maritime related international conventions, agreements and instruments.

5.3.29 MINISTRY OF FINANCE DEVELOPMENT & PLANING (MFDP)

The Ministry of Finance Development and Planning is the entity of government of the Republic of Liberia established under the Ministry of Finance Development & Planning Act to execute the mandates and functions which includes but not limited to the following;

- The Ministry shall formulate, institutionalize and administer economic, development, fiscal and tax policies for the promotion of sound and efficient management of the financial resources of the government;
- The Ministry shall have the power to administer this Chapter and all of the provisions contained herein as well as perform such other powers and functions as may be provided by law;

5.3.30 LIBERIA REVENUE AUTHORITY (LRA)

The Liberia Revenue Authority was established through an Act of the National Legislature in 2013 and began operations on July 1, 2014 as a semi-autonomous agency of Government. The core mandate of the LRA is to administer and enforce Liberia's Revenue Code of 2000 as amended in 2011, and other related laws under which it is assigned responsibility, for the purpose of assessing, collecting, auditing and accounting for all national revenues and for facilitating legitimate international trade through border management and enforcement.

5.3.31 MINISTRY OF COMMERCE AND INDUSTRY (MOCI)

The Ministry of Commerce and Industry was established in 1987 by the National Legislature of the Republic of Liberia. The Ministry was originally established in 1948 as the Department of Agriculture and Commerce. On June 1, 1962 it became the Department of Commerce and Industry. Subsequently, on December 31, 1971 the name was changed to Ministry of Commerce, Industry and Transportation. An Act detaching the Bureau of Transport form the Ministry of Commerce, Trade and Transportation, resulted in the current Ministry of Commerce and Industry.

The MOCI has three distinct bureaus namely; Bureau of Administration, Bureau of Commerce & Trade and Bureau of Industry which are subdivided into 13 Divisions; Personnel, Finance, Electronic Data Processing, Information, and Planning & Research, Foreign Trade, Domestic Trade, Inspectorate, Price Analysis & Marketing, Standards, Small-Medium Enterprises (SMEs), Industrial Development, Industrial Administration & Supervision etc.

Functions of the MOCI includes;

- Establish and regulate commodity and trade standards;
- Collect, evaluate, and publish data pertaining to Commerce and Industry;
- Establish and enforce standards for business practices;
- Promote sound development of foreign and domestic trade;
- Issue import and export permits;
- Control quality of goods and commodity imported into and exported from the country;
- Implement efficient and effective trade management system including pre-shipment Inspection of imports and exports.
- Monitoring and regulating prices of essential goods;

5.3.33 NATIONAL PORT AUTHORITY (NPA)

The National Port Authority (NPA) was established by an Act of the National Legislature in 1967 and amended in 1970 as a state-owned corporation to manage, plan, and build all public ports in Liberia. The National Port Authority system comprises of four ports nationwide namely; Freeport of Monrovia, Port of Buchanan, Port of Greenville, and Port of Harper. The NPA has the statutory responsibility to plan, design, construct, administer and operate all public seaports within Liberia. The NPA is managed by an Executive Management team led by the Managing Director and supervised by a Board of Directors.

5.3.34 MINISTRY OF INTERNAL AFFAIRS

The Ministry of Internal affairs was first established in 1864, known as the Parish. The name was changed from the PARISH, first, to Department of Interior (1927), then to Ministry of Local Government, Rural Development and Urban Reconstruction (1971), and again, to Ministry of Internal Affairs (1982). It is the oldest and largest government institution. It is responsible to administer the affairs of all government functionaries within local and urban areas of Liberia. Guarded by the revised Interior Regulations of Liberia, the Ministry supervises all county superintendents, and oversees the activities of local government bodies, such as districts, chiefdoms and clans.

5.3.35 MINISTRY OF HEALTH

The Ministry of Health and Social Welfare is in charge of managing the health sector. The oversight of the Ministry includes:

- Healthcare activities at the primary, secondary and tertiary levels; monitoring of the nation's state of health and the preparation and implementation of health improvement programs;
- Economic relations in healthcare and tasks relating to the founding of public healthcare institutions in line with the law;
- Health measures to be taken in the event of natural and other disasters;
- Protection of the population against addiction-related health problems;
- Protection of the population against infectious diseases and HIV infection;
- Food safety and the nutritional quality and hygiene of food and drinking water with a view to preventing chemical, biological and radiological pollution and conducting a general policy on nutrition;
- The production of, trade in and supply of medicines and medical products; the production of and trade in poisonous substances and drugs;
- The safety of products intended for general use; health and ecological issues relating to the environment, where a direct impact on human beings is involved;
- Problems related to drinking water, bathing waters, air, soil and vibrations; waste management from the health protection aspect;
- Protection against ionizing and non-ionizing radiation in residential and work environments;
- Conditions relating to the removal and transplantation of human organs; and
- The formulation and implementation of international agreements on social security.

5.3.35 NATIONAL PUBLIC HEALTH INSTITUTE OF LIBERIA (NPHIL)

The National Public Health Institute of Liberia (NPHIL) was officially established by the NPHI Act of 2016, as an autonomous institution which was signed into law by January 2017. The law was rapidly approved to response to the weakness in public health system of Liberia observed during the Ebola outbreak. The function of the Public Health Institute as envisioned are to help Liberia increase surveillance, laboratory and outbreak response capacity and efficiency for detection and response to public health threats while avoiding interruption of routine services. It will also provide evidence-based information that can be used to strengthen the health-care system of Liberia

5.3.36 MINISTRY OF LABOR

The Ministry of Labor is responsible for the development, implementation and evaluation of Government's policy and programs in respect to industrial relations, the status of workers and social security. The Ministry's broad objectives cover all activities in the elaboration, implementation, control and evaluation of policies on labor relations, labor and safety standards and Employment.
The main sections of the Ministry and their objectives are as follows:

- **Promote and encourage** --- Promote and encourage an enabling environment for accelerated growth and Employment, facilitate the process of formalization of Employment through appropriate policy intervention, improve and promote opportunities for technical and vocational training especially in the rural areas
- **Permanent Arbitrator** — to provide a permanent institution for adjudication of industrial disputes on an expeditious and consistent basis.
- **Occupational Health and Safety** — the effective administration of the legislation and other standards relating to occupational health and safety and the promotion of a high standard of health and safety in all places of work.
- **Legal** — provides legal advice on labor legislation, and also litigation and prosecution services for all sections of the Ministry.
- **Training** — provides effective training programs for the staff in order that the highest quality services are delivered.

5.4 THE AFRICAN DEVELOPMENT BANK AfDB GROUP

The African Development Bank (AfDB) Group is a multilateral development bank whose shareholders include 54 African countries (regional member countries or RMCs) and 24 non-African countries from the Americas, Asia, and Europe (non-regional member countries or non-RMCs). The AfDB Group herein is referred to as the Donor or funding Partner for phase I of the Project Development Objectives.

5.4. 1.2 AFRICAN DEVELOPMENT BANK ENVIRONMENTAL AND SOCIAL GUIDELINE AND POLICIES

The African Development Bank Group (AfDB). 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.

5.5 OPERATIONAL SAFEGUARDS

The Bank selected the Operational Safeguards (Oss) for inclusion in the ISS on the basis of the following considerations:

- Commitments in the Bank's existing policies;
- Relevance to key environmental and social issues in the region;
- Lessons learned from applying the environmental and social policies/procedures in the Bank;
- Harmonization with other multilateral development banks and alignment with relevant international conventions and standards;
- Outcomes of stakeholder consultations; and
- Limiting the number of OSs to just what is required to achieve the optimal functioning of the ISS. The OSs are intended to:
- Better integrate considerations of environmental and social impacts into Bank operations to promote sustainability and longterm development in Africa;
- Prevent projects from adversely affecting the environment and local communities or, where prevention is not possible, minimize, mitigate and/or compensate for adverse effects and maximize development benefits;
- Systematically consider the impact of climate change on the sustainability of investment projects and the contribution of projects to global greenhouse gas emissions;
- Delineate the roles and responsibilities of the Bank and its borrowers or clients in implementing projects, achieving sustainable outcomes, and promoting local participation; and
- Assist regional member countries and borrowers/ clients in strengthening their own safeguards systems and their capacity to manage environmental and social risks.
- Relevant Operational Standards (Oss) of the African Development Bank Group that are triggered by the Project are summarized below;

5.5.1 OS1: ENVIRONMENTAL AND SOCIAL ASSESSMENT

This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements:

the scope of application; categorization; use of a SESA and ESIA, where appropriate; Environmental and Social Management Plans; climate change vulnerability assessment; public consultation; community impacts; appraisal and treatment of vulnerable groups; and grievance procedures. It updates and consolidates the policy commitments set out in the Bank's policy on the environment.

5.5.1 OS 2: INVOLUNTARY RESETTLEMENT

Land Acquisition, Population Displacement and Compensation – This safeguard consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement, and it incorporates refinements designed to improve the operational effectiveness of those requirements. In particular, it embraces comprehensive and forward-looking notions of livelihood and assets, accounting for their social, cultural, and economic dimensions. It also adopts a definition of community and common property that emphasizes the need to maintain social cohesion, community structures, and the social interlinkages that common property provides. The safeguard retains the requirement to provide compensation at full replacement cost; reiterates the importance of a resettlement that improves standards of living, income-earning capacity, and overall means of livelihood; and emphasizes the need to ensure that social considerations, such as gender, age, and stakes in the project outcome, do not disenfranchise particular project-affected people.

5.5.2 OS 3: BIODIVERSITY AND ECOSYSTEM SERVICES

The overarching objective of this safeguard is to conserve biological diversity and promote the sustainable use of natural resources. It translates into OS requirements the Bank's commitments in its policy on integrated water resources management and the UN Convention on Biological Diversity. The safeguard reflects the importance of biodiversity on the African continent and the value of key ecosystems to the population, emphasizing the need to "respect, conserve and maintain [the] knowledge, innovations and practices of indigenous and local communities… [and] to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements3 .

5.5.3 OS 4: POLLUTION PREVENTION AND CONTROL, GREENHOUSE GASES, HAZARDOUS MATERIALS AND RESOURCE EFFICIENCY –

This safeguard covers the range of impacts of pollution, waste, and hazardous materials for which there are agreed international conventions and comprehensive industry-specific standards that other multilateral development banks follow. It also introduces vulnerability analysis and monitoring of greenhouse gases.

5.5.4 OS 5: LABOR CONDITIONS, HEALTH AND SAFETY

This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labor

5.5.5 HARMONISATION OF ENVIRONMENTAL AND SOCIAL SAFEGUADS

Development of the Integrated Social Standard has taken place in the context of the Multilateral Funding Institutions' continued harmonization and upgrading of their environmental and social best practices. Following the Paris Declaration on Aid Effectiveness in 2005, there has been greater impetus for development agencies to harmonize environmental and social safeguards. The MFI Working Group on the Environment (MFI-WGE) published a Common Framework for Environmental Assessment in 2005 to encourage greater harmonization of environmental and social safeguards among its members[8]. In the past few years, almost all the MFIs have embarked on or have completed major revisions and upgrading of their environmental and social policies and their safeguard requirements and standards[9].

[8, 9] African Development Bank Group, Integrated Safeguards Systems 2013

Table 007: Key areas of operational safeguards among multilateral development banks

Area	WB	IFC	EBRD	EIB	IADB	AsDB	AfDB[a]	MFI-WGE
Environmental and Social assessment (ESA)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Involuntary resettlement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pollution Prevention	Yes	Yes	Yes	Yes	Yes	(In ESA)	Yes	Yes
Biodiversity	Yes[c]	Yes	Yes	Yes	Yes	(In ESA)	Yes	Yes[d]
Community impacts	Yes	Yes	Yes	Yes	No	(In ESA)	(In ESA)	Yes
Labor conditions	Yes	Yes	Yes	Yes	No	(In ESA)	Yes	Yes
Indigenous peoples	Yes	Yes	Yes	Yes	Yes	Yes	(In ESA)	Yes

Cultural heritage	Yes	Yes	Yes	Yes	Yes	(In ESA)	(In ESA)	No[e]
Environmental flows	Yes 1	No	No	No	No	No	(In Biod)	Yes

a As proposed in the ISS	c world Bank safeguards on natural habitats and forest	e proposes safeguard on vulnerable groups, which includes indigenous people
b as contained in the Common Framework for Environmental and Social Assessment	d split into pollution and toxic hazardous substances	f Safeguard is on water resource management

5.6 RELEVANT INTERNATIONAL POLICIES AND CONVENTIONS

Liberia is signatories to several of these international conventions, protocols and laws that seeks to inspire global action in ending poverty, protection of the earth's environment and climate, ensuring that people everywhere can enjoy peace and availability of clean air, water and environment for all. The United Nations first Conference on Environment was organized FROM June 5-14, 1972 in Stockholm, Sweden. It became known as the first global efforts for environmental consciousness and management and resulted in the creation of the United Nations Environment Programme (UNEP). Decades proceeding were emancipated by various international efforts gear towards development of new environmental laws, policies, researches, meetings and conference and strategic ambitions for global actions.

5.7 INTERNATIONAL FINANCE CORPORATION (IFC)

The International Finance Corporation (IFC) is a subsidiary of the World Bank was established in 1956 with the specific purposed of financing private enterprises. It helps developing countries achieve sustainable growth by financing investment, mobilizing capital in international financial markets, and providing advisory services to businesses and governments. The objectives of the IFC are to assist economic development by encouraging the growth of productive private enterprise in its member nations, particularly in the underdeveloped areas. The IFC is an affiliate of IBRD. The Board of Governors of the IBRD also constitute the Board of Governors of the IFC however, it is a separate entity with funds kept separate from those of IBRD.

5.7 THE EHS GUIDELINES

Environmental, Health and Safety (EHS) Guidelines are technical reference document encompassing of general and industry-specific examples of Good International Industry

Practice (GIIP) and are generally referred to as the World Bank's Environmental and Social Framework and in IFCS Performance Standards.

Table 008 Relevant EHS Guidelines

1. Environmental
• **Air Emissions and Ambient Air Quality**
• **Energy Conservation**
• **Wastewater and Ambient Water Quality**
• **Water Conservation**
• **Hazardous Materials Management**
• **Waste Management**
• **Noise**
• **Contaminated Land**
2. Occupational Health and Safety
• **General Facility and Design and Operation**
• **Communication and Training**
• **Physical Hazards**
• **Chemical Hazards**
• **Biological Hazards**
• **Radiological Hazards**
• **Personal Protective Equipment**
• **Special Hazard Environments**
• **Monitoring**
3. Community Health and Safety
• **Water Quality and Availability**
• **Structural Safety of Project Infrastructure**
• **Life and Fire Safety (L&FS)**
• **Traffic Safety**
• **Transport of Hazardous Materials**
• **Disease Prevention**
• **Emergency Preparedness and Response**

5.7.1 CONVENTION ON BIOLOGICAL DIVERSITY

The convention seeks to promote conservation of biological species, sustainable use of its components, and fair and equitable sharing arising from the utilization of genetic resources.

5.7.2 UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

The convention aims to combat desertification and mitigate the effect of drought in countries experiencing serious threats.

5.7.3 KYOTO PROTOCOL

The international protocol seeks to strengthen the commitment of developed country (parties) with a view to reduce their overall emission. It aims to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

5.7.4 RAMSAR CONVENTION ON WETLANDS

The convention aims to manage wetland systems so that human impacts do not change their natural capital for future generation and to encourage and support countries to develop and implement national policy

5.7.5 ABIDJAN CONVENTION AND PROTOCOL ON MANAGEMENT & PROTECTION OF COASTAL AND MARINE ENVIRONMENT IN THE SUB-REGION

The convention seeking to strengthen regional cooperation in the protection and development of the marine and coastal environment of West Africa.

5.7.6 STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS (2001)

The conventions accounts for 12 chemical substances classified as Persistent Organic Pollutants including DDT.

5.7.7 CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

The convention seeks to abolish illegal trade in species and ensure international cooperation in trade of species of wildlife but do not threaten their survivability.

5.7.8 INTERNATIONAL CONVENTION ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS (UN, 1976)

The Convention seeking to grant individual social, economic and cultural rights including labor, health, safety, education and guarantee for adequate standard of living.

CHAPTER 6: BASELINE ENVIRONMENTAL AND SOCIAL CONDITION

6.1 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 & meteorological setting, temperature, hydrology, geology, soil characteristics, rainfall and precipitation, noise, air quality); Biological environment (fauna and flora, biodiversity, vegetation, protected areas, birds, reptiles, mammals, 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.

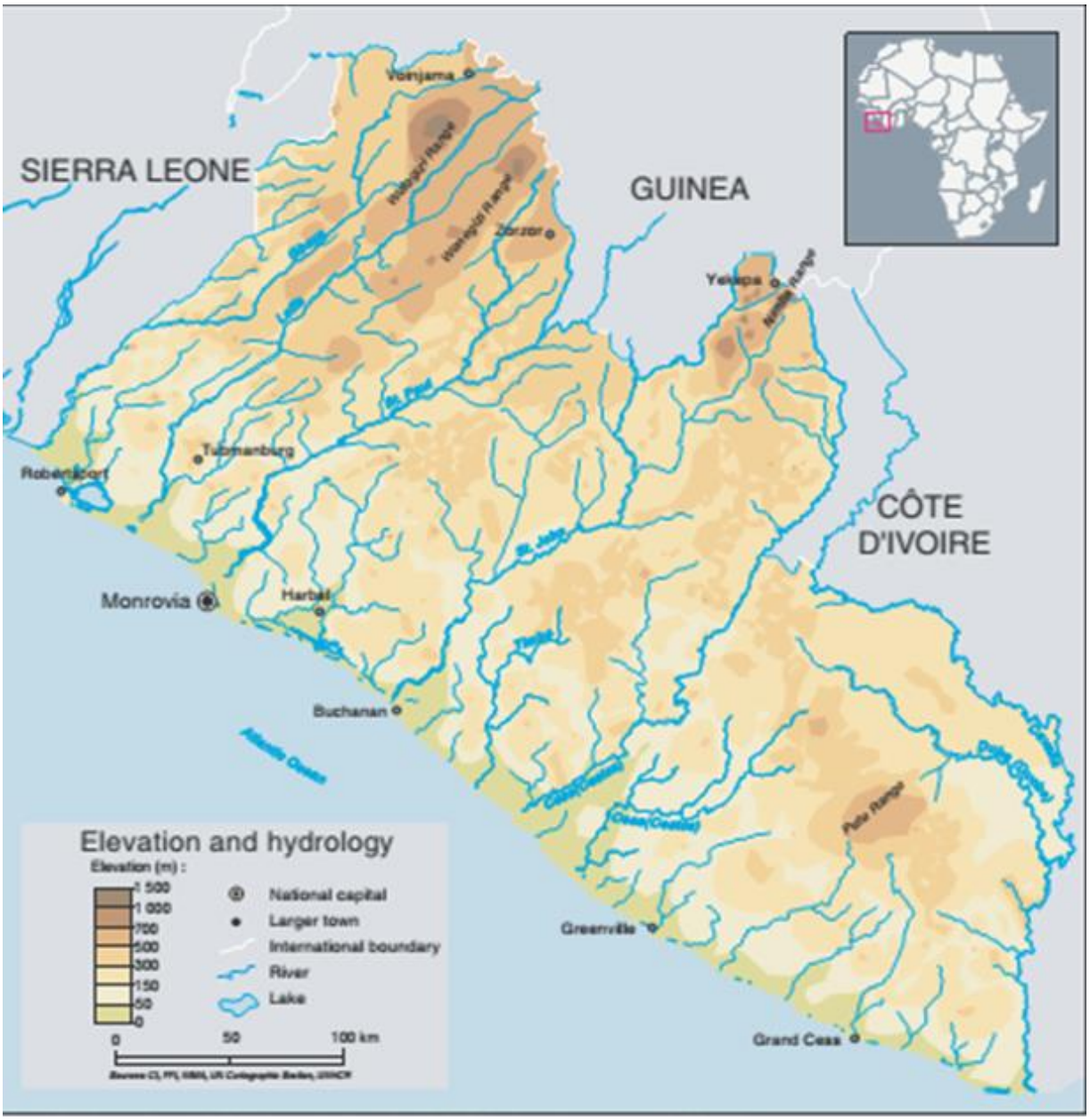
6.2 TOPOGRAPHY

Grand Bassa has a flat coastline and narrow coastal plain that extends inland form seashore and the land gradually rises to the hilly hinterland of the County. The proposed Project location is generally regarded as a Greenfield and thus anthropogenic footprint and impacts are relatively low. High elevation regions have forest of evergreen and deciduous trees, including ironwood and mahogany[10]. The county has several major rivers and shorelines broken by estuaries, tidal creeks and rocky capes. The City of Buchanan is prone to inundation and erosion with the Benson River and Merclin River the most noted rivers for overflowing the banks during the peak of the rainy season. The proposed site contour ranges from +4m to +40m and minimum sport elevation is 3.116m and maximum sport elevation is 40.94m[11]. _____

[10] Grand Bassa County Development Agenda, 2012

[11] Buchanan SEZ & Feasibility Study

Figure003: **Topographic map of Liberia**



Source: UNEP, 2004. Desk Study on the Environment of Liberia

6.3 GEOGRAPHY

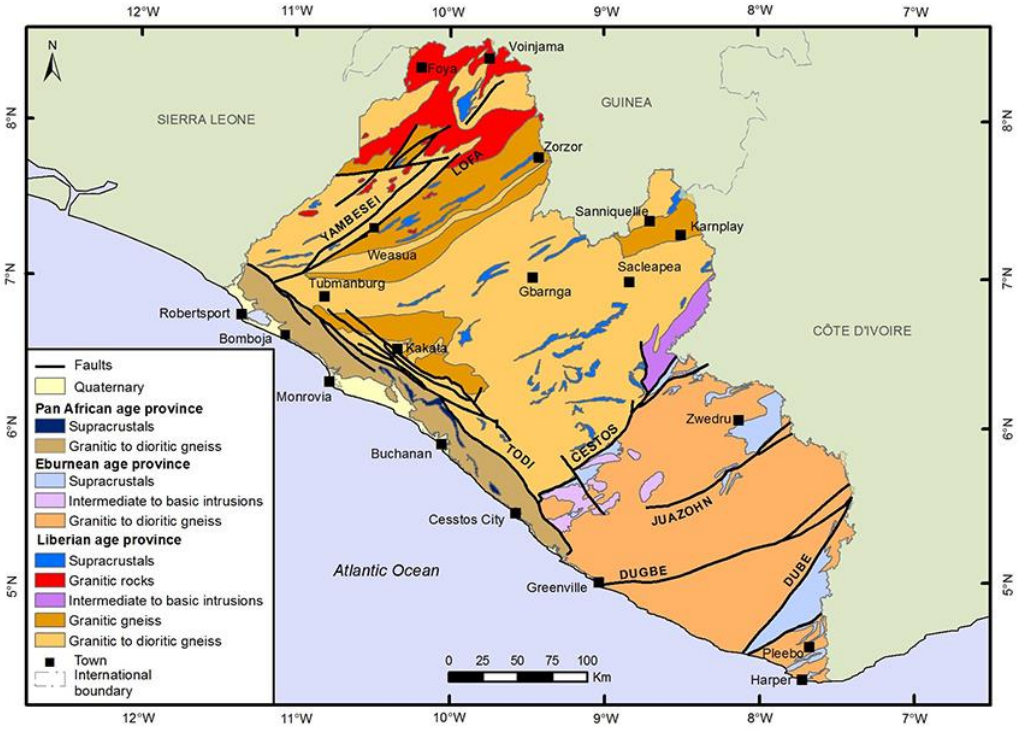
Buchanan City, is the administrative capital of Grand Bassa County and lies 70 miles (110 km) southeast of Monrovia and near the mouth of the Saint John River. . Grand Bassa County is bordered by Margibi County to the Northwest, Bong County to the North, Nimba County to the East, and Rivercess County to the South and East and the Western part by the Atlantic Ocean. The County is located in an area from latitude 6 °45' to latitude 5°30' North, and form longitude 10°30' to longitude 9°00' West (ISO 3166-2 geocode: LR-GB)[12] . Grand Bassa County

has total area of 8,759 square kilometers (3,382 sq. mi). The county has eight political districts and several isolated beaches and lagoons. The County has five statutory districts, nine administrative districts, eleven townships, three cities and forty-five clans.

6.4 GEOLOGY

Liberia is underlain by the Man Shield, which comprises two major areas of Archaean and Paleoproterozoic rocks. The Archaean basement, which is of Liberian age (2.5–3.0 Ga) and extends across central and western Liberia, is characterized by a granite-greenstone association that is dominated by granitoid gneisses and migmatites, which are infolded with supracrustal metavolcanic and metasedimentary rocks and intruded by a younger igneous complex [13].

Figure: 015 Geological Map of Liberia



Source: Liberia Geological Survey LGS/Ministry of Mines and Energy

12 Buchanan SEZ and Port Feasibility

13 Liberia Geological Survey

Grand Bassa County's soils can be categorized as laterite (55%) which is leached out, alluvial (19%) and sandy and loamy (26%). Alluvial soil is prevalent in the leeward districts. The coastal areas of Grand Bassa is characterized by narrow strip of level more or less cut up by lagoons, tidal creeks, and marches. Two onshore sediment-filled basins are located along the coastline; Roberts Basin, which is filled with sediments of the Farmington River formation and Paynesville Sandstone; and the Bassa Basin which is filled with material from the St. John River formation[14]. The project area of influence is forms part of the pan-African Age Province (550my) which forms part of the sedimentary basin of Buchanan, Liberia.

6.5 PROTECTED AREA & WETLANDS

The proposed Project location is not a protected Area nor a proposed Protected Area Network. However, the proposed project location is considered a green field and there have not be significant human impacts on the surrounding area. The location is considered a flood prone environment during the height of the rainy season. The Project Technical Design and Plan will ensure to address all issues regarding the hydrological environment in close proximity to the project area.

Liberia is endowed with wetlands that provide both environmental, economic and social benefits to its diverse populations. Naturally, wetland are often prone to exploits and Liberia established key priorities and significance for wetland conservations and protections. Currently, Liberia has identified Eight (8) major wetland of which Five (5) are designated as Ramsar Wetlands of International importance. These include; Mesurado, Lake Piso, Marshall, Gbedin and Kpatawee Wetlands. In terms of environmental management and conservation, Part VI, section 74 and 75 of the Environmental Protection and Management Law of Liberia deal with management and protection of wetlands. It delineate specific charge as penalty for violators in the ton of US$5,000.00 Five Thousand United States Dollars) or imprisonment for a period not exceeding two years.

The various types of wetlands found in Liberia along with details locations and size are presented in the table below:

14 Liberia Buchanan SEZ including SAPZ Final 2020

Table 009: Wetlands of Liberia

No.	Wetland	Type	Size(acres)	Location/ County	Conservation status
1	Bufu Bay	Coastal	11,900	Sinoe County	None
2	Cestos-Senkwehn	Inland Riverine	15,000	Sinoe & River Cess Counties	Proposed Nature Reserve
3	Gbedin	Inland Riverine	11,200	Nimba County	Ramsar Wetland
4	Kpatawee	Inland Riverine	8,800	Bong County	Ramsar Wetland
5	Lake Piso	Coastal Lacustrine	76,091	Cape Mount County	Proposed Nature Reserve, Ramsar Wetland
6	Lake Shepherd	Coastal	18,000	Maryland County	None
7	Marshall	Coastal Lacustrine	38,500	Margibi County	Proposed Nature Reserve, Ramsar Wetland
8	Mesurado	Coastal	22,000	Montserrado County	Ramsar Wetland

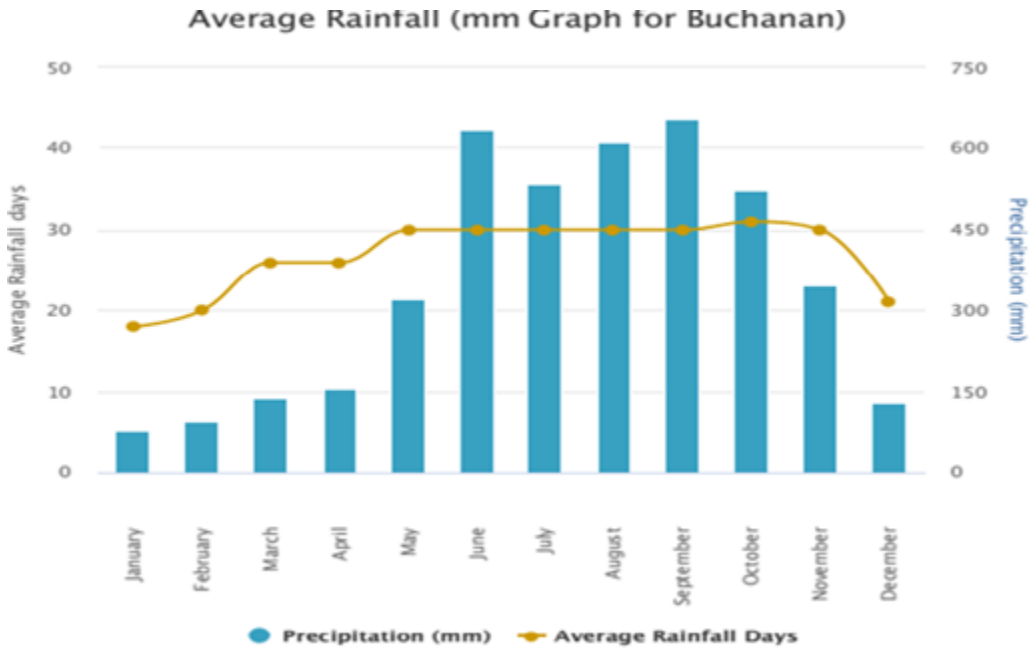
Source: EPA/GEF/UNDP.2004. National Biodiversity Strategy and Action Plan (NBSAP).

6.6 RAINFALL AND PRECIPITATION

There is significant rainfall in most of the months of the year ranging from 100mm to 300mm annually, with the heaviest rains observed through June to October. The short dry season have little effect in on the overall climate. The average temperature is about 25.65 degrees Celsius with precipitation 249.5 mm. There are several green fields and wetland found in the project area of influence as the result of the heavy rainfall. The average rainfall ranges more than 4500 mm along the coast to about in the interior. In the wet season, the West African Monsoon causes exceptionally high rainfalls on the coastline of West Africa. The capital of Liberia Monrovia is one of wettest capital cities of the World with the average annual precipitation exceeding 5000 mm[15].

[15] Liberian hydrological Services

Figure 004: Average Monthly Rainfall (mm) in Buchanan, Grand Bassa County



Source: lhs/Liberian Hydrological Service 2021

6.6 CLIMATE & METEOROLOGICAL SETTING

The climate of Liberia is determined by the equatorial position and the distribution of low and high-pressure belts along the African continent and the Atlantic Ocean. There is a fairly warm temperature throughout the year with very high humidity because of the moderating influence of the ocean and the equatorial position. The climate in Buchanan, Grand Bassa County is classified according to the Koppen-Geiger Climate classification as Tropical.

This classification is as the result of the significant amount of rainfall incurred in most part of the year. The closet Airports to Buchanan is the Roberts International Airport (ROB) which 52.53 km away. The temperature, precipitation/rainfall and humidity of Buchanan, Grand Bassa County are provided in subsequent sections. The variation in the precipitation between the driest and wettest months is 329 mm | 13 inch. The average temperatures vary during the year by 2.0 °C | 3.7 °F [16].

[16] Climate data.org

Figure 005: Average Temperature of Buchanan, Grand Bassa County

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	26.3 °C (79.3) °F	26.4 °C (79.5) °F	26.5 °C (79.7) °F	26.5 °C (79.8) °F	26.1 °C (78.9) °F	25.2 °C (77.3) °F	24.7 °C (76.5) °F	24.5 °C (76.1) °F	24.7 °C (76.4) °F	25.2 °C (77.4) °F	25.6 °C (78.1) °F	26.1 °C (79) °F
Min. Temperature °C (°F)	24.1 °C (75.4) °F	24.5 °C (76.1) °F	24.6 °C (76.4) °F	24.6 °C (76.3) °F	24.2 °C (75.5) °F	23.6 °C (74.5) °F	23.4 °C (74.2) °F	23.3 °C (74) °F	23.3 °C (73.9) °F	23.4 °C (74.1) °F	23.5 °C (74.3) °F	23.9 °C (75.1) °F
Max. Temperature °C (°F)	28.9 °C (83.9) °F	28.8 °C (83.9) °F	28.9 °C (84) °F	29 °C (84.2) °F	28.6 °C (83.4) °F	27.2 °C (81) °F	26.4 °C (79.5) °F	26.1 °C (79) °F	26.7 °C (80.1) °F	27.7 °C (81.8) °F	28.4 °C (83.2) °F	28.6 °C (83.6) °F
Precipitation / Rainfall mm (in)	87 (3.4)	116 (4.6)	174 (6.9)	218 (8.6)	293 (11.5)	369 (14.5)	310 (12.2)	401 (15.8)	416 (16.4)	317 (12.5)	182 (7.2)	102 (4)
Humidity (%)	84%	86%	87%	86%	87%	87%	85%	86%	88%	88%	87%	85%
Rainy days (d)	15	16	20	20	21	21	20	20	21	22	20	18
avg. Sun hours (hours)	6.9	6.5	6.3	6.0	5.5	4.3	3.6	3.1	3.6	4.4	5.6	6.4

Source: Climate Data.org

6.7 HYDROLOGY

The project is located within a Greenfield within the designated Buchanan Special Economic Zone. The county has several major rivers and shorelines broken by estuaries, tidal creeks and rocky capes. The City of Buchanan is prone to inundation and flood with the Benson River and Merclin River the most noted rivers for overflowing the banks during the peak of the rainy season. The Liberia River Basins 2016 Report provides condensed information on Liberian drainage network and river basins. It encompasses the Liberian Drainage Network and River Basins relevant for future development of the Liberian Water Resources and Catchments areas nationwide[17]. It also possesses huge hydropower potentials and economic viability when recognized and developed by the national government.

6.8 WATER RESOURCES

Water resources are the most abundant resources found in Liberia however, large percentage of these water sources are prone to pollution as the result of human anthropogenic activities.

Liberia is blessed with incredible water resources, catchment areas, rivers, streams, lakes and creeks which are unequivocally environmentally significant, aesthetically beautiful, economically potential and socially pivotal to the prosperity and development of the nation. Several of these basins have been are identified in previous reports both within the project area of influence and by extension Liberia as whole for conservation, protection and sustainable development and management purposes.

16 Basins Report/Liberia Hydrological Surveys

6.9 PRINCIPAL BASINS AREAS

The Liberian principal basins are drained by rain-fed rivers discharging into the Atlantic Ocean. All largest rivers, with the exception of the middle reaches of the Cavalla River flow from their headwaters in the south-west direction towards Atlantic Ocean. The river basins are generally narrow and the largest rivers are distributed regularly across the country[17]. The Six (6) largest principal basins in Liberia are transboundary river basins, which can be defined as basins shared by two or more riparian states. The Mano River, the Lofa, the St. Paul, the St. John, the Cestos and the Cavalla River have headwaters in Guinea or in Sierra Leone and the rivers cross all the Liberia territory from north-west to south east. This situation could put upstream countries in a position of advantage over their downstream neighbor Liberia. At the highest level all basins drains to the Atlantic Ocean. The Principal basins and coastal drainage areas are identified by two digit code segment. Principal catchments are numerated from west to east and are denoted by two-digit number beginning form 00 for the Mao River basin to 15 for the Cavalla River Basin as indicated below:

Table 010: Codes of Principals basins and main rivers

Basin Code	Basin Name	River Code	Main River Name (outlet-source direction)
00	Moa River	0000	Moa –Makona
01	Mano River	0100	Mano - Gbeya - Kaiha – Zeliba
02	Mafa River- Lake Piso	0200	Mafa
03	Lofa River	0300	Lofa River
04	St. Paul River	0400	St. Paul - Diani (Nianda)
05	Farmington River	0500	Farmington
06	St. John River	0600	St. John – Mani
07	Timbo River	0700	Timbo
08	Cestos River	0800	Cestos – Nuon
09	Sehnkwehn River	0900	Sehnkwehn – Butudi
10	Sinoe River	1000	Sinoe – Pane

11	Dugbe River	1100	Dugbe
12	Dubo River	1200	Dubo – Wu
13	Grand Cess (Nuch) River	1300	Grand Cess (Nuch) River
14	Po-Joda River	1400	Po-Joda
15	Cavalla River	1500	Cavalla

Source: Liberia River Basins 2016

Principal river basins are separated by smaller areas which are drained directly into the sea or into the coastal lagoons by one river to a single outlet or more streams to multiple outlets (frontal drainage). Because of a difference in size as compared to the principal river basins, coastal drainage areas are not divided into sub-basins. They are coded by separate two-digit numeration. Some semi closed (or closed) lagoon catchments were included into larger coastal drainage areas[18]. The coastal drainage areas are numbered from west to east starting from 50 for area between the Moa and the Mano River principle basins to 72 for small basins between the Decoris River coastal drainage area and the Cavalla River principal basin[19]. These identified and coded drainages are provided in Table 011 below:

17, 18, 19 Liberia River Basins Report 2016

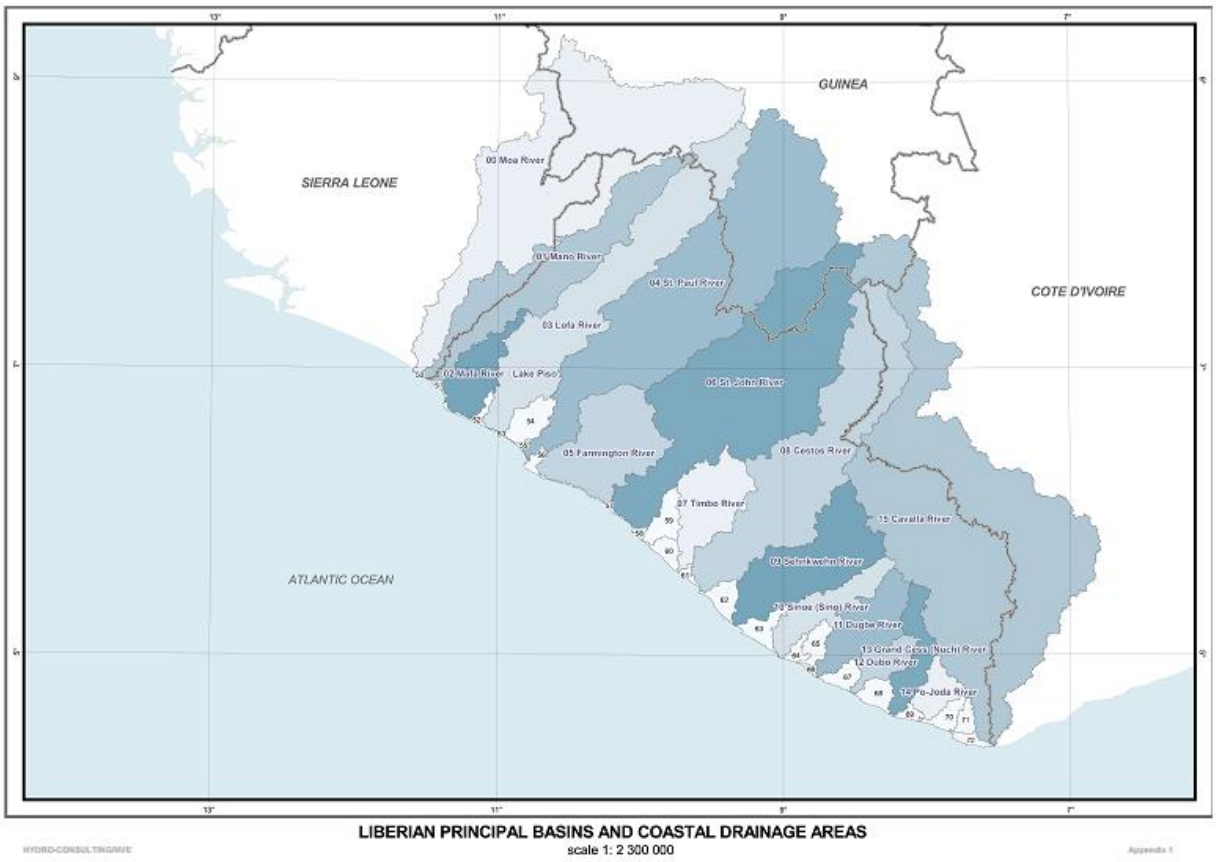
Table 011: Codes coastal drainage areas.

Coastal drainage	Coastal drainage area	Coastal drainage	Coastal drainage area

area code	name	area code	name
50	Moa River-Mano River	62	Cestos River-Sehnkwehn River
51	Mano River-Mafa River	63	Sehnkwehn River-Sinoe River
52	Mafa River-Lofa River	64	Sinoe River-Dugbae River
53	Lofa River-Mafa River	65	Dugbae River
54	Po River	66	Dugbae River-Dugbe River
55	Po River-St. Paul River	67	Dugbe River-Dubo River
56	St. Paul River-Farmington River	68	Dubo River-Grand Cess
57	Farmington River-St. John River	69	Grand Cess-Po-Joda River
58	St. John River-New Cess River	70	Po-Joda River-Decoris River
59	New Cess River	71	Decoris River
60	New Cess River-Timbo River	72	Decoris River-Cavalla River

Source: Liberia River basins Report 2016

Figure 005: The identified and coded coastal drainage are illustrated by the figure below:



6.10 ENVIRONMENTAL QUALITY ANALYSIS

6.10.1 SAMPLING PROGRAM

The objective of the sampling program is to obtain comprehensive baseline system within limited time and budget constraints. The sampling locations were selected based on higher ecological and environmental sensitivity and current and previous usage of certain areas. Details of the sampling program are summarized in the following tables below:

Table 011: Sampling regime/Protocol

Method	Sampled Medium				
	Air Quality	Soil Quality	Noise Quality	Surface H20	Ground H20
Ex-situ		√		√	√
In-situ	√		√		

Table 012: Soil Sampling location and coordinates

Sample Code	Matrix	Location	Sampling Depth	GPS Coordinates	Sampling Start Time
SS1	Soil	Doewhoen Town	0 – 50 cm	0389088/0646472	9:17 am
SS2	Soil	Near Queen River	0 – 50 cm	0387904/0646431	10:36 am
SS3	Soil	Giah Town	0 – 50 cm	0387933/0646421	10:55 am
SS4	Soil	Penny Town	0 – 50 cm	0390255/0644803	11:38 am
SS5	Soil	Kono Town	0 – 50 cm	0390918/0645064	1:44 pm

6.10.2 AIR QUALITY

Ambient air quality of the proposed SAPZ facility were conducted at designated sampling points. The main air pollution sources associated to the project are transport vehicles and diesel generators that would be used during the construction phase while during operation the major sources will be industrial/processing plants. These impacts are temporary and will be mitigated according. The results of environmental ambient air quality analysis are provided in the Appendix. Provide the Table number

6.10.3 AIR AND NOISE QUALITY MONITORING POINTS

Air and Noise quality data were monitored at six (6) points in and around the proposed economy zone. The GPS Coordinates and other sampling information are provided in **Table 3.**

Table 013: Air & Noise quality monitoring locations and coordinates

Sample Code	Matrix	Location	GPS Coordinates	Monitoring Start Time
AQ1/NQ1	Air & Noise	Doewhoen Town	0389123/0646468	9:20 am
AQ2/NQ2	Air & Noise	Doewhoen Town	0389089/0646473	10:40 am
AQ3/NQ3	Air & Noise	Queen River	0387904/0646431	11:05 am
AQ4/NQ4	Air & Noise	Giah Town	0387938/0646423	1:53 pm
AQ5/NQ5	Air & Noise	Penny Town	0390149/0644784	2:02 pm
AQ6/NQ6	Air & Noise	Kono Town	0390917/0644909	3:07 pm

6.10.4 SOIL QUALITY

Liberia soil quality is classified into three major groups namely, Latosols (75%), Lithosols (17%, and Regosol (6%) (Coastal and alluvial sands). Soils are formed as the result of accumulated actions of various physical, chemical, and biological process on rocks, minerals, and elementary substances on the surface of the earth. The nature of these processes and the kinds of soil formed depend on factors of climate, vegetation, parent material, relief, and time. These factors vary from place to place and produce a variety of soils, each with special horizons; structure; chemical properties that express each factor in various degrees of dominance. The way in which these soil characteristics are expressed serves as a basis for distinguishing one kind of soil from another[20]. The figure below depicts the soil types, distribution & characterization patterns in Liberia and while the result of the soil type found at the project area is provided in subsequent section

- Latosols Soil: is the most abundant soil type found in Liberia. Latosols constitutes about 75% of the total area of the Republic of Liberia. Latosols are commonly known as tropical red earth, are found below tropical rainforests which have a relatively high content of iron and aluminium oxides. They occur on undulating, gently rolling, rolling, r steeply rolling land that varies in elevation form almost sea level to about 1,800 feet, in a climatic zone that has an annual rainfall ranging between 70 and 180 inches, a mean temperature of about 80 °F., and wet and dry seasons. They are typically classified as oxisols or ferralsols.
- Lithosols Soil: Generally occur on hilly and rugged land; they represent about 16.7% percent of the total area. They are shallow soils, varying in depth from several inches

to a few feet, and not infrequently outcropping of the native bedrock occurs. Most of the deeper soils are of colluvial formation. The vegetation consist of trees and shrubs.

- Regosols Soil: These soils group consist of sands. The sands of Liberia occur in the narrow coastal belt and n several small tracts farther inland. Sand along the coast are ocean deposits; those inland are developed form coarse sandstones. These sands are inherently infertile and can be made productive only by heavy application of fertilizers. The coconut palm and oil palm are the crops that seems best adapted to the Regosols of Liberia[21].

6.10.5 .SOIL QUALITY SAMPLING POINTS

A total of five (5) soil samples were collected from different locations in and around the proposed economy zone. The GPS Coordinates and other sampling information are provided below:

Table 014: Soil Sampling location and coordinates

Sample Code	Matrix	Location	Sampling Depth	GPS Coordinates	Sampling Start Time
SS1	Soil	Doewhoen Town	0 – 50 cm	0389088/0646472	9:17 am
SS2	Soil	Near Queen River	0 – 50 cm	0387904/0646431	10:36 am
SS3	Soil	Giah Town	0 – 50 cm	0387933/0646421	10:55 am
SS4	Soil	Penny Town	0 – 50 cm	0390255/0644803	11:38 am
SS5	Soil	Kono Town	0 – 50 cm	0390918/0645064	1:44 pm

6.10.6 NOISE QUALITY

Ambient noise levels at the proposed site were conducted, however due to the low anthropogenic and industrial activities and influences at the area, the result revealed are relatively low. During construction operations, this situation is expected to increase significantly. Noise sampling point and are provided in table 024 below;

[20, 21] Reconnaissance Soil Survey of Liberia

6.10.7 AIR AND NOISE QUALITY MONITORING POINTS

Air and Noise quality data were monitored at six (6) points in and around the proposed economy zone. The GPS Coordinates and other sampling data are provided below:

Table 015: Air & Noise quality monitoring locations and coordinates

Sample Code	Matrix	Location	GPS Coordinates	Monitoring Start Time
AQ1/NQ1	Air & Noise	Doewhoen Town	0389123/0646468	9:20 am
AQ2/NQ2	Air & Noise	Doewhoen Town	0389089/0646473	10:40 am
AQ3/NQ3	Air & Noise	Queen River	0387904/0646431	11:05 am
AQ4/NQ4	Air & Noise	Giah Town	0387938/0646423	1:53 pm
AQ5/NQ5	Air & Noise	Penny Town	0390149/0644784	2:02 pm
AQ6/NQ6	Air & Noise	Kono Town	0390917/0644909	3:07 pm

6.10.8 WATER QUALITY

Water quality (surface and ground water) from the proposed site were conducted, however from local wells and streams to determine the baseline quality for future monitoring and compliance engagements. Details of the sampling are provided in the table below;

6.10.9 WATER QUALITY SAMPLING POINT

A total of six (6) water samples were collected during the study: four surface water and two ground water samples. As a quality control measure, all samples were collected in duplicates. The GPS Coordinates and other relevant sampling information are provided in **Table 016**.

Table 016: Water Sample Information

Sample Code	Matrix	(Water Source) Location	GPS Coordinates	Sampling Start Time
SW1	Surface Water	Doewhoen Town	0388992/0646332	9:03 am
SW2	Surface Water	Queen River	0387904/0646431	10:22 am
GW1	Ground Water	Giah Town	0387977/0646382	10:46 am
SW3	Surface Water	Penny Town (Gahyou Creek)	0390265/0644807	11:30 am
GW2	Ground Water	Well	0390161/0644745	11:57 am
SW4	Surface Water	Kono Town Creek	0390920/0645069	1:33 pm

6.10.10 WATER QUALITY RESULTS

The test method and detection limit for each parameter employed during the water quality testing are provided in **Table 025.**

Table 017: Water quality results

Parameter (Unit)	Methodology (Instrumentation)	LoD
pH	Colorimetric Method	0.1
Turbidity (NTU)	Turbidity Meter	0.001
Total Dissolved Solids (ppm)	Magnetic Stirrer	0.005
Electric Conductivity (µS/cm)	Conductivity Meter	0.001
Chemical Oxygen Demand (ppm)	COD meter	0.01
Biological Oxygen Demand (ppm)	BOD Meter	0.01

Pesticide (ppm)	Colorimetry	0.001
Nitrate (ppm)	Cadmium Reduction Method	0.001
Phosphate (ppm)	Colorimetry	0.005
Oil & Grease (ppm)	Colorimetry	0.001
Zinc (ppm)	Zincon Method	0.001
Mercury (ppm)	Waste Water Test Kit	0.001
Lead (ppm)	Waste Water Test Kit	0.001
Arsenic (ppm)	Arsenic Test kit	0.001
Iron (ppm)	FerroMo Method	0.001
Chromium VI (ppm)	Colorimetry	0.002
Copper	Colorimetry	0.005

NB: LoD = limit of detection

6.10.11 SURFACE & GROUND WATER QUALITY

The results of the surface and ground water quality are presented in **Table 018.**

Table 018: Analytical Results

Parameter (Unit)	**SW1**	**SW2**	**GW1**	**SW3**	**GW2**	**SW4**	**LWQ-Class III**	**LWQ-Class II**
Turbidity (NTU)	**11.22**	**19.75**	5.87	9.01	4.96	**10.01**	10.00	≤ 10
Alkalinity (ppm)	40.82	40.11	20.84	37.49	19.94	22.74	≤ 60.0	≤ 30.0
Mercury (ppm)	0.009	0.02	BDL	0.004	BDL	0.002	≤ 0.01	≤ 0.005
Total chromium (ppm)	0.21	0.19	0.003	0.11	0.002	0.09	≤ 0.9	≤ 1.5
TDS (ppm)	100.38	121.17	65.89	120.80	60.8	109.38	≤ 1200	≤ 1000
TSS (ppm)	44.82	77.49	22.74	60.82	20.84	55.92	≤ 50	≤ 30
Iron total (ppm)	0.36	0.42	0.007	0.39	0.004	0.31	≤ 2.0	≤ 1.5
Lead (ppm)	0.006	0.008	BDL	0.005	BDL	0.008	≤ 0.1	≤ 0.01
Pesticide (ppm)	0.004	0.008	BDL	0.02	BDL	BDL	NS	NS

Total Nitrogen (ppm)	6.93	6.82	2.37	6.77	2.07	6.28	NS	NS
Zinc (ppm)	0.65	0.74	0.33	0.65	0.21	0.48	≤ 5.0	≤ 2.0
Nitrate (ppm)	4.92	4.38	2.93	3.89	2.77	3.18	≤ 80.0	≤ 60.0
Copper (ppm)	<0.005	0.017	<0.005	0.011	<0.005	0.013	≤ 0.2	≤ 0.1
COD (ppm)	150.30	177.11	N/A	148.28	N/A	126.83	≤ 500	≤ 100
BOD (ppm)	88.48	89.30	N/A	80.37	N/A	60.36	≤ 150	≤ 250
Phosphate (ppm)	**1.84**	**2.04**	**0.95**	**1.72**	**0.99**	**1.89**	≤ 0.05	≤ 0.02
Ph	6.13	5.99	6.63	6.02	6.57	6.29	5.5-9.0	6.0-9.0
Ammonia-N (ppm)	3.48	3.22	0.94	2.84	0.12	2.05	≤ 6.0	≤ 3.0
Oil & Grease	0.83	0.99	BDL	1.13	BDL	0.96	NS	ND

LWQ-Class = Liberia Water Quality Standards Class III; Figures in **bold** are above allowable limits; **NS** = not stated; **ND** = not detected; BDL = below detection limit

The results of the water quality analysis showed phosphate levels outside acceptable limits for all samples analyzed. Turbidity levels were higher than acceptable in three of the five samples analyzed. All other parameters were below the required thresholds (Liberian Water Quality Class II and Class III).

6.10.12 SOIL QUALITY RESULTS

The results of the soil quality analysis are presented in **Table 019.**

Table 019: Soil Quality Results

Parameter	**Unit**	**Methodology**	**SS1**	**SS2**	**SS3**	**SS4**	**SS5**
Ph		Colorimetry	5.35	5.48	5.41	5.03	5.03
Pesticide residue	mg/L	Pesticide Kit	<0.005	<0.005	<0.005	<0.005	<0.005
CEC	mg/L	Titrimetry	87.9	86.2	99.30	98.39	90.37
Lead	mg/L	Colorimetry	BDL	BDL	BDL	BDL	BDL
Iron	mg/L	Colorimetry	0.005	0.003	0.005	BDL	0.003
Copper	mg/L	Colorimetry	BDL	BDL	BDL	BDL	BDL

NB: 1 mg/L = 1ppm; ND = not detected; CEC = Cation exchange capacity; BDL = below detection limit

The soil quality results showed all samples were acidic with good cation exchange potential. Pesticide, lead and copper remained undetected in all of the samples analyzed. Iron was detected in low quantities in four of the five soil samples.

6.10.13 AIR QUALITY RESULTS

The results of the air quality are presented in **Table 020**.

Table 020: Air Quality Results

Parameter	Unit	AQ1	AQ2	AQ3	AQ4	AQ5	AQ6	WHO Limit
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	5.16	5.19	5.56	5.40	4.51	4.53	25
Particulate Matter (PM_{10})	$\mu g/m^3$	9.04	9.16	9.32	9.20	6.73	6.38	50
Volatile Organic Compound (VOC)	$\mu g/m^3$	0.13	0.11	0.17	0.13	0.10	0.11	0.75
Carbon dioxide (CO_2)	$\mu g/m^3$	4.30	4.38	5.07	4.21	4.14	4.10	50
Carbon Monoxide (CO)	$\mu g/m^3$	500.6	500.3	509.4	511.2	501.4	503.3	5000

The Air Quality results showed all parameters below the WHO permissible limits for eight hours continuous exposure.

6.10.14 NOISE QUALITY RESULTS

The results of the noise quality are presented in **Table 0029.**

Table 021: Air Quality Results

Parameter	Unit	NQ1	NQ2	NQ3	NQ4	NQ5	NQ6	EPA Limit
Noise level	db	68.4	60.9	55.9	68.8	55.4	53.9	75.0

6.11 DESCRIPTION OF THE BIOLOGICAL ENVIRONMENT

6.11.1 BIRDS

Liberia has 695 bird species with one endemic, two near endemics found only in less than three African countries, 12 species of the Upper Guinea Forest Bird Areas found in Liberia. Liberia has 11 terrestrial threatened bird species with threat category ranging from critical, endangered, vulnerable, to near threatened (Birdlife International 2000, African Bird Club 2013). The Birds assessment was conducted to understand the diversity and the avi-fauna population within the project region and to ensure that their population and mode of existence is not inhibited by the project activities and operations. The assessment was conducted at both early mornings and late evenings with observation through transect surveys, including sighting, The following studies (Gatter, 1997; Robertson, 2001; Demey, 2007) Liberia is a strong hold for many endemic, rare and threatened birds in the Upper Guinea Forest and the Guinea-Congo forest biome [22,23,24]. During the survey, keen observation were made, recording and play-back techniques of bird calls were implemented to attract and identify shy and uncommon species, wherever necessary. A field guide (Borrow and Demey, 2008) was used to verify species identified.

6.11.2 VEGETATION ASSESSMENT

The proposed site for the SAPZ Project is a green-field, covered by indigenous coastal forest and vegetation[24]. The vegetation assessment was conducted utilizing methods consistent with rapid botanical surveys which involves the determination of plants species distribution from observations along defined transects running perpendicular and parallel. Much of the original forest is thought to have been cleared some three centuries ago due to high population density and rampant cut-and-burn agriculture (Cooper and Record, 1931; Gatter, 1984) [25, 26].

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[22] Gatter, W. (1997). Birds of Liberia. Pica Press. Robertsbridge

[23] Robertson, P. (2001). Liberia. In: L.C.D. Fishpool and M.I. Evans (eds). Important Bird Areas in Africa and Associated Islands; Priority Sites for Conservation. Pisces Publications; and Birdlife International, Newbury and Cambridge, UK. Pp 473-480.

[24] Demey, R. (2007). Rapid survey of the birds of North Lorma, Gola and Grebo National Forests. In: Hoke, P., R. Demey and A. Peal (eds.), (2007). A rapid biological assessment of North Lorma, Gola and Grebo National Forest, Liberia. RAP Bulletin of Biological Assessment 44. Conservation International, Arlington, VA, USA.

25 Buchanan SEZ and Port Feasibility Study

[9] Cooper, G.P. and Record, S.J. (1931) The evergreen forest of Liberia. Yale University School of Forestry Bull. 31

[26] Gatter, W. (1984). For future Natural Forests and Plantation Management in Liberia. Observation—Consideration—Results. German Forestry Mission Papers. 55 pp. Forestry Development Authority, Monrovia.

All plant species identified during the field assessment were classified based on the biogeographic representation of the country/or sub-region. The vegetation in the proposed project area of influence comprises of mixture of various types of plant communities, bush fallows, forest regrowth, palm plantation, scattered vegetation (fruit trees and grasses), exotic species, fruit trees, occasional mangrove swamps, seasonally flooded areas, patches of forest vegetation, flooded grasses along swamps, mangrove swamp vegetation etc. The assessment revealed that there are subsistent farming in the area, including rice, cassava, banana, coconut, sugar cane etc. Most of the landscape are covered by vegetation and forest regrowth. The recorded plant species were checked for conservation status using the IUCN Red List.

6.11.3 MAMMALS

Mammal's survey were conducted in fulfilment of the ESIA requirement while interview with the locals, farmers, villagers, hunters and resources people were made. The following mammals species were observed, reported and noted via visual evidences including footprints, fecal droppings and nesting sites: African golden cat, the drill, two species of duiker, the water chevrotain and one species of pangolins. Others are spotted-necked otter (Hydrictis maculicollis) Dephomys defua, Nandinia binotata, Liberlictis kuhni, Tragelaphus scrriptus. Additionally, their conservation status were verified utilizing a field guide (the IUCN Red List (2005). The Sapo National Park hosts around 125 species of mammal. These include the African golden cat, the drill, seven species of duiker, the water chevrotain and three species of pangolins. spotted-necked otter (Hydrictis maculicollis) etc.

6.11.4 WILDLIFE

Based on interview and field assessment conducted, there has been no wildlife species found within the radius of the project area of influence. This may be as the result of human occupation, presence and influence over the region. However, there has been reported that few species of wild life are traded by hunters and poachers along the market corridors.

6.11.5 PLANT SPECIES DIVERSITY:

The survey revealed that about 123 species of vascular plants, belonging to the total of 59 trees, 29 shrubs, 9 Grasses, 14 herbs, 5 Lianas, 7 palms, 70 plant families recorded along the proposed Special Agro-Industrial Processing Zone/ Special Economic Zone. During the

assessment, Ten (10) species were identified and classified as Vulnerable (VU) according to the IUCN conservation status. These species are highlighted in the table below: acacia, milicia regia, zanthoxylum atchoum, Turraenthus africanum.

Table 021: List of Plant species identified to be Vulnerable (VU)

Botanical Name	Family name	IUCN Status
Zanthosylum atchoum	Rutaceae	VU
Hallea Stipulosa	Rubiaceae	VU
Turraenthus africanum	Meliaceae	VU
Nauclea diderrichii	Rubiaceae	VU
Milicia regia	Moraaceae	VU
Sterculia ablonga	Sterculiaceae	VU

The most common and prevalent tree speces were anthocleista nobilis, Acacia mangium, Mussanga cercropioides, Harungana madagascariensis, H. madagascariensis, Raphia palma-pinus (raphia), Eremospatha macroparpa (rattan), Parinari macrophylla and Xylopia aethiopica. Plant species that were sources of food include Coconut cocos nucifera, Mango Mangifera indica, breadfruit artocarpus communis, Pear Persea Amercan and orange citrus sinesis.

6.11.6 FAUNA DIVERSITY

The report revealed the total of 30 mammal's species during the site assessment. Several others species were identified by local settlements and communities within the project area. About 8 species of Mammals were identified as species of international conservation concerns. These includes, Western chimpanzee Pan Troglodytes versus (EN), Pied Colobus Monkey Colobus polykomus (UV). And Sooty Mangabey Cercocebus aty UV). List of mammals identified and recorded during the surveys are provided below:

Table 022: List of Mammals species recorded within the study area

Species	Scientific Name	IUCN TEST
Black Duiker	*Cephalophus niger*	LC
African CIVET	*Civettictis civetta*	LC

Marsh Cane-rat	*Throyonomys swinderianus*	LC
Sooty Mangabey	*Cerocebus atys*	VU
Water Chevrotain	*Hyemoschus aquaticus*	DD
Olive Colobbus	*Poliocolobus versu*	LC
Bushbuck	*Tragelaphus scriptus*	LC
Crested porcupine	*Hystrix cristata*	LC
Bush tailed porcupine	*Atherurus africanus*	LC
Long-tailed Pangolin	*Uromanis tetradacyla*	LC
Tree Pangolin	*Phataginus trcuspis*	NT
Giant Pouch Rat (S)	*Cricetomys emini*	LC
Gambian Sun squirrel	*Heliosciurus gambianus*	LC
Spot-nosed monkey	*Cerficopithecus petaurista*	LC
Western Chimpanzee	*Pan troglodytes –veruc*	EN
Maxwell's Duiker	*Cephalophus maxwelli*	LC
Babary ground squirrel	*Atlantoxerus getuls*	LC
Common genet	*Genetta genettoo*	LC
PIED Colobus Monkey	*Colobus polykomus*	VU

6.12.7 BIRD DIVERSITY

The survey revealed a total of 64 birds belonging to 27 to the Guinea-Congo Forest Biome. The study also shows that most of the birds are resident. These survey were conducted through visual evidence, observation and call identification. Around 590 species of bird have been recorded in Sapo National Part[27]. The most common bulbul Pycnonotus babartus and the Village Weavers Ploceus cuculatus, Passer griseus, Spermestes cucullatus, Hirundo rustica were the most common species identified during the survey. These birds were classified according to their origin.

[27] Jaffe, Maark (15 October 1994). Philadelphia Zoo officials head for rain forest; they will visit West Africa with a Liberian conservationist on a mission. The Philadelphia Inquirer. P. B01

Table 023: Birds species identified according to their origin

Species Category	Diversity
No of species	64
No. of Family	20
Resident Species	28`
GCF Biome Species	7
Afrotropical Mgr.	4
Palaearctic Mgr	7
Total	130

6.13. DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

6.13.1 LIVELIHOOD

The main source of livelihood for the residents within the project terrain are farming and fishing activities. Several residents are involved in subsistence farming specifically in rice, vegetables cassava, etc. Due to the increase in economic potential and massive construction project ongoing in the city of Buchanan a significant of the community residents are engaged in contractors services to generate funds for their sustainability.

6.13.2 TRANSPORTATION

The proposed Project location does not have well established access road and during the raining season, the SAPZ becomes nearly inaccessible during to the competing natural drainages, wetlands, swamps and others. The survey revealed that transportation sector has huge economic potential and dividend when prioritized by the national government. The transportation sector may offer service through air, rivers, land etc. The city of Buchanan possess a strategic location and the relevant transportation design and blue print for the SAPZ/SEZ must be prepared.

6.13.3 DEMOGRAPHICS

According to Household Income and Expenditure Survey (HIES) 2016, the population of Grand Bassa County is 270,594 which accounts for 6.4% of Liberia's population. The male population constitute 137,792 accounting for 50.9% of Grand Bassa's population while the female constitutes 132,802 and accounts for 49.1% of Grand Bassa County's population. Grand Bassa has an estimated 66,879 households with a mean household size of 4.1 persons per household[28].

Grand Bassa County was traditionally inhabited by the Bassa ethnic speaking group which are the most dominant and make up 94% of the county's population. Other ethnic groups in the County include the Kpelle (5%) and the Kissi (1%) and small numbers of other groups[29]. The Christian religion is the dominant at 93%, followed by an estimated 5% Muslim and 2% animist[30].

Table 024: Population Data by Gender

Statutory District	Total	Population by gender		Population gender percentage	
		Male	Female	Male	Female
Owensgrove	15434	7492	8171	48.54%	52.94%
District #01	21089	10706	10383	50.77%	49.23%
District #02	29516	14477	15039	49.05%	50.95%
District #03	88278	43732	44546	49.54%	50.46%
District #04	31365	14951	16293	47.67%	51.95%
St. John River	14874	7377	7497	49.60%	50.40%
Total	200556	98735	101929	49.23%	50.82%

Source: Norwegian Refugee Council, January 2007

[28] Household Income and Expenditure Survey 2016
[29] Liberia Buchanan SEZ including SAPZ Final
[30] Grand Bassa County Development Agenda, 2012

6.13.4 WASTE GENERATION AND DISPOSAL

There are no specialized waste disposal sites within Buchanan City, Grand Bassa County. Municipal wastes and other commercial waste generated are usually buried, burnt or dumped in the open or wastelands. Given the prospects of the proposed Special Agri-Industrial Processing Zone, waste generation, collection and management will be eminent during both the construction phase and the operational phase of the project development. Therefore, it is imperative to begin conversation relative to the plans, development and design of a future landfill site that would complement the SEZ activities.

6.13.5 HEALTH CARE

The health care delivery system in Liberia is a daunting reality that continue to impede the fabric of the population. Poor and lack of primary health care system is unequivocally an urgent threats to a healthy society and by extension a great fraction of the poorer population. The 75-bed Government-owned hospital is fair condition and continues to play an important role in the health sector. The second hospital is presently managed by ArcelorMittal. The governmental hospital as well as all other clinics in the County is supported by international non-governmental organizations, with the government playing a leading role through the Ministry of Health and Social Welfare (MoHSW). There are 31 functional health facilities in the County according to the County Health Team[31]. The Barconi's Community Clinic is the only health center situated within the project surrounding however, its current functional and operational status is poor due to staffing gaps, drugs availability, power struggles, logistics among others.

6.13.6 EDUCATION

Literacy attainment among the population varies, and shows significant inequality, by gender, locality and income (ES-B). People who are female, poor, and living in rural areas are less likely to be literate than their male, wealthy and urban counterparts. Strikingly, as illustrated in the figure below, in the three middle age cohorts (cohorts 25 to 34, 35 to 44 and 45 to 54 years of age) literacy gaps remain almost constant over time[32].

[31] Grand Bassa County Development Agenda, 2012

[32] Liberia Education Sector Analysis, 2016

Table 025: Number of Students Enrolled in School by Level, Various Years

Level	1981	1984	2005/06	2007/06	2015
ECE	91,394	96,813	358,210	491,564	539,660
Primary	155,166	146,476	488,438	539,887	655,94
Junior High	34,365	40,307	98,448	102,642	166,957
Senior High	22,243	25,359	33,77g	102,642	105,875
Total	303,168	308,955	33, 776	55,600	1,467,541

Source: EMIS in respective years, World Bank 2010.

Over the past four years, the share of government expenditure allocated to the education sector has ranged between 10.6 to 13.5 percent. In 2008, the share of public expenditure allocated to education was 11.4 percent. In the fiscal year 2015/16 the share of government spending allocated to education grew to 13.5 percent of government spending due to the Economic Stabilization and Recovery Plan (ESRP) [33].

6.13.7 ENERGY

The electricity supply system in Liberia is operated by the Liberia Electricity Corporation (LEC). It is based on a Central Monrovia City System with radial lines extending into the country and independent isolated grids. A typical rural Liberian County, Grand Bassa does not have any access to public electricity. Private generators are the main sources of power, available only to the few who can underwrite the fueling and servicing costs. The main source of energy is charcoal made from the wood of local trees [34].

However, over the past few year, the Transco CLSG Project has engaged into development of Liberia component (transmission) and Distribution lines across the County. Moreover, these sub-stations construction and logistical arrangements have not yielded into power supply to local residents yet. Additionally, the city of Buchanan does not have public telephone system with two GSM mobile coverage from private mobile telephone service provides namely Lone Star MTN and Orange at specific limits. The city houses four major radio stations which include Radio Gbehzohn (FM 106.3), Radio One (a.k.a Magic FM 99.3), Bassa Christian Radio Broadcast or Radio Dukpa (FM 89.1) of the Christian Education Foundation of Liberia and Ableejay Radio (94.3 FM).

[33] LACEEP—AF Transmission & Distribution Lines, Diffusion Inc. 2018

[34] Grand Bassa County Development Agenda 2012

6.13.8 WATER SUPPLY

The Liberia Water and Sewer Corporation (LWSC) is charge with the mandate of providing water supply for urban communities and the Ministry of Rural Development to rural communities. Prior to the civil war precisely 1990, there were 11 cities with piped water supply systems in Liberia. Four of these were based on groundwater sources. The destruction of most of these facilities means that today over 90% of the population has to rely on groundwater for water supply[35]. The Monrovia urban area had the most sophisticated system with an impounding reservoir, water treatment plant and distribution network.

Table 026: Pre-war era water supply capacity

No.	Town/City	County	Capacity gal./day	Year of completion
1	Greater Monrovia	Montserrado	16,000,000	1885
2	Gbarnga	Bong	160,000	1978
3	Sanniquellie	Nimba	94,000	1979
4	Voinjama	Lofa	125,000	1980
5	Zwedru	Grand Gedeh	100,000	1980
6	Buchanan	Grand Bassa	200,000	1984
7	Kakata	Margibi County	580,000	1985
8	Robertsport	Grand Cape Mount	90,000	1971
9	Greenville	Sinoe	85,000	1970
10	Tubmanburg	Bomi	N.A	N.A
11	Harper	Maryland	N.A	N.A

Source: Liberia Environmental Profile CEP Liberia 2006

In addition to the LWSC supply facilities, there were other systems owned and operated by concessions. These include; Yekepa in Nimba County and Buchanan both operated by

LAMCO, Division 45 owned and operated by Firestone Plantation Company and Bong mines owned and operated by Bong Mining Company.

[35] Liberia Environmental Profile 2006

The Urban Water Supply and Sanitation Project secured a whopping $40 million for sanitation and water projects specifically for Kakata City, Bong County, Buchanan City, Grand Bassa County and Zwedru City, Grand Gedeh County through the African Development Bank Financial and Technical Assistance to Liberia's water system. Despites the relatively low supply of pipe borne water in the City of Buchanan by the Urban Water Supply System, many of its inhabitants do relied upon ground water (well) sources to meet their basic social needs and services. Most of the rural settlements are situated at high altitudes with usually a river, stream or pond serving the water needs of the population. Water supply is always reliable except for the brief period during the dry season. Though these water are frequently prone to pollution sources such concession operations and activities and other man made actions. There are frequent outbreak of waterborne diseases associated to rural settlement such as diarrhea, cholera, and typhoid. Ground water is readily available everywhere, but the implementation of a successful groundwater development program would dependent on detailed investigation.

6.13.9 ECONOMY & MARKET

Widespread poverty remains a considerable socioeconomic challenge for Liberia. Approximately 70 percent of the population lives on less than $1.90 per day, which is, on average, 20 percentage points higher than other developing countries in sub-Saharan Africa. .Buchanan is the Capital of Grand Bassa County and has the second largest seaport of Liberia. The County produces the majority of iron ore and the facilities of the counties are used to serve the export needs of timber, iron ore, rubber & palm oil export and flour production & fishing needs[36]. Poverty and economic inequality are deeply rooted in the bifurcated structure of the Liberian economy. Prior to the civil war, Buchanan has been an economic and industrial hub where several companies including the famous LAMCO, Liberia Mining Company, Palm oil Liberian Incorporated (LIBINC) etc., contributed toward diversifying the economy.

The Liberia economy faces has numerous, longstanding constraints to economic growth, including weak transportation infrastructure, unreliable utilities, and inefficient bureaucracy. However, the country as a whole and Buchanan in particular do offer certain comparative advantages which the SEZ can capitalize on. Opportunities exist for import substitution and /or export promotion for select industries, with agro-processing, packaging, and limited manufacturing activities all realistic possibilities for the zone. Based on an existing resources and enterprises, as well as local, regional, and global market demand, the strongest

candidate industries for the Buchanan SEZ include food processing for fisheries and palm oil; additional processing and manufacturing of wood products; and packaging and labelling for various imparted and exported products[37].

36 Liberia Buchanan SEZ including SAPZ Final

37 Buchanan SEZ and Port Feasibility Study

6.13.10 LAND RESOURCES

Since the end of the civil unrest in Liberia, Land resources and associated conflicts has been a frequent and permanent social crisis nationwide. The Liberia Land Rights Act (LRA) was passed into law in September 2018 and subsequently printed into handbill on October 10, 2018. The Act defines and delineates the different categories of land in Liberia into Private Land, Public Land, Government Land and Customary Land. The Land Rights Act of 2018 regulates the form and manner of land acquisition, ownership, use, and management in Liberia. While the Liberia Land Authority has confirmed approximately 631 hectares GOL deeds of land to
LSEZA for the establishment of the Special Economic Zone, the ESMP seeks to determine the status of the acclaimed property considering the potential for customary, private land rights, concession agreement overlaps and potential resettlement requirement.

CHAPTER 7: ENVIRONMENTAL IMPACTS IDENTIFICATION AND ANALYSIS

7.1 INTRODUCTION

This chapter summarizes all major potential environmental and social health risks and impacts as well as related mitigation measure and actions plan. It also highlights the impact assessment methodology, analysis of potential impacts both negative and positive impacts and risks associated with the project, explicitly defined implementation time and budget for measures, implementing and supervising agencies, monitoring frequency for result monitoring of related measures implementation. Mitigation measures will be incorporated into detailed design tender documents and project management manual, to be implanted by the Contractor and the NIC/PIU/SAPZ under the supervision of the African Development Bank Group (AfDB), the Environmental Protection Agency of Liberia, Project Environmental Specialist and Social Specialist. The effectiveness of these measures will be assessed through impact detection monitoring and compliance monitoring results so as to determine whether these measures will be implemented continually or improved.

7.2 IMPACT IDENTIFICATION

This involves characterization of the existing baseline environment and project sub-components that are likely to impact the environment. A checklist of the associated and potential negative impacts of the proposed project is presented in **Table 027.** The impacts identified have also been characterized as reversible or irreversible, direct or indirect, short or long term, permanent or temporary and cumulative etc.

Table 027: Impact types and descriptions

Impacts	Description
Indirect Impacts	Are environmental effects that are at least one step removed from project activity in terms of cause-effect linkages.
Direct Impacts	These are impacts which follow as a direct cause-effect consequence of a project activity.
Irreversible Impacts	Impacts that are permanently impair on the environmental component of the area.
Residual Impacts	These are impacts that remain even after mitigation measures have been applied.
Reversible Impacts	The ability of the environmental components to recover their value after a disturbance.
Beneficial Impacts	These are positive impacts
Cumulative Impacts	Impacts arising from the interaction of project components or activities with other activities of the past or those occurring simultaneously, or sequentially.
Adverse Impacts	These are negative impacts.
Short term	Impacts that are removed after application of mitigation measures
Long term	Predicted adverse impacts which remain after mitigation measures have been applied.

7.3 DETERMINATION OF IMPACT SIGNIFICANCE

Determination of impact significance is based on two key criteria namely;

- **Impact Significance Criteria**
- **Impact likelihood Criteria**

Table 029: Impact Significance Criteria

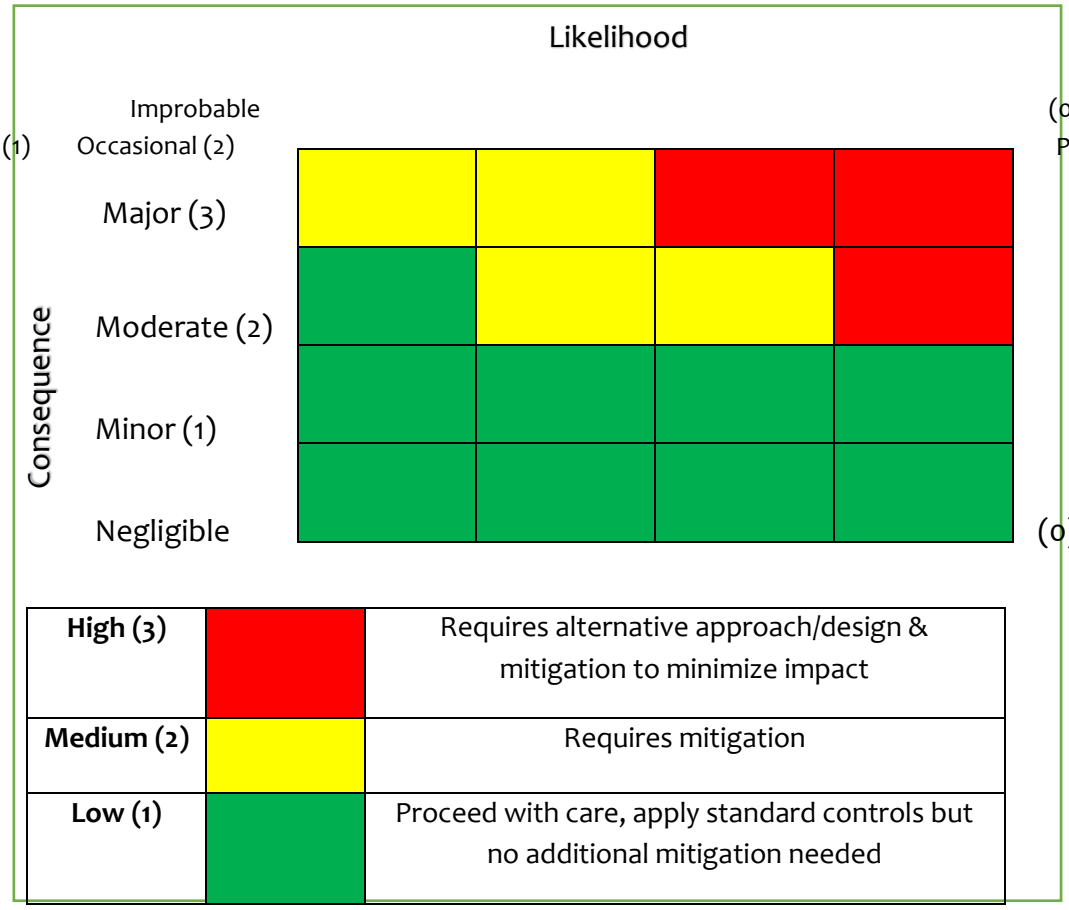
CONSEQUENCE LEVEL	SIGNIFICANCE CRITERIA
Major (3)	**Workers Health & Safety:** one or more fatalities or life-threatening injuries/illness **Environmental & Social**: widespread modification or extraordinary severity in physical environment or economic resources or social structure lasting more than one year, with an area extent of impact > 1 percent of study area.
Moderate (2)	**Workers Health & Safety:** injury requiring medical attention, or illness requiring long-term medical care or > 2 lost tie instances for same or recurring incident/illness during phase of work **Environmental & Social:** local modification of measurable severity in physical environment or economic resources, lasting form a few months up to one year before recovery, with an area extent of impact extending from 01 to 1 percent of study area; or more widespread modification of lesser severity.
Minor (1)	**Workers Health & Safety:** 1-2 lost time instances for same or recurring illness/injury. **Environmental & Safety**: localized, relatively isolated change in physical environment or economic resources, lasting only a few days to a few months before recovery, with no observable residual effects; and with an area extending from 0.01 to 0.1 percent of study area; impacts less significant than exerted by nature.
Negligible (0)	**Workers Health & Safety**: Negligible first-aid case (no lost time) or near miss. **Environmental & Social**: Little or no change in physical environment, even temporarily, conditions consistent with background conditions.

Table 028: Impact likelihood Criteria Table

LIKELIHOOD LEVEL	SIGNIFICANCE CRITERIA
Probable (3)	Impact or event can reasonably be expected to result from project, occur routinely for similar operations.
Occasional (2)	The Impact or event has occurred in similar operations in this country or conditions could allow the impact/event to reoccur.
Seldom (1)	The impact or event has occurred once or twice in the company/industry, but conditions in this program are unlikely to allow the impact/event to occur.
Improbable (0)	The impact or event has never before occurred.

Figure 00x

Figure 006: Impact Evaluation Matrix



7.4 POTENTIAL IMPACTS ANALYSIS AND EVALUATION

Consistent with the Special Agro-Industrial Processing Zone (SAPZ) Project development and implementation, there are four main phases and activities involved which include;

a. Bidding Phase
b. Pre-construction Phase
c. Construction Phase and
d. Operational and Monitoring Phases

There would be relatively no significant potential impacts during the bidding phase of the Project, however the effective implementation of mitigation plans in this ESMP will start from the Pre-Construction Phase risks and impacts and their management. All relevant and potential environmental and social health risks and impacts of the project and proposed mitigation plans to address and offset these risks and impacts are described in the subsection sections.

7.4.1 BIDDING PHASE--- PROCUREMENT OF CONTRACTOR

The National Investment Commission (NIC) and the Special Agro-Industrial Processing Zone Project (SAPZ) will include the following Environmental, Social, Health and Safety (ESHS) conditions in the bidding documents to ensure that the mitigation measures proposed in this ESIA/ESMP are effectively implemented.

- Past performance of the Contractor on ESHS aspects including sexual exploitation and abuse and gender-based violence;
- ESHS Staff with the Contractor;
- Performance security;
- Mitigation measures to address construction impacts (**Table 032** and **Table 033**)
- Code of conduct of Contractor's Personnel;
- Management Strategies and Implementation Plans (MSIP) to manage the ESHS Risks;

7.4.2 POTENTIAL POSITIVE IMPACTS

The Development, implementation and operation of the SEZ/SAZP Project would contribute to the creation of new jobs opportunities, Capacity Building, Skill Transfer, for the skilled, unskilled labor, casual laborer, and by extension the project affected communities. Summary of Potential impacts of the SEZ/SAPZ includes;

7.4.2.1 EMPLOYMENT OPPORTUNITIES

The project is envisaged to provide direct employment in the ACPZ & other industrial raw material procurement zones including direct employment in Agro industrial zone, farming sector outside the ACPZ, SAPZ & ATCs. The SAPZ project will also provide indirect employment in primary, secondary and tertiary sectors including banks, logistics, insurance, manufacturing etc. of the Project Area of Influence.

7.4.2.2 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.

7.4.2.3 SKILL 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.

7.4.2.4 INCREASE PUBLIC 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;

7.4.2.5 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 and wouldn't have to worry about the available market for purchasing and storing their products.

7.4.2.6 ECONOMY

The SEZ/SAPZ 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 raises the competitiveness and efficiency of SME opportunities among youth and significantly increase earning potential and improving health and sanitation.

7.4.2.7 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 envisaged to accelerate the infrastructure development in the City of Buchanan and make Buchanan the second commercial hub in Liberia.

7.5.0 POTENTIAL NEGATIVE OR ADVERSE IMPACTS ON NATURAL ENVIRONMENT

7.5.1 IMPACTS 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, NO_X, SO_2 and PM). This impact is localized and not significant.

7.5.2 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. In proper handling of lubricants, hazardous substances and hydrocarbons (fuels, gasoline, etc.) may also cause water pollution of surface and ground water. However, the quantities required for used are small and not expected to affect surface and ground water as long as good management practices are applied.

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 SEZ. Construction activities and operation phase may cause increased soil erosion and sediment loading of nearby streams, while accidental leaks or spills of hydrocarbons (oil, fuel or other substances) can also pollute surface water and impact on ground water. During operations, the major threats to surface water quality is likely to be pollution form pesticides, fertilizers, sewage, effluents from operations and processing plants etc. Gradually seepage of improperly stored materials, chemicals, and products from storage continent may also continue to contaminate surface.

Ground water --- SAPZ 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.

7.5.3 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.

7.5.4 IMPACTS FROM 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 the EPA standards.

In addition to these wastes generated during construction phase, the operational phase would produce huge volume of waste from key sectors, zones, processing and value-added streams within the Special Economic Zone and the Special Agro-Industrial Processing Zone. Wastes expected to be generated during this period include; raw materials from farmlands, plantations, concessions areas and their cumulative wastes generated as well as effluents and wastewater from the processing and value-added streams.

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.

7.5.5 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.

7.5.6 IMPACTS OF VISUAL INTRUSION

Construction activities at SAPZ facility may be include construction of campsites, recruitment and mobilization of equipment and machineries transportation and other operations carried out at both day and night. Lighting at night can result in visual impact on local communities and sensitive fauna species. Unobtrusive lighting disrupt critical behavior of biodiversity. It can stall the recovery of threatened species and interfere with their ability to undertake long-distance migrations, reduce breeding success and their chances of survival. Lighting should be kept to the minimum requirement for safety at nighttime.

7.5.7 IMPACTS ON FAUNA AND FLORA

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.

7.5.8 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 substances during construction and operations should said materials not stored and handled in the appropriate manner and form. The risks and impacts on health and safety are increased if contractors and employees do not adhere to the administration of the Personal Protection Equipment (PPEs) relative to their respective scope of work and not 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.

7.5.9 IMPACTS FROM TRAFFIC

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.

7.6 POTENTIAL SOCIO-ECONOMIC IMPACTS

7.6.1 EMPLOYMENT

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.

7.6.2 IMPACTS TO CULTURAL RESOURCES

Based on the field survey, no activities under the project are expected to take place near any cultural or archaeological resources. Avoiding cultural resources during planning stages and ensuring equal representation and participation of relevant project affected persons and communities in decision making process helps to mitigate impacts to cultural resources. Damage to cultural resources constitute threat to social cohesion and would lead to resentment of the proposed project. However, should any cultural site or resources be found, the appropriate standard for chance finds will be applied.

7.6.3 SUMMARY OF POTENTIAL IMPACTS

Table: 029: Summary of Potential Impacts and Receptors

Mobilization, Construction & Operational phases							
Sources of Impacts/Risk	**Affected Resource**	**Intensity**	**Scope**	**Duration**	**Consequence Level& Score**	**Likelihood level & score**	**Significant**
Reduce air quality due to increase traffic flow	Air Quality	Reversible	Localized	Short-term	Moderate (2)	Occasional (2)	Medium
Dust emissions form earthworks and transport of materials	Air Quality	Reversible	Localized	Short-term	Moderate (2)	Occasional (2)	Medium
Pollutant emission form fuel generators and transport vehicles	Air Quality	Reversible	Localized	Short-term	Moderate (2)	Occasional (2)	Medium
Reduced air quality due to unsustainable waste management practices	Air Quality	Reversible	Localized	Short-term	Moderate (2)	Occasional (2)	Medium
Air pollution due to open burning of excavated substances	Air Quality	Reversible	Localized	Short-term	Moderate (2)	Occasional (2)	Medium
Reduce air quality due to bad smell and	Air Quality	Reversible	Localized	Short-term	Moderate (2)	Occasional (2)	Medium

odor							
Depletion of natural resource (water use during construction)	Water Quality/ Resources	Irreversible	Localized	Short-term	Major (3)	Seldom (1)	Medium
Exposure of workers to biological, chemical or physical hazards	Employees	Irreversible	Localized	Long-term	Major (3)	Seldom (1)	Medium
Noise form construction equipment and activities	Employees	Irreversible	Localized	Long-term	Moderate (2)	Seldom (1)	Medium
accidental spills/leaks and incorrect handling of lubricants	Water Quality/ Resources	Reversible	Dispersed	Short-term	Moderate (2)	Occasional (2)	Medium
Potential waste water and effluent from industrial processing of raw materials	Water Quality/ Resources	Reversible	Dispersed	Long-term	Moderate (2)	Occasional (2)	Medium

Pollution of water bodies due to surface runoff from construction sites	Water Quality / Resources	Reversible	Dispersed	Long-term	Moderate (2)	Occasional (2)	Medium
Alteration of aquatic habitat due to construction waste and oil spills	Aquatic Ecology	Reversible	Dispersed	Long-term	Moderate (2)	Occasional (2)	Medium
Loss of downstream aquatic habitat and species due to reduced water quality as the result of flood and erosion from construction and operations	Water Quality /Resources	Reversible	Dispersed	Long-term	Moderate (2)	Occasional (2)	Medium
Loss of viable aquatic species due to oil spillages	Flora/fauna Resources	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Displacement and loss of fauna due to disturbance from excavation and site clearance	Flora/fauna Resources	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium

Risk of physical injury to wildlife species	Flora/fauna Resources	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Increased pressure on natural resources due to increase ease of access as a result of construction and operation of new access road	Flora/fauna Resources	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Risk of increased incidence of invasive and alien plant species due to construction of the SEZ and associated activities	Flora/fauna Resources	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Increase level of noise and disturbance that potentially cause involuntary migration of animals species	Flora/fauna Resources	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Loss of biodiversity and destruction of critical habitat	Biodiversity	Irreversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium

during to excavation and site clearing							
Increase erosion from vegetation clearing and earthworks	Soil Quality	Reversible	Localized d	Long-term	Moderate (2)	Occasional (2)	Medium
Risk of soil contamination from waste generation and accidental spills	Soil Quality	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Increase sedimentation due to construction activities	Soil Quality	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Impact of change in land use and capability for construction and operation	Soil Quality	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Loss of fertile soil for the construction of the ZEZ	Soil Quality	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
	Noise Quality						
Increase risks of noise and vibration pollution due equipment and earthworks	Noise Quality	Reversible	Public	Long-term	Moderate (2)	Occasional (2)	Medium

operations							
Increase risk of noise from transportation activities	Noise Quality	Reversible	Public	Long-term	Moderate (1)	Occasional (2)	Medium
Potential impacts of noise on fauna and flora from construction and operations	Noise Quality	Reversible	Public	Long-term	Moderate (1)	Occasional (2)	Medium
Potential uninterrupted noise generation both at day and night	Noise Quality	Reversible	Localized	Long-term	Moderate (1)	Occasional (2)	Medium
Increase risk of noise due to poorly service machines and equipment	Noise Quality	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Employment opportunities for both the local people	Public	Reversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium
Potential for resettlement or relocation where designated site is inhabited by people	Social	Reversible	Localized	Log-term	Moderate (2)	Occasional (2)	Medium
Impact of change	Public	Irreversible	Localized	Long-term	Moderate (2)	Occasional (2)	Medium

in land use as result of the construction of the SAPZ							
Potential soil and /or water contamination form mishandling of generated solid waste, construction waste, operation waste and sewer created by the project	Public Health	Reversible	Localized	Long-term	Major (3)	Seldom (2)	Medium
Potential adverse effect from unsustainable management of effluent and wastewater generated from operations	Public Health	Reversible	Localized	Long-term	Major (3)	Seldom (2)	Medium
Increase risk of workers exposure to hazards due to lack of relevant PPEs	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of injury during onsite	Employee/	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium

construction, excavation and preparatory work	Public Health						
Risk of fall from high heights during construction and operation	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Potential traffic related accidents	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Potential of intoxicated workers conducting delicate operations	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Increase risk of occurrence of infectious diseases from influx of employees	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of injury and accident during operations	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of fire explosion due to improper management of hydrocarbons	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium

(fuel, gas etc.)							
Risk of workers exposure to unsafe and dangerous working environment without PPEs	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of accidental exposure to hazardous materials	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of workers exposure to high vibrating equipment and substances	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of accident from being struck of machinery or moving equipment	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of electrocution due to exposed to faulty electrical devices	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Lack of emergency treatment for injured workers and contractors	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium

Risk of child abuse and child labor	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Potential threats to workers as the result of raising workplace concerns	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Potential risks of failure to investigate accident and unsustainable activities	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of discrimination on the basis of religion, race, ethnicity or creed	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Lack of awareness among workers on ESHS risks and requirements of the project	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Increase pressure on local infrastructure and services including health facilities, water	Public	Reversible	Localized	Long-term	Moderate (2)	Probable (3)	High (H)

resources, etc.							
Risk of loss of Cultural Heritage due to construction of the SAPZ	Cultural Heritage	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of loss of life due to lack of training or application of relevant PPEs	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of fire due to use of faulty cables and plugs	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of explosion due to unsafe storage of chemicals or Oil spills due to leakage of containers	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Potential risks of fall from heights	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Increased risk of vehicular cohesion due to poor maintenance of equipment and machineries	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium

Risk of accidents from being struck of machinery or moving equipment	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Risk of exposed to faulty electrical devices, such as cables, cords, hand tools	Employee/ Public Health	irreversible	Localized	Long-term	Moderate(2)	Occasional (2)	Medium
Cumulative impact of spatial and temporal crowding in project Area of Influence	Public	Reversible	Localized	Long-term	Minor (1)	Occasional (2)	Medium
Cumulative benefit from Socio- economic and infrastructural development and expansion	Public	Reversible	Dispersed	Long-term	Moderate (2)	Probable (3)	High (H)
Risk of relocation due to project reached.	Socio-Economic	Irreversible	Localized	Long-term	Moderate (2)	Probable (3)	High (H)

CHAPTER 8: ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES

8.1 INTRODUCTION

This Chapter highlights the environmental mitigation and management measures that must be considered for the project. The Environmental mitigation consists of measures that can mitigate/reduce 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.

8.2 MITIGATION HEIRARCHY

Identification and assessment of impacts has been undertaken through a process comprising consultation, modeling, on-site observations, literature review and expert opinion based on experience of similar projects. These modeling and assessment results have been reviewed and verified. The National Investment Commission is committed to the Mitigation Hierarchy for Health and Safety and the Mitigation 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, in order to ensure that impacts are management within good reason.

Table 031: Mitigation Hierarchy for Planned Project Activities

Avoid at Source; Reduce at Source
Avoiding or reducing at source is essentially 'designing' the project so that a feature causing impact is designed out (e.g. pipeline re-route) or altered (e.g. reduced working

width). Often called minimization.

Abate on Site

This involves adding something to the basic design to abate the impact- pollution controls fall within this category. Often called end-of-pipe.

Abate at Receptor

If an impact cannot be abated on-site then measures can be implemented off-site. An example of this would be to instruct authorities in affected schools to increase the level of supervision of their pupils during the period of civil works.

Repair or Remedy

Some impacts involve unavoidable damage to a resource, e.g. agricultural land during pipeline construction. Repair essentially involves restoration and reinstatement type measures.

8.2 ENVIRONMENTAL, HEALTH AND SAFETY MANAGEMENT

The ESIA and various E&S studies have identified key E&S aspects, risk and impacts requiring mitigation and control. 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 other similar projects. The National Investment Commission (NIC) will develop an Environmental Management Plan that represents the policies, procedures and standards for all of its operations. This ESMP will accommodate the role of an Environmental Management System (EMS) in the absence of a fully developed EMS for the SAPZ Project.

The Environmental Management System (EMS) is a set of processes and practices which enables an organization to manage the impacts of its organizational activities on the environment and also to increase its operating efficiency. It is a framework which helps the organization to achieve its environmental goals through consistent control of its operations. The framework includes organization's environmental programs in a comprehensive, systematic, planned and documented manner and includes the organizational structure, planning and resources for developing, implementing and maintaining organizational policy for the protection of the environment. It provides a structured approach to planning and implementation of the environment protection measures.

8.3 ELEMENTS OF AN EMS

The Environmental Management System (EMS) encourages the organization to continuously improve its environmental performance. The basic elements of an EMS are as follows:

- The organization commits initially to an environmental policy.
- It includes review of the present status and future environmental goals of the organization.
- Analysis of the environmental impacts and the legal requirements.
- Keeping environmental policy as the basis, the organization sets the environmental objectives and targets for reducing environmental impacts and for complying with the legal requirements.
- Establishment of plans for improving the environment performance and also for meeting the objectives and targets of the organization.
- Monitoring, measuring and evaluating the progress for achievement of the objectives.
- To ensure environmental awareness and competence of the employees of the organization.
- To take corrective actions if the objectives and targets are not being met.
- To have regular review of the progress of the EMS and to make improvements on continuous basis.

8.3 MITIGATION MEASURES ---BIDDING PHASE

8.3.1 BIDDING PHASE--- PROCUREMENT OF CONTRACTOR

The National Investment Commission (NIC) and the Special Agro-Industrial Processing Zone Project (SAPZ) will include the following Environmental, Social, Health and Safety (ESHS) conditions in the bidding documents to ensure that the mitigation measures proposed in this ESIA/ESMP are effectively implemented.

- Past performance of the Contractor on ESHS aspects including sexual exploitation and abuse and gender-based violence;
- ESHS Staff with the Contractor;
- Performance security;
- Mitigation measures to address construction impacts (Table ooXXX)
- Code of conduct of Contractor's Personnel;
- Management Strategies and Implementation Plans (MSIP) to manage the ESHS Risks;

Table 029: ESHS Management in the Bidding Documents

Condition	The rationale for inclusion of this condition in the contract	Specifications to be included in the Bidding Documents	Responsibility	
			Bidders	NIC/SAPZ
1.Past performance of the Contractor on ESHS is one of the eligibility criteria for the shortlisting process	The contractor's past performance on compliance with ESHS is an indicator on contractor's commitment and capability for implementation of this ESMP	The Bidder shall "declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social (including sexual exploitation and abuse (SEA) and gender-based violence (GBV) or health or safety requirements or safeguard in the past five years".	Bidder to make the Declaration	Bidder to make the Declaration NIC/SAPZ use this information to seek further information or clarifications in carrying out its due diligence
2. Contractor shall propose and possess an ESHS Specialist in his Team	The Contractor's staff should include an ESHS specialist who is responsible for implementation of all mitigation measures on ESHS risks and compliance with ESMP	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. The ESHS Specialist should have a minimum	The bidder shall submit the CV of the proposed ESHS Specialist	NIC/SAPZ will review and subsequently approve

		bachelor's degree in engineering or a master's degree in sciences related to environmental management. The Specialist should have 5 years of experience working on monitoring and managing ESHS risks related airport projects or other similar infrastructure Projects.		
3. Contractor shall submit ESHS Performance Security for compliance with ESHS obligations	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	The bidder will submit a Performance Security	
4. Implement Mitigation Measures to Address Construction Related Impacts given in Table 032 **and** Table 033	The mitigation measures to address potential ESHS risks and impacts should be included in the bidding documents. The contractor shall be made responsible or implementation of	NIC/SAPZ will include **Table 032** and **Table 033** of the ESMP in the General Specifications of the Bidding Document, and the reference to these tables will be provided in the Conditions of the Contract as follows: • The Contractor shall implement the mitigation and monitoring measures given in **Table 030** and **Table 031** of the ESMP to address ESHS risks		NIC/SAPZ shall include this requirement in the bidding document

	the mitigation measures through the necessary conditions in the contract.	associated with the construction works. • The Contractor shall comply with the African Development Bank Group's Environmental and Social Guidelines and Policies.		
5. Payments for Implementation of ESHS Mitigation and Monitoring Measures	The proposed measures to address ESHS risks are mainly related to workplace safety. Hence the cost of implementing the ESHS requirements shall be covered by Bidder's rates for the relevant works, and no separate payment will be made.	The cost of the delivering the ESHS requirements shall be a subsidiary obligation of the Contractor covered under the prices quoted for other Bill of Quantity items. No separate payments will be made for implementation of ESHS requirements.		NIC/SAPZ will include this in the general specification of the bid document
6. Code of Conduct for Contractor's Personnel	All workers hired by the Contractor should sign a code of conduct to ensure compliance with ESHS obligations of the Contract	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 the following ESHS requirements: • Wearing of Personal Protective Equipment (PPE's) in the workplace at all times	Bidder shall submit code of Conduct with the bid documents	

		• Non-discrimination in dealing with the local community by race, ethnicity, gender, religion, disability, sexual orientation, gender identity, social, or health status • Respectful attitude while interacting with the local community • Prohibit sexual harassment particularly towards women and children • Prohibit violence, including sexual and/ or gender -based violence • Respecting the reasonable work instructions • Protection and Proposer use of the property		
7. contractor's Management Strategies and Implementation Plan (MSIP) to manage the ESHS Risk	The Contractor proposal should include his understanding of the ESHS requirements of the project and the proposed strategies to manage the ESHS risks	The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key ESHS risks: • Strategy for the protection of workers and community (airport staff, passengers and other users) from the construction related hazards inside the terminal • Pollution prevention (wastewater, air and noise emissions) and management • A waste management plan for proper collection and disposal of waste	The bidder will submit MSIP along with the Bid Documents	

		• Traffic management plan to ensure the safety of local communities from traffic • Hazardous material management plan safe storage and handling • Strategy to address labor influx impacts on the local communities • Gender-based violence and sexual exploitation and abuse prevention and response action plan • Emergency response plan and early warning system The Contractor shall be subsequently required to submit (before mobilization) Contractor's Environment and Social Management Plan (CESMP) by the above strategies and Condition 4 of this Table.		

8.3.2 MITIGATION MEASURES ---PRE-CONSTRUCTION PHASE

The Pre-construction Phase encompasses various activities that post risks, hazards and health and safety threats to the propose 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;

- Contractor's Environmental and Social Management Plan (C-ESMP) with site-specific management plan;
- Labor Management Procedures to be followed for hiring and management of labor related issues;
- Permit for disposal of waste at the government's operated landfill site;
- The mobilization of ESHS specialist.

Table 030: ESHS Conditions in the Pre-Construction Phase

Condition	The rationale for inclusion of this condition in the contract	Specifications to be included in the Bidding Documents	Responsibility	
			Bidders	NIC/SAPZ
1. Preparation of Contractor's Environmental and Social Management Plan (C-ESMP)	The Contractor shall submit site-specific management plans to address ESHS risks following the ESMP requirements and MSIP proposed in the bid documents.	The Contractor to submit for approval and subsequently implement their Environment and Social Management Plan (C-ESMP). The C-ESMP should be submitted prior to the commencement of construction works and no construction activities will be carried out under the project until approval of the C-ESMP. The C-ESMP will include the following site-specific management plans on: • Occupational health and safety management plan • Community health and safety management plan; • Waste management plan • Wastewater discharges management plan; • Air and noise emissions management plan; • Hazardous material management and spill control plan • Water supply and sanitation management at the worksites and		

		workers' accommodations • Management of labor influx and facilities for the foreign workers • Labor recruitment procedures and labor management • Traffic management plan • Training plan for ESHS risks including HIV/AIDS, sexual exploitation and abuse, and gender-based violence • Emergency Response Plan • Grievance Redress Mechanism • Demobilization plan after • completion of works		
2. Mobilization of ESHS Specialist	The ESHS Specialist should be mobilized during preconstruction for preparation of C-ESMP	The Contractor shall submit the CV of ESHS Specialist for NIC/SAPZ review and approval. The ESHS Specialist should be present at the site throughout the construction period.	Contractor	**NIC/SAPZ** and Environmental Specialist
3. Require Permits/ License for disposal of Commercial waste	Government permits/licenses are required for disposal of commercial wastes generated from the construction activities at the government operated landfill site.	Contractor shall obtain relevant permits and license from government authorities relating to waste disposal and construction authorization	Contractor	**NIC/SAPZ** and Environmental Specialist

4. The hiring of Construction Labor	OS 5: Labor Conditions, Health and Safety – This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labor.	Contractor to develop and implement labor management procedures following the Operational Standard 5 for the hiring of construction workers. The procedures will include terms and conditions of employment including hours of work, wages, overtime, compensation and benefits, holidays, leaves, and so on. The procedures will set out measures to prevent and address harassment, intimidation And or exploitation.	**Contractor**	**NIC/SAPZ**
5. Temporary storage facilities and construction yard	The contractor will need areas for setting up temporary storage areas and construction yards.	Contractor shall set up temporary storage facilities and construction yard within the NIC/SAPZ of the SEZ facility boundary approved by the NIC/SAPZ.	**Contractor**	**NIC/SAPZ**

8.3.3 SUMMARY OF MITIGATION MEASURES---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. Summary of proposed mitigation measures are provided in the below table:

Table 031: Summary of Adverse Environmental and Social Risks, and Mitigation Measures

Receptor	Summary of Mitigation Measures During Construction
Biophysical	
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 • Water surfaces to control dust emissions • Avoid burning of materials resulting from onsite clearance • Ensure that persons working in areas prone to dust are provided PPEs • Ensure the use ofhigh-quality diesel for generators and vehicles • Maintain minimum traffic speed on-site and on access roads • Ensure that construction materials and hazardous substances are well handled • Cover all vehicles hauling materials likely to give off excessive dust emissions • Regularly water spray surfaces to control dust emissions
Water Resources	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate cleanup 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
Aquatic Ecology	• Schedule construction activity to avoid heavy rainfall • Ensure that hazardous materials are not discharge in aquatic ecosystems • Ensure to construct fence at the perimeter of construction site to avoid cross pollution with aquatic resources • Ensure to prevent dumping of oil, filter cans and other substances into aquatic ecosystem
Terrestrial Ecology	• Cautions must be accorded during vegetation clearing to minimize species loss and destruction • Ensure that all species of conservation values are enumerated, conserved and reported to the designated conservation authority
Waste Water	• Ensure to obtain required permit for discharge of effluent and chemical wastes • Ensure that all effluent and chemical waste water meets at acceptable levels for discharging • Ensure that the point of discharge of effluent and wastewater is approved prior to any discharge • Ensure to adopt good house keep during construction phase and operation phase • Ensure that washing water from vehicles is drained in a sand/silt
Biodiversity (Fauna and flora)	• 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 • Ensure outdoor construction lighting is unobtrusive and turn off when not required

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
Hydrocarbons and Hazardous Materials	• Ensure that disposal of obsolete chemicals, fertilizers, and other industrial processing chemicals occurs according to the EPA's standards • Ensure that all chemicals are clearly label and stored in accordance with their respective Material Safety Data Sheet (MSDS) • Ensure to store hazardous materials separately from non-hazardous materials • Use oil traps • Ensure to hydrocarbons in a separate area that has an impermeable floor, adequate space, ventilation and roof to prevent rainfall from seeping • Carefully fuel/refuel vehicles, and machineries to avoid spillage
Noise	• Choose inherently quiet equipment • 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 ae 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

Socio-Economic	• 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 labor • 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
Macro-economy	
Land and Land Use	• Conduct assessment to verify if project do not trigger relocation/resettlement • Conduct thorough assessment of project area of influence to understand and address relevant environmental and social risks • Utilize alternative designs to reduce and minimize land use impacts • Adopt Chance Find Procedures for unanticipated discovery of finding of archaeological or historical significance
Waste Generation	• Promote recycling and reuse of general refuse • Ensure that disposal of obsolete chemicals, fertilizers, and other industrial processing chemicals occurs according to the EPA's standards • Prohibit the burning of refuse on the construction and operation site • Ensure to obtain required authorization from the EPA for disposal of hazardous waste generated onsite • Segregate chemical wastes and properly store and dispose hazardous waste according to the EPA's standards • 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

	• Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site
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 Corvid 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 can be stored for proper disposal according to the EPA's standards • 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
Traffic	• 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 channeling 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
Visual Amenity	• Ensure that site cleanliness and sanitation is maintained • Ensure outdoor construction lighting is unobtrusive and turn off when not required
Accident	• Ensure that all accidents and incidents are report and investigated • Ensure that all workers are qualified, ell trained and instructed in handling their equipment, including health protection equipment • Implement speed limits for trucks entering and exiting the construction facility • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste separation • Adopt good housekeeping practices during all phases of the project • Ensure the presence of an onsite First Aid Provider • Ensure that safety specialist is recruited to manage the preparation, implementation and

	maintenance of a comprehensive safety program • 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 • 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 Corvid 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
Cultural Heritage	• Ensure to apply the standard Procedures for Chance Finds

CHAPTER 9: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

9.1 INTRODUCTION

The environmental and Social Management Plan 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.

9.2 OBJECTIVE OF THE ESMP

The main objective is to provision a framework for implementation of the measures identified in the impact assessment analyzed in order 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

9.3 IMPLEMENTATION ARRANGEMENT

The project will be managed by the National Investment Commission, Project Implementing Unit (PIC) within close collaboration will 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. Relevant stakeholders include: GoL, NIC, MFDP, EPA, LLA, Inter-ministerial Steering Committee.

9.4 ESMP ROLES AND RESPONSIBILITIES

The National investment Commission 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 labor 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 SAPZ Project, which will meet or exceed the requirement of National Investment Commission's HSE MS. The NIC's existing and updated HSE MS will form the framework for managing social and environmental issues throughout construction, prior to the operation of the SAPZ 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 NIC's ESMMP, topic specific management plans and HSE MS at all levels, including subcontractors;
- Produce a Contractor's ESMP in accordance to NIC'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 NIC'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 aforementioned sites, the Contractor Environmental Officer will be required on a daily basis to check as per the following table where relevant.

NIC'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.

9.5 EHS MANAGEMENT PLAN TO BE DEVELOPED FOR THE PROJECT INCLUDE:

- Development of an Environmental Health and Safety Plan
- Development of a Project Specific Emergency Response plan
- Development of a Project Specific management Plan
- Development of a Spill Contingency Management Plan
- Completion of a "Bridging" process with contractors to evaluate their EHS procedures.

9.5.1 DEVELOPMENT OF AN ENVIRONMENTAL HEALTH AND SAFETY PLAN

A Health and Safety Plan will be prepared for the construction, operation and decommissioning phases of the project to ensure compliance with the Ministry of Health Guidelines for Occupational Health and Safety and IFC guidelines.

- To ensure its employees' health and safety, the SAPZ/NIC plan will address the following topics:
- Safety device to protect employees from injuries or hazardous conditions;
- Safe drinking water;
- Immunizations, as applicable;
- Clean eating area;
- First aid facilities;
- Sanitary conditions;
- Waste management, including bathrooms, and proper disposal procedures;
- Appropriate signage;
- Fire prevention facilities, training, and awareness; and
- Personal Protective Equipment (PPE).

A safety specialist assigned by SAPZ/INC will be responsible for the preparation, implementation and maintenance of a comprehensive safety program, which will be periodically evaluated. The safety specialist will be provided with written safety instructions including instructions on correct storage handling and disposal of hazardous waste, and written contingency Plans / guidelines of action for accidents, spills, and fire. The responsibility of the safety specialist includes performing safety training and conducting safety inspections, sessions and practice. The safety specialist will also be responsible for the investigation of accidents. A safety committee should be formed by SAPZ/INC and regular safety meetings should be organized.

9.5.2 DEVELOPMENT OF AN EMERGENCY RESPONSE PLAN

- An Emergency Preparedness and Response Plan (EPRP) will be prepared to assist project staff in effectively responding to emergencies associated with project hazards. The EPRP will comply with the IFC Occupational Safety guidelines and performance standards. The EPRP will include:
- Roles and responsibilities of emergency personnel;
- Emergency contacts and communications systems/protocols, including procedures for interaction with local and regional emergency authorities;
- Specific emergency response procedures;
- Design and implementation of an emergency alarm system audible across the entire site at the sub-stations;
- An evacuation plan will be read and practice by all employees and contractors. The evacuation plan will include emergency escape routes, procedures for accounting for employees after an evacuation, and roles and responsibilities of personnel during an evacuation;

- Identification of supplies and resources to be utilized during an emergency event, including emergency equipment, facilities, and designated areas; and
- A training plan, which includes specific training and drill schedules for personnel
- Who are responsible for rescue operations, medical duties, spill response, and fire response?

If an emergency develops, all persons on site will be notified immediately and efforts will be coordinated with others in the vicinity surrounding the project area in order to reduce impacts, if applicable. The LEPA, the County Superintendent, local police, and all necessary authorities will be immediately notified. If an emergency is imminent, but has not yet begun, steps will be initiated to immediately advise person in the vicinity of the emergency to evacuate and notifications will be made to LEPA, the County Superintendent, local police, and all other authorities which have responsibility regarding the emergency.

If there is a slowly developing emergency or unusual situation where an emergency is not imminent, but could occur if no action is taken, project personnel will notify the LEPA, the county Superintendent, local police, and all other authorities of the potential problem and keep them advised of the situation. These agencies will be requested to indicate if there are any immediate actions that should be taken to reduce the risk or severity of the emergency and if necessary, what preventative actions will be implemented. In an emergency situation, equipment and supplies will be needed on short notice. Therefore, the SAPZ/INC will maintain an accurate inventory of emergency response equipment and supplies.

The EPRP will include an evacuation plan which will be read and practiced by all employees and contractors. The evacuation plan will include emergency escape routes, procedures, for accounting for employees after an evacuation, and roles and responsibilities of personnel during an evacuation. In general, the following evacuation procedures should be followed:

- Alert the Emergency Response Team to assist in the evacuation.
- Use communications tools that are appropriate for the type of incident and the time of occurrence, such as alarms or loud speakers.
- When communicating an evacuation, speak clearly and succinctly: “we have a [state the type of emergency]. Evacuate to [state the assembly point]”.
- Turn equipment off, if possible.
- Take emergency supplies and staff roasters, if possible.
- Account for personnel.
- Wait at the assembly point for further instructions.

The ERPP will have specific information on the fire safety and explosion response, which will provide additional details specific to these emergencies.

9.5.3 DEVELOPMENT OF A WASTE MANAGEMENT PLAN

The SAPZ/NIC will develop a project specific waste management plan to ensure that all waste for the project activities are properly managed in accordance with applicable laws and regulations, and international standards relevant to the power distribution industry. The waste Management Plan will include:

- Description of the types of waste that will be generated
- Waste minimization opportunities
- Waste management methods
- Good housekeeping practices, including manifest and waste tracking forms

The following general categories of waste are anticipated to be generated from the project at this time:

- Hazardous waste such as construction wastes and debris from exaction materials, unused paint, lubricant, batteries, or similar chemicals that exhibit flammability, corrosive or reactive characteristic
- Liquid waste discharged such as sanitary wastewater and gray water, macerated food waste
- Solid wastes, such as packaging materials, containers, used PPE
- Special and recyclable waste, e.g. Batteries, used oil, paper aluminum cans, fluorescent light boils, mercury light builds
- Domestic waste, e.g. refuse

The plan will specify the proper storage, handing and disposal procedures for each waste identified.

During the construction phases, these will be generation of construction debris as a result of various construction activities. The generate materials will be used for reclamation purposes whenever applicable. Nevertheless, care will be taken to ensure the absence of contaminated fill material and the adequacy of the physical and chemical properties of such material to limit potential adverse impacts on water and soil and ensure the safety of the project. Construction waste will also be minimized through careful planning during the design stage, whereby reducing or elimination overpowering of construction materials to decrease waste generation and reduce project costs (cost of surplus materials). Sorting of construction and demolition waste will be encouraged, as well as, adoption of a re-use/recycle program on site whenever deemed feasible.

Chemical waste generated include containers that were used for storage of chemical waste on site, the chemical residue as well as contaminated material. These materials will be

segregated as hazardous and non-hazardous and properly stored and disposed of. Storage will be place in a separate area t6hat has an impermeable floor, adequate ventilation and a roof to prevent rainfall from entering. In addition, all chemical waste must be clearly labeled in English, stored in corrosion resistant containers and arranged that incompatible materials are adequately separated. There will be a prior agreement with the LEPA for the disposal hazardous waste generated.

General refuse will be stored in enclosed bins or compaction units separate from construction and chemical waste. An agreement will be drafted with a solid waste collector certified by the LEPA to identify collection sites and schedule the removal to minimize odor, past infestation and litter buildup. The burning of refuse on the construction site will be strictly prohibited and penalized. General refuse is generated largely by food service activities on sites, so reusable rather than disposable dishware will be promoted id feasible. Aluminum cans will be recovered from the waste stream by their storage collectors if they are segregated and made easily accessible, so separate, labeled bins for their storage should be provided if feasible. Janitorial services will be assigned for upkeep of project sites during construction phase.

9.5.4 SPILL CONTINGENCY MANAGEMENT PLAN

The SAPZ/ NIC will prepare and implement a spill contingency management plan that identifies this procedure to prevent, contain, cleanup, and report spill and release of fuel oil and their hazardous materials. Mitigation measure to prevent contamination from hazardous materials are primarily aimed at preventing their release into the environment in the first place and will include:

- Keeping equipment maintained.
- Inspecting equipment and containers for spill and leaks, corrosion, or other signs of deterioration
- Maintaining spill response equipment near material storage areas and on heavy equipment.
- Training employees on material storage, transfer, and transportation procedures, spill response procedures, and reporting requirements.

If a fuel spill occurs at the project sites, prompt action will be taken to contain the leakage or spillage in the event of a spill of leak, all combustible, flammable, and ignition sources (such as running engines) likely to result in a fire will be removed from the vicinity of the spill and anyone in the area will be advised to stay upwind. Spill kits will be kept at the project sites and the transport vehicles to readily clean up small spills. Large spills will be contained by constructing a berm around the spell area to control runoff to surface water.

All soil contaminated by previous spills will be excavated and disposed of in accordance with the SAPZ/NIC hazardous waste management procedures.

9.5.5 CONTRACTOR MANAGEMENT

SAPZ/NIC will expect its contractors to follow IFC Guidelines for Occupational Health and Safety and Environmental Management. SAPZ/NIC will issue a set of Environmental, Social, Health and Safety safeguards to the construction contractor to follow, which include standards that are expected to be followed and programs that the contractors are expected to have in place (e.g. Environmental Health and Safety Management System)

9.5.6 AIR QUALITY: GENERATION OF AIR EMISSIONS FROM DISTURBANCE

Control techniques for minimizing temporary particulate matter (PM) emission during construction will involve watering of surfaces, chemical stabilization, or surface wind speed with windbreak or source enclosures. Furthermore, surface improvements offer long-term control techniques. These includes covering the road surface with a new material of lower site content, such as covering a dirt road with gravel or slag. Also, regular maintenance practices, such as grading of gravel roads, help to retain larger aggregate size on the traveled portion of the road and thus help reduce emissions. The amount of emissions reduction is tied directly to the reduction in surface site content.

Other mitigation measures include, maintaining good housekeeping prates throughout the construction phase. These low-cost measures include:

- Proper site enclosure through appropriate hoarding and screening
- On-site mixing and unloading operations.
- Proper handling of cement material.
- Maintain minimal traffic speed on-site and on access roads to the tower construction sites.
- Covering all vehicles hauling materials likely to give off excessive dust emissions.
- Ensure adequate maintenance and repair of construction machinery and vehicle
- Avoid burring of material resulting from site clearance
- Cover any excavated dusty materials or stockpile of dusty materials entirely by impervious sheeting
- Proper water spraying when necessary.

9.5.7 GENERATION OF AIR EMISSION FROM VEHICLES AND EQUIPMENT ENGINES

In addition to PM generation, emissions will consist of combustion emission from diesel engine-driven electrical generators and vehicles and diesel-driven mobile construction equipment (such as, concrete trucks, dump trucks, excavators, and backhoes. The engines emit primarily CO2, Co, NO2, Sox, and HC. Measures to reduce combustion emissions include proper truck and engine maintenance, adoption of a traffic management plan while avoiding congested routes, proper maintenance of construction equipment, and the quality of diesel fuel used. In addition, equipment will be turned off when not in use, while would reduce power needs as well as emissions of pollutants. The supervising consultant will have the responsibility of ensuring the implementation of these measures by the contractor.

9.5.8 DEGRADATION OF WATER QUALITY DUE TO STORM WATER RUNOFF

The removal of vegetation and disturbance of soil in the construction work areas may result in erosion and sedimentation causing increased turbidity in water within the project area.

Additionally, degradation of water quality may occur from pollutants in storm water runoff from material and equipment storage areas and spills and leaks from construction equipment

Special care must be taken to decrease impacts where work is or near the marshland/wetland and mangrove areas so as to keep disturbance of the ecosystems to a minimum.

Prior to commencement of construction activities, SAPZ/NIC will require its contractors to prepare and implement an Erosion and sediment Control Plan. Its purpose will be to assist SAPZ/NIC, it contractor, and subcontractors in the implementation of control measure for storm waste runoff from the transmission line corridor, the substations, and material storage areas to prevent degradation of water quality. The plan will achieve this purpose by specifying the best management practices, required to assess the effectiveness of construction storm water management practices, especially during the rainy season. SAPZ/NIC will demonstrate, to the satisfaction line route will not occur during any stage of construction. Briefly, the erosion and sediment control measures to be implemented during the construction phase of the project include:

- Minimizing land cleaning activities to the tower location work areas, access points, and material storage area
- Minimizing the time of exposure of erodible land exposed to storm water runoff during the rainy season

- Maintaining a riparian management Zone (RMZ) (width 15m 174) between the construction work areas and surface water bodies to fitter sediments in storm water runoff
- Covering open stockpiles of construction materials with tarpaulin or similar fabric during rainstorm events to prevent erosion and resultant sedimentation of receiving waters.
- Compacting soil as soon as the tower foundations are formed to prevent erosion, especially during the wet season
- Restoring the construction working areas as soon as possible once construction is complete at each tower location

9.5.9 DEGRADATION OF WATER QUALITY DUE TO ACCIDENTAL SPILLS AND LEAKS

SAPZ/NIC will develop and implement a spill contingency plan to prevent and mitigate spills of oils or hazardous material to surface water bodies and groundwater. Storage of fuel and hazardous material should not occur within 30m of a surface water body. If any pumps are needed for removal of water during tower construction within 30m of marshland/wetland water body. They will utilize proper secondary containment. Oil leakage or spillage will be contained and cleaned up immediately. Spent oil and lubricants will be collected and stored for recycling of proper disposal. In addition, all fuel tanks and chemical storage areas will be provided with locks and located within secondary containment structure. Oil/water separators will be installed at storm water channels to remove oils from contaminated waters such as from workshops.

9.5.10 SOIL CONTAMINATION AND EROSION DUE TO EROSION

Prior to commencement of construction activities, SAPZ/INC will implement an erosion and sediment control Plan, SAPZ/NIC will demonstrate, to the satisfaction of the LEPA that any substantial risk of increased sediment discharges from the project sites will not occur during any stage of the project

Cleaning of vegetation will be limited to where it is strictly needed so as decrease the risk of soil erosion, and Riparian Management Zone (RMZ) (width 15m) between the construction areas and surface water bodies. Unpaved roads will be graded so that to decrease the risk of erosion during rainstorms.

- Soils excavated for tower foundations will be used for re-filling and will not be left exposed to wind or water for long periods
- The contractor will avoid steep terrain during the transportation material by using alternative route or use light vehicles where appropriate

- Heavy machinery will be used as needed in the clearance of construction work areas in order to minimize soil compaction, which makes the soil susceptible for erosion
- Riverine and surface water body associated vegetation will be minimally disturbed during the construction phase to reduce soil erosion and safeguard bank protection
- Disturbed areas will be replanted with local species common in the area complement natural vegetation regeneration to improve cover
- In are prone to soil erosion, suitable sediment binding grasses will be planted in degraded substrates.

9.5.11 NOISE MANAGEMENT

Typical mitigation measures that will be enforced during construction to minimize noise levels are:

- Effectively utilizing material stockpiles and other structures, where feasible; to reduce noise from on-site construction activities
- Choosing inherently quiet equipment
- Operating only well-maintained mechanical equipment on-site
- Keeping equipment speed as low as possible
- shutting down or throttling down to minimum equipment that may be intermittent in use, between work periods
- Utilizing and properly maintaining silencer or mufflers that reduce vibration on construction equipment during construction works
- Restricting access to the site for truck traffic outside of normal working hours
- Utilizing proper site logistics and planning
- Limiting site working hours the morning hour
- Scheduling noisy activities strictly during the morning hours
- Consulting with local communities and informing the locals when noisy activities are planned
- Enforcing noise monitoring
- Enforce the use of hearing protection actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140dB(C), or the average maximum sound level reaches 110db(A)
- Installing warning signs in area high noise levels
- Consider the use of acoustic insulating materials, isolation of the noise source, and other engineering controls to minimize noise impact.

The noise control measure will be included within the construction contracts and be considered as requirements from contractors. The supervising consultant will have the responsibility of ensuring the implementation of these measure.

9.5.12 BIOLOGICAL RESOURCES & HABITAT ALTERATIONS

The cleaning of vegetation in the construction work areas may have a significant impact on terrestrial habitats especially in areas with tree cover, During the process of installing the transmission touted, there is need to take into consideration the importance of critical habitat including forest patches and wetlands for biodiversity that depend on road side habitats. Recommended mitigation measure include:

- Limiting vegetation cleaning to the tower locations, access points, and material storage and work areas. The transmission line will be installed within the existing SAPZ/NIC ROW whenever possible in areas where diversion from the old ROW is deemed necessary, all care will be taken to minimize disturbance and avoid critical habitat
- Installing transmission lines above existing vegetation to avoid land cleaning of the maximum extent possible
- Avoiding construction activities during the breeding season and other sensitive season of time of day
- Re-vegetating disturbed areas with native plant species
- Minimizing vegetation management to selective removal of tail growing trees and plant growth that would negatively affect the transmission lines and equipment
- Utilizing hand cleaning rather than mechanized cleaning whenever practicable
- Removal invasive plant species, whenever possible, and cultivating native plant species
- Avoiding use of machinery in the vicinity of watercourse a mush as possible
- Retaining a Riparian management Zone between construction work areas and surface water bodies
- Providing the community priority on use of the removed vegetation for wood-fuel, construction of any other purpose,

9.5.12 HAZARDOUS MATERIALS MANAGEMENT:

SAPZ/NIC will require its contractor to prepare and implement a spill contingency Plan that identifies the procedures to prevent, contain, cleanup, and report spills and releases of oil and hazardous material Mitigation measures to prevent contamination from hazardous materials are primarily aimed at preventing their release into the environment in the first place and will include:

- Storing oil and hazardous materials within secondary containment structures in designated area
- Using portable oil collection pans during refueling operations

- Storing pesticides and herbicides in designated areas according to FAO Guideline standards any pesticides to be used will be manufactured, packaged, labeled, handled, stored, disposed of, and applied according to standards such as the minimum standards of FAO's Guidelines for packaging and storage of pesticides (Rome,1985), Guidelines on Good labeling practice for pesticides (Rome, 1995)
- Ensuring that no storage of oil and hazardous materials occurs within 30m of a surface waste body
- Keeping equipment maintained
- Inspecting equipment and containers for spill and leaks, corrosion, or other signs of deterioration
- Maintaining spill response equipment near material storage areas and on heavy equipment
- Ensuring all working dealing with such substances are adequately informed about the risks
- Training employees on material storage, transfer, and transportation procedures, spill response procedures, and reporting requirements

SAPZ/NIC will keep an accurate inventory of all oil, hazardous material, and waste stored on site and material safety Data sheets will be available for these material

If a fuel/oil spill occurs at the project site, on any of the access roads to the site, or into a water body or wetland, prompt action will be taken to contain the leakage of spillage. In the event of a spill or leak, all combustibles, flammables, and ignition sources (such as running engines) likely to result in a fire will be removed from the vicinity of the spill and anyone in the area will be advised to stay upwind. Spill kits will be kept at the project site and on the transport vehicles to readily clean up small spills. Large spills will be contained by constructing a berm around the spill area to control runoff surface water, or deploying a spill boom if the spill is in a water body. All soil contaminated by the spills will be excavated and disposed of in accordance with the SAPZ/INC hazardous waste management procedures

9.5.13 WASTE MANAGEMENT:

During the construction phase, there will be generation of construction debris as a result of various activities. The generated materials will be used for reclamation purposes whenever applicable. Nevertheless, care will be taken to ensure the absence of contaminated fill material and the adequacy of the physical and chemical properties of such material to limit potential adverse impacts on water and soil ensure the safety of the project. Construction wastes will also be minimized through careful planning during the design stage, whereby reducing or elimination over-ordering of construction materials to decrease waste generation and reduce project cost (cost of surplus materials). Soring of construction and

demolition waste will be encouraged, as well as, adoption of a re-use/recycle program on site deemed feasible.

Chemical waste generated during the construction phase include containers that were used for storage of chemical wastes on site, the chemical residue as well as contaminated material. These materials will be segregated and properly stored and disposed of as hazardous waste. Storage will be placed in a separate area, away from the wetland and surface water bodies. The storage will have an impermeable floor, adequate ventilation and a roof to prevent rainfall from entering. In addition, all chemical wastes must be clearly labeled I English, stored in corrosion resistant containers and arranged so that incompatible material are adequately separated.

CHAPTER 10: ENVIRONMENTAL MONITORING PROGRAM

10.1 INTRODUCTION

The primary object of environmental monitoring is to ensure that mitigation measures are implemented and the potential negative impacts are reduced, minimized to acceptable levels. The primary objective of the Special Agro-Industrial Processing Zone Monitoring Plan includes the following:

- To assess the changes in environmental conditions
- To assess performance and the effectiveness of the mitigation measures adopted
- To determine project compliance with regulatory requirements and adopt remedial action
- To identify potential gaps and promptly implement of corrective measures

The project monitoring scope is divided into two (2) main phases namely;

10.2 IMPACT DETECTION MONITORING

Includes periodic sampling to assess the impact of project operations on the environment and human health, and to ensure progress towards minimizing project's negative impact. This is also referred to as Institutional monitoring which be conduct by the project Environmental Officer and team of sustainable staff. The objective of Impact detection monitoring compliance monitoring includes:

- Identify the most probable source;
- Verify the proper implementation of the specified mitigation measures;

- Review the effectiveness of environmental management plans including mitigation measures and propose alternative actions as appropriate;

10.3 COMPLIANCE MONITORING

Compliance Monitoring is conducted to ensure that all project and sub-project activities are in full compliance with the Environmental Protection Agency regulations and standards. It is usually commissioned by a Third-Party Evaluator accredited by the EPA. Objectives of the party include;

- To monitor performance and effectiveness of environmental management plans;
- Evaluate project compliance with regulatory requirements;
- Provision of safety at all difference locations of the working area and retention of records;
- Capacity development and training of staff, operators, technicians, staff etc.)
- Adequate analytical instrumentations;

10.4 THE RECEPTORS REQUIRED MONITORING INCLUDE:

- Air Quality
- Water Resources
- Occupational Health and Safety
- Odor
- Noise Quality
- Soil Quality
- Waste Generation & Management
- Landscape and Visual
- Biodiversity

10.5 SUMMARY OF MONITORING PROGRAM

- Monitoring activities
- Cost and resource requirements;'
- Monitoring duration and frequency;
- Monitoring location
- The party incurring the cost
- Party required for implementing the monitoring measure

Table 032: Monitoring program and cost

Monitoring Activity	Monitoring parameter	Monitoring location	Phase	Frequency	Cost	Cost Responsibility	Implementation responsibility
Air Quality							
Visual Assessment, routine and if necessary, in response to a compliant through the Grievance Mechanism	Dust levels in the atmosphere	Construction areas, places of heavy traffic flow	Construction	Daily & during period of dust generating activity or in response to a compliant through the Grievance Mechanism	Under the general responsibilities of the construction supervisor --No material additional costs associated with this activity	Construction Contractor (CC)	Construction Contractor (CC)
Soil Quality							
	Soil contaminants including heavy metals, non-metallic contaminants, organic and non-organic compounds,	Specific sampling points identified at the project locations and areas where dangerous activities are ongoing	Construction	Prior to construction and after remediation of			NIC Environmental

Soil sampling	pesticides, and biological organisms			contaminated sites	Laboratory fees US$8,000.00	NIC	Manager
Water Resources							
Surface water	pH, Conductivity, RCRA, COC, SVDC, Suspended solids, dissolved solids, oil and grease, BTEX	Lake/River in closed proximity to the project location to be identified as monitoring point	Construction	Quarterly	Laboratory Fees US$8,000.00	NIC	NIC Environmental Manager
Ground water **Ground Water**	pH, Conductivity, Dissolved Oxygen, Temperature, & Turbidity	Groundwater wells in or around project location	Operation	Prior to commencement of construction, during and then quarterly during operations	Capital cost of Multiparameter probe US$40,000 ($10,000X4)	NIC	NIC Environmental Manager
	RCRA, VOC, Suspended solids, dissolved solids oil and grease BTEX	Ground water samples in close proximity to the project location	Operation	Quarterly	Laboratory Fees US$8,000.00	NIC	NIC Environmental Manager

Health and Safety							
Health and Safety surveys, documentation of injuries and accidents	Proper use of PPEs, Presence of signs, First Aid Kit, and Firefighting Devices	Construction and operation sites where activities are undertaking	Construction & Operation	Continuous	Under the general responsibilities of the Environmental Manager—No significant material costs associated with this activity	NIC	Contractor and/ or NIC Environmental Manager
Solid Waste							
Solid Waste Generation and Disposal	Visual inspection and photographic documentation and audit	Project site and disposal sites	Construction & Operation	Continuous	Under the General responsibilities of the Environmental Manager--- No significant material costs associated with this activity	NIC	NIC Environmental Manager
Landscape and Visual Amenity							

Monitor to ensure that dust control and visual screening measures are implemented effectively	Ensure the effective implementation of mitigation measures	Entire project area where activities are undertaking	Construction & Operation	Quarterly	Under the General responsibilities of the Environmental Manager—No significant material costs associated with this activity	NIC	NIC Environmental Manager
Noise							
Measurements of existing ambient noise will be carried out at the most sensitive locations prior to the start of the construction	Noise level, LAeq, 1 hour	Nearest houses to the project construction sites	Construction	Prior to construction and during activities that are likely to produce the highest noise outputs	Capital costs (onsite noise monitoring meter- US$3,50000) Monitoring Cost (US$500.00 X1)	NIC	Qualified Acoustic Survey Technicians
				Grand Total:	($68,000.00 x4) Quarterly		($272,000.00) Annually

CHAPTER 11: STAKEHOLDER ENGAGEMENT & INFORMATION DISCLOSURE

11.1 INTRODUCTION

Consistent with the African Development Bank Group Environmental and Social Policies and Guidelines, The Environmental Protection and Management Law of Liberia, 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.

11.2 OBJECTIVE OF THE STAKEHOLDERS CONSULTATION AND ENGAGEMENT

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;

Stakeholders Identification and Analysis

Based on the project development objectives, the following stakeholders were identified, engaged, and consulted relatives to the project development as mentioned below:

11.3 NATIONAL STAKEHOLDER (GOVERNMENT)

1. Ministry of Finance Development and Planning (MFDP);
2. National Investment Commission (NIC);
3. Environmental Protection Agency of Liberia (EPA);
4. Liberia Land Authority (LLA);
5. Liberia Revenue Authority (LRA);
6. Ministry of Agriculture (MOA);

7. Ministry of Commerce & Industry (MOCI);
8. Ministry of State (MOS);
9. National Port Authority (NPA);
10. Forestry Development Authority (FDA):
11. Liberia Maritime Authority (LMA);
12. Liberia Chamber of Commerce (LCC);
13. Liberia Business Association (LIBA).
14. Ministry of State for Presidential Affairs
15. USAID

11.4 LOCAL STAKEHOLDER/INTEREST (GRAND BASSA COUNTY)

1. Project Affected Communities
2. Direct Local rural people
3. Local government authority

11.5 STRATEGY FOR INFORMATION DISCLOSURE/STAKEHOLDER CONSULTATION

The Public Consultation process was initiated during the early stage of the project. Relevant stakeholders were engaged and consulted regarding the prospects of the project, meetings were conducted between the Consultant, and the project Implementation Team, Essential documents about the project were reviewed and resources persons and experts' views were solicited. Other sources of information and regulatory institutions were consulted and detailed were used facilitate the field assessments and surveys. Specialized data collection and interpretation tool were utilized. Stakeholder consultation were conducted at the local level to solicit inputs, views and comments from the project affected rural people.

The proceedings took the form of:

- Introduction of the project to community members and stakeholders;
- Informing them of the locations for the proposed development and the nature of the project;
- Entertaining comments and questions from stakeholders, and
- Addressing concerns raised by stakeholders

11.6 SUMMARY OF FINDINGS FROM THE STAKHODLER CONSULATION

The SAPZ Project Stakeholder Consultation encompasses two group of stakeholders process; consultative meeting with relevant stakeholders from level I (national, government,

donor partner in Montserrado County while level II comprises of two distinctive consultative meetings with the local county authorities and subsequently with the project affected communities, local rural people, parties, interest and non-interested party. Due to the Government of Liberia Health Protocols and restrictions imposed as the result of the resurgence of Covid 19, stakeholder's consultations were conducted through cell-meetings and at random times and places.

The first Stakeholder Consultation Meeting was held between 22 July 2021 to 28 July 2021 at various MACs locations and the total of 8 MACs were consulted and views, comments and inputs received. The Local county authorities' stakeholders meeting was held at the Superintendent Office, Buchanan City, Grand Bassa County. While the local project affected people, meeting was organized within Bleewein Town, with the twelve (12) village's leadership in attendance. The meeting provided a wide platform for all the relevant stakeholders to raise their concerns, highlight the project related environmental, social, economic and risk impacts and issues of significant. The total of twenty-eight (28) persons attended the consultative meeting held in Bleewein Town, Buchanan, Grand Bassa County.

On the overall, the Buchanan local authorities (stakeholders) that is the local government in Buchanan including the Superintendent, City Major and others and the national authorities (stakeholders) that is those regulatory institutions ; demonstrated their willingness and acceptances of the Project and hope that the project implementation is accelerated in the soonest possible time to improve the living conditions of the people and alleviate poverty and increase economic activities in the southeast part of the country. While the local project affected parties that is people living near the proposed project site, people whose land is acquired by the project; and people whose livelihoods are affected by the project in the communities such as (fishermen, farmers, rural hunters, etc.) expressed their dismay in the government deliberate refusal to recognize their local entitlement to the lands. However, insists that they should be recognized as partners in the project and that the social and economic impacts such as homes, settlement, livelihood and investment must be identified and compensated accordingly.

11.7 ISSUES ARTICULATED DURING THE STAKEHOLDER MEETING (LOCAL AUTHORITY AND PAP) AT BUCHANAN, GRAND BASSA COUNTY, LIBERIA

The major issues highlighted during the meeting are summarized below:

- The local county leadership is in support of the proposed project
- That the selection of project communities be done in consultation with project communities at local level.
- Liberians' owned businesses be giving priority

- Avoid involuntary resettlement and if avoidance is impossible, compensate for private properties affected by the project.
- Government has not been fair to us regarding the proposed site; they remove us from our settlement. We experience this with previous companies.
- Government should incorporate the local people into every aspect of the project development and implementation.
- We are currently conducting a customary land survey in the entire project location because the site belongs to us not the Government.
- Intend to complete the ongoing land survey before any agreement with the Government.
- We were never involved in the previous survey done by the Government, were overlooked and left out. Therefore, we are generously glad about the project development but our interest and concerns are legitimate and must be address.
- The act of the Government of Liberia to conduct survey without our involvement brought fear to us about our future and the communities.

11.8 GRIEVANCE REDRESS MECHANISM

OBJECTIVE

The strategic objectives of the Feedback and Grievance Redress Mechanism (FGRM) is to identify and address potential problems, prevent recurring or escalating grievances, and ensure timely achievement of the SAPZ Project Development objectives through the promotion of accountability among stakeholders. The purpose of the FGRM is to establish a two-way communication with stakeholders for the maximization of the project benefits for people and country. It is also intended to facilitate safeguarding and mitigation of potential adverse impacts of the project activities on land related issues and concerns and as well as operational activities.

It is envisaged that absence an existing channel through which project affected parties can present their complaints/grievances and receive timely and appropriate feedbacks is a trigger for public outcry, community uprisings, and resistance to project activities, which may potentially hinder the project development objectives. Against this backdrop the FGRM is prepared to address and facilitate the handling of grievances emanating from the project activities.

A two-tier grievance resolution mechanism will be adopted to receive and resolve grievances from the project host communities. A Grievance Management Committee will be set up that the community level for the purpose of receiving and resolving project related grievances in a timely manner without any cost to the complainants. The second tier will require the setting up of grievance redress committee at the project level (NIC/SAPZ) to

receive and resolve grievances that may not be resolved at the local community level, and elevated to the Judicial System in instances where the NIC/SAPZ cannot handle the grievance. It is further anticipated that the FGRM shall provide the ambiance to handle problems in an efficient, transparent, timely and cost-effective manner and provide a cordial environment for the participation of all stakeholders, including affected parties. In this regard, the FGRM is expected to generate benefits to project affected persons (PAPs) and the public through the following ways:

A. Providing a forum for redressing grievances and disputes at all levels;
B. Creating effective communication between NIC and affected parties;
C. Building productive relationships among all stakeholders, including affected parties;
D. Allowing affected parties to discuss, negotiate and participate in the decision-making process; and
E. Mitigating or preventing adverse impacts of the project on communities and availing appropriate corrective or preventive actions

11.9 PROCESS OF HANDLING GRIEVANCES

Grievances will be handled at the project level by the NIC/PIU. Grievance redress will include the following steps:

STEP 1: SUBMISSION OF GRIEVANCES EITHER ORALLY OR IN WRITING

For submission of grievances either orally or in writing to a local/community GM committee or a GM officer in the PIU, a toll-free phone line and email will be established. Walk-ins may register a complaint on a grievance logbook or suggestion box at NIC/SAPZ offices. In order to ensure the GM is accessible to all stakeholders, particularly in rural areas and those that are vulnerable, specific measures will be explored during consultations and reflected in the SEP. The GM will also allow anonymous grievances to be raised and addressed.

STEP 2: RECORDING OF GRIEVANCES WITHIN 24 HOURS

Grievances will be recorded and classified based on the typology of complaints and the complainants in order to provide more efficient response and providing the initial response within 24 hours by the GM officer. The typology will be based on the characteristics of the complainant (e.g., vulnerable groups, persons with disabilities, people with language barriers, etc.) and also the nature of the complaint.

STEP 3: INVESTIGATING THE GRIEVANCE AND COMMUNICATION OF THE RESPONSE WITHIN 7 DAYS BASED ON THE NATURE OF THE GRIEVANCE.

GR Officer, will ensure that all grievances and communications are responded to with in the seven (7) days stipulated period. This intervention will ensure that all pressing issues, concerns will be timely addressed.

STEP 4: COMPLAINANT RESPONSE

Either grievance closure or taking further steps if the grievance remains open. If grievance remains open, complainant will be given opportunity to appeal to Grievance Management Committee that will be set up at the NIC/PIU.

Once a complaint has been received, by any and all channels, it should be recorded in the complaints logbook or grievance Excel sheet (grievance database). Once all possible redress has been proposed and if the complainant is still not satisfied then they should be advised of their right to legal recourse.

Quarterly summaries and internal reports on public grievances, enquiries and related incidents, together with the status of implementation of associated corrective/preventative actions, will be collated by responsible staff and referred to NaFAA/PIU senior management. The quarterly summaries will provide a mechanism for assessing both the number and the nature of complaints and requests for information, along with the Project's ability to address those in a timely and effective manner.

11.10 MONITORING AND REPORTING

The NIC/PIU will maintain a Stakeholder Engagement Log that chronicles all stakeholder engagements undertaken throughout the project implementation. The Engagement Log includes location and dates of meetings, workshops, and discussions, and a description of the project-affected parties and other stakeholders consulted. A comprehensive result of the inquiries and issues raised by project-affected stakeholders during every stage of the project implementation will be presented during quarterly stakeholders' engagement meetings within the project-affected communities. Further, a quarterly Steering Committee meeting will be held with interested parties such as Governmental line Ministries, Agencies, Non-governmental Organizations, Civil Society, Community-based Organizations, etc. Findings from continuous engagements will be used as a tool to assess the project acceptance level, intervention impacts, and performance to the compliance of the project environmental and social safeguards instruments.

11.11 BUDGET FOR IMPLEMENTATION

Table 032: A summary of the cost associated with implementation of the ESMP

No.	Description	Cost (USD)
1	Construction Contractor ESMP	18,000.00
2	Company's ESMP	$15,000.00
3	Construction Supervision	$30.000.00
4	Community Health, Safety and Security Plan	$25,000.00
5	Construction Contractors' Monitoring	$40,000.00
6	Company Monitoring	$35,000
7	Environmental and Social Management	$45,000.00
8	Contingency (8%)	20,240.00
	TOTAL	**$273,240.00**

CHAPTER 12: CONCLUSION AND RECOMMENDATION

The assessment and identification of potential and eminent environmental, social, cultural and health risks and impacts recommended measures to curb, reduce, offset these impacts to acceptable levels ensures project acceptance by the local affected parties and successful implementation. Despites the urgent needs of major stakeholders expressed for project approval and implementation, it is eminent to note other descending views and concerns expressed by project affected parties/ stakeholders should be consider to ensure that the project is environmentally sound and socially sustainable. The report revealed about twelve (12) villages within the Special Economic Zone Project Site with about four within closed proximity to the SAPZ location. Thus, a detailed assessment must be conducted to determine the level and extent of resettlement that may be required. It is important that the Government of Liberia through the National Investment Commission, Ministry of Finance & Development Planning and the Liberia Land Authority enhance efforts in engaging the rural communities and clarify pressing concerns relative to the project development object, land ownership and traditional land, customary land, public and private land ownership.

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

Baseline surface and ground water within the proximity of the project area of influence were evaluated to assess its characteristics prior to the implementation of the project activities. Socio-economic survey revealed that the majority of the local and rural people are generally involved with traditional agricultural practices including farming, hunting, charcoal production,

Hence, the Consultant asserts that all environmental and social impacts associated with the Special Agro Industrial Processing Zone Project (SAPZ) have been identified and that the mitigation and management measures herein contained can adequately addressed the identified impacts when implemented accordingly.

CHAPTER 13: REFERENCE:

Food and Agriculture Policy and Strategy, 2008, Ministry of Agriculture

Liberia maritime law, Title 21 of the Liberian Code of Laws of 1956

EPA (2010), Environmental Protection Agency Draft Regulations

LEPDA Report on Proposed institutional structure and projected cash flow model for the Liberia Special Economic Zone Authority (LSEZA)

Liberia Environmental Profile 2006

AfDBS (2013), Integrated Safeguards System, Policy Statement and Operational Safeguards

Liberia River Basin Report 2006

Aide Memoire 2021, Liberia Special Agro Industrial Processing Zone (SAPZ)

Mahindra 2021, Feasibility study and Master Plan for the Buchanan Special Economic Zone (SEZ) and Special Agro Industrial Processing Zone (SAPZ) in Liberia

Energean Oil & Gas, Environmental & Social Impact Assessment (ESIA) for Prinos Offshore Development Project,

LNBSAP 2017, Liberia National Biodiversity Strategic Action Plan, Environmental Protection Agency of Liberia

LSEZA 2017, Liberia Special Economic Zone Act

SEZ 2020, Buchanan SEZ and Port Feasibility Study, Ministry of Finance Development Planning

APPENDIX A: CHANCE FIND PROCEDURE

Chance finds are defined as physical cultural resources encountered unexpectedly during project implementation. Chance find procedures includes provisions for managing aforementioned encountered chance finds. These include the following;

- In case of chance find of any sites or artifacts of historical, cultural, archeological or religious significance all construction activity in the vicinity of he find/feature/site will cease immediately;
- The discovery will be clearly delineated and secured, and all found remains will be left in situ;
- An NIC assigned archaeological consultant will assess, record and photograph the find/feature/site;
- In consultation with the Ministry of Information, Culture and Tourism, the assigned Archaeologist will complete a report on the findings and determine the appropriate course of action to take;
- An on-site finds storage area will be provided, allowing storage of any artifacts or other archaeological material recovered during the process;
- A conservator will be made available to the project, if required, and will decide on the disposition of any found samples or relics.

APPENDIX B: LABORATORY RESULTS:

UL CIVIL ENGINEERING LABORATORY
College of Engineering
University of Liberia, P.O. Box 9020
Fendall Campus 1000 Monrovia 10, Liberia WA

ENVIRONMENTAL ANALYSIS RESULTS

Order ID: UL-SEZ-001-2021

Client: National Investment Commission (NIC)

Nature of Project: Special Economy Zone (Industrial Park)

Sample Matrix: Water, Soil, Air and Noise

Sample Source: Buchanan, Grand Bassa County

Analysis Start Date: 04-08-2021

Laboratory: University of Liberia Civil Engineering Laboratory

Background

Analyses of water, air, soil and sound quality were conducted at the proposed Special Economy Zone (SEZ) in Buchanan, Grand Bassa County. This report is a summary of test methods employed and results obtained from the study. It is anticipated that the results obtained herein will be used as baseline for the purpose of assessing compliance during future environmental audits or monitoring of the industrial zone. All Laboratory analyses were conducted by the UNIVERSITY OF LIBERIA CIVIL ENGINEERING LABORATORY and results obtained were submitted to the Environmnetal Consultant for compilation of report.

All parameters considered in this study are consistent with the ENVIRONMENTAL PROTECTION AGENCY'S (EPA) approved Parameters of Concern (POC) for establishment of

an industrial zone and related activities. The sampling and/or monitoring points for the different environmental matrices are presented in tables 1, 2 and 3.

Water Quality Sampling Point

A total of six (6) water samples were collected during the study: four surface water and two ground water samples. As a quality control measure, all samples were collected in duplicates. The GPS Coordinates and other relevant sampling information are provided in **Table 1**.

Table 1: Water Sample Information

Sample Code	Matrix	Location (Water Source)	GPS Coordinates	Sampling Start Time
SW1	Surface Water	Doewhoen Town	0388992/0646332	9:03 am
SW2	Surface Water	Queen River	0387904/0646431	10:22 am
GW1	Ground Water	Giah Town	0387977/0646382	10:46 am
SW3	Surface Water	Penny Town (Gahyou Creek)	0390265/0644807	11:30 am
GW2	Ground Water	Well	0390161/0644745	11:57 am
SW4	Surface Water	Kono Town Creek	0390920/0645069	1:33 pm

Soil Quality Sampling Points

A total of five (5) soil samples were collected from different locations in and around the proposed economy zone. The GPS Coordinates and other sampling information are provided in **Table 2**.

Table 2: Soil Sample Information

Sample Code	Matrix	Location	Sampling Depth	GPS Coordinates	Sampling Start Time
SS1	Soil	Doewhoen Town	0 – 50 cm	0389088/0646472	9:17 am
SS2	Soil	Near Queen River	0 – 50 cm	0387904/0646431	10:36 am
SS3	Soil	Giah Town	0 – 50 cm	0387933/0646421	10:55 am
SS4	Soil	Penny Town	0 – 50 cm	0390255/0644803	11:38 am
SS5	Soil	Kono Town	0 – 50 cm	0390918/0645064	1:44 pm

Air and Noise Quality Monitoring Points

Air and Noise quality data were monitored at six (6) points in and around the proposed economy zone. The GPS Coordinates and other sampling information are provided in **Table 3.**

Table 3: Air quality monitoring Information

Sample Code	Matrix	Location	GPS Coordinates	Monitoring Start Time
AQ1/NQ1	Air & Noise	Doewhoen Town	0389123/0646468	9:20 am
AQ2/NQ2	Air & Noise	Doewhoen Town	0389089/0646473	10:40 am
AQ3/NQ3	Air & Noise	Queen River	0387904/0646431	11:05 am
AQ4/NQ4	Air & Noise	Giah Town	0387938/0646423	1:53 pm
AQ5/NQ5	Air & Noise	Penny Town	0390149/0644784	2:02 pm

AQ6/NQ6	Air & Noise	Kono Town	0390917/0644909	3:07 pm

Water Quality Results

The test method and detection limit for each parameter employed during the water quality testing are provided in **Table 4.**

Table 4: Water quality results

Parameter (Unit)	**Methodology (Instrumentation)**	**LoD**
Ph	Colorimetric Method	0.1
Turbidity (NTU)	Turbidity Meter	0.001
Total Dissolved Solids (ppm)	Magnetic Stirrer	0.005
Electric Conductivity (µS/cm)	Conductivity Meter	0.001
Chemical Oxygen Demand (ppm)	COD meter	0.01
Biological Oxygen Demand (ppm)	BOD Meter	0.01
Pesticide (ppm)	Colorimetry	0.001
Nitrate (ppm)	Cadmium Reduction Method	0.001
Phosphate (ppm)	Colorimetry	0.005
Oil & Grease (ppm)	Colorimetry	0.001
Zinc (ppm)	Zincon Method	0.001
Mercury (ppm)	Waste Water Test Kit	0.001
Lead (ppm)	Waste Water Test Kit	0.001
Arsenic (ppm)	Arsenic Test kit	0.001

Iron (ppm)	FerroMo Method	0.001
Chromium VI (ppm)	Colorimetry	0.002
Copper	Colorimetry	0.005

NB: LoD = limit of detection

The results of the surface and ground water quality are presented in **Table 5.**

Table 5: Analytical Results

Parameter (Unit)	**SW1**	**SW2**	**GW1**	**SW3**	**GW2**	**SW4**	**LWQ-Class III**	**LWQ-Class II**
Turbidity (NTU)	**11.22**	**19.75**	5.87	9.01	4.96	**10.01**	10.00	≤ 10
Alkalinity (ppm)	40.82	40.11	20.84	37.49	19.94	22.74	≤ 60.0	≤ 30.0
Mercury (ppm)	0.009	0.02	BDL	0.004	BDL	0.002	≤ 0.01	≤ 0.005
Total chromium (ppm)	0.21	0.19	0.003	0.11	0.002	0.09	≤ 0.9	≤ 1.5
TDS (ppm)	100.38	121.17	65.89	120.80	60.8	109.38	≤ 1200	≤ 1000
TSS (ppm)	44.82	77.49	22.74	60.82	20.84	55.92	≤ 50	≤ 30
Iron total (ppm)	0.36	0.42	0.007	0.39	0.004	0.31	≤ 2.0	≤ 1.5
Lead (ppm)	0.006	0.008	BDL	0.005	BDL	0.008	≤ 0.1	≤ 0.01
Pesticide (ppm)	0.004	0.008	BDL	0.02	BDL	BDL	NS	NS
Total Nitrogen (ppm)	6.93	6.82	2.37	6.77	2.07	6.28	NS	NS
Zinc (ppm)	0.65	0.74	0.33	0.65	0.21	0.48	≤ 5.0	≤ 2.0
Nitrate (ppm)	4.92	4.38	2.93	3.89	2.77	3.18	≤ 80.0	≤ 60.0
Copper (ppm)	<0.005	0.017	<0.005	0.011	<0.005	0.013	≤ 0.2	≤ 0.1
COD (ppm)	150.30	177.11	N/A	148.28	N/A	126.83	≤ 500	≤ 100
BOD (ppm)	88.48	89.30	N/A	80.37	N/A	60.36	≤ 150	≤ 250

Phosphate (ppm)	**1.84**	**2.04**	**0.95**	**1.72**	**0.99**	**1.89**	≤ 0.05	≤ 0.02
Ph	6.13	5.99	6.63	6.02	6.57	6.29	5.5-9.0	6.0-9.0
Ammonia-N (ppm)	3.48	3.22	0.94	2.84	0.12	2.05	≤ 6.0	≤ 3.0
Oil & Grease	0.83	0.99	BDL	1.13	BDL	0.96	NS	ND

LWQ-Class = Liberia Water Quality Standards Class III; Figures in **bold** are above allowable limits; **NS** = not stated; **ND** = not detected; BDL = below detection limit

The results of the water quality analysis showed phosphate levels outside acceptable limits for all samples analyzed. Turbidity levels were higher than acceptable in three of the five samples analyzed. All other parameters were below the required thresholds (Liberian Water Quality Class II and Class III).

Soil Quality Results

The results of the soil quality are presented in **Table 6.**

Table 6: Soil Quality Results

Parameter	**Unit**	**Methodology**	**SS1**	**SS2**	**SS3**	**SS4**	**SS5**
pH		Colorimetry	5.35	5.48	5.41	5.03	5.03
Pesticide residue	mg/L	Pesticide Kit	<0.005	<0.005	<0.005	<0.005	<0.005
CEC	mg/L	Titrimetry	87.9	86.2	99.30	98.39	90.37
Lead	mg/L	Colorimetry	BDL	BDL	BDL	BDL	BDL
Iron	mg/L	Colorimetry	0.005	0.003	0.005	BDL	0.003
Copper	mg/L	Colorimetry	BDL	BDL	BDL	BDL	BDL

NB: 1 mg/L = 1ppm; ND = not detected; CEC = Cation exchange capacity; BDL = below detection limit

The soil quality results showed all samples were acidic with good cation exchange potential. Pesticide, lead and copper remained undetected in all of the samples analyzed. Iron was detected in low quantities in four of the five soil samples.

Air Quality Results

The results of the air quality are presented in **Table 7.**

Table 7: Air Quality Results

Parameter	**Unit**	**AQ1**	**AQ2**	**AQ3**	**AQ4**	**AQ5**	**AQ6**	**WHO Limit**
Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	5.16	5.19	5.56	5.40	4.51	4.53	25
Particulate Matter (PM_{10})	$\mu g/m^3$	9.04	9.16	9.32	9.20	6.73	6.38	50
Volatile Organic Compound (VOC)	$\mu g/m^3$	0.13	0.11	0.17	0.13	0.10	0.11	0.75
Carbon dioxide (CO_2)	$\mu g/m^3$	4.30	4.38	5.07	4.21	4.14	4.10	50
Carbon Monoxide (CO)	$\mu g/m^3$	500.6	500.3	509.4	511.2	501.4	503.3	5000

The Air Quality results showed all parameters below the WHO permissible limits for eight hours continuous exposure.

Noise Quality Results

The results of the noise quality are presented in **Table 8.**

Table 8: Air Quality Results

Parameter	**Unit**	**NQ1**	**NQ2**	**NQ3**	**NQ4**	**NQ5**	**NQ6**	**EPA Limit**
Noise level	Db	68.4	60.9	55.9	68.8	55.4	53.9	75.0

The Noise Quality results showed all parameters below the EPA permissible limits for eight hours continuous exposure.

Conclusion

This study assessed water, soil, noise and air quality at the proposed Special Economy Zone (SEZ) in Buchanan, Grand Bassa County. All parameters considered in this study are consistent with the ENVIRONMENTAL PROTECTION AGENCY'S (EPA) approved Parameters of Concern (POC) for establishment of an industrial zone and related activities.

The results of the water quality analysis showed phosphate levels outside acceptable limits for all samples analyzed. Turbidity levels were higher than acceptable in three of the five samples analyzed. All other parameters were below the required thresholds (Liberian Water Quality Class II and Class III).

The soil quality results showed all samples were acidic with good cation exchange potential. Pesticide, lead and copper remained undetected in all of the samples analyzed. Iron was detected in low quantities in four of the five soil samples. The air and noise quality data were generally within the required permissible limits for each media.

It is anticipated that the results obtained in this study will be used as baseline for the purpose of comparing with future data during environmental audit of the economy zone.

Signed: Alex B. Momo
Chemical Analyst

APPENDIX C: STAKEHOLDER CONSULTATIVE MEETINGS

SAPZ Stakeholder Engagement Meeting with the Liberia Land Authority #001
Head in
Montserrado County, Monrovia
July 27, 20217

No.	Name	Institution	Position	Date	Cell#
1	Atty. J. Adam Monibah, Sr.	LLA	Chairman	**July 27, 2021**	0776623817
2	Dr. Janet V. Ngegla	LLA	Staff	July 27, 2021	-------
3	Samuel F. Kpakio	LLA	Staff	July 27, 2021	------
4	William K. Kokulo	LLA	Staff	July 27, 2021	0777513146
5	Yoquoi Lavala	IFC		July 27, 2021	0777444434

SAPZ Stakeholder Engagement Meeting with the Ministry of Commerce & Industry #002
Head in
Montserrado County, Monrovia
July 28, 2021

No	Name	Institution	Position	Date	Cell#
1	Nyenati Katifeys	MOCI	Director of Industry	**July 28, 2021**	077080616
2	Morris K. Saryon	MOCI	Asst. Min-Industry	July 28, 2021	0886849073
3	Benjamin T. Gee	MOCI	ADM/Asst.	July 28, 2021	N/A
4	Thomas K. Duoku	MOCI	Consultant	July 28, 2021	0777912903
5	DMI Goba	MOCI	Deputy Min	July 28, 2021	0777552058
6	Refus T. Kakar	MOCI	Sectional Head	July 28, 2021	0777096238

SAPZ Stakeholder Engagement Meeting with the Liberia Chamber of Commerce #003
Head in
Montserrado County, Monrovia

July 29, 2021

No	Name	Institution	Position	Date	Cell#
1	Tony Hage	LCC	1st Vice President	**July 29, 2021**	0886510744
2	Motmah M. Neufville	LCC	Asst. Secretary	July 29, 2021	0880487000

SAPZ Stakeholder Engagement Meeting with the Ministry of Agriculture #004
Head in
Montserrado County, Monrovia
July 29, 2021

No	Name	Institution	Position	Date	Cell#
1	Robert R. Fagans, Jr.	MOA	Deputy Minister	**July 29, 2021**	0776942990

SAPZ Stakeholder Engagement Meeting with the local County Authority #005
Head in
Buchanan, Grand Bassa County
August 4-5, 2021

No.	Name	Institution	Position	Date	Cell#
1	Janjay Baikpeh	MIA	Superintendent	**August 3, 2021**	0777041044
2	Flee A. Glay	MIA	Dev. Superintendent	**August 3, 2021**	0770796966
3	Eddie L. Williams	MIA	Info/ protocol officer	**August 3, 2021**	0776668075
4	Nathaniel SM. Thompson	LLA	Land Administrator	**August 3, 2021**	0776339445
5	J. O. Yancy Morris Vanyan	LLA	County Resident Surveyor	**August 3, 2021**	0777524138

Finding from stakeholders Consultation with interested Parties National Level (Government/International Agencies/Donors/NGOs, etc.)

	Stakeholder	Date of meeting	Place and Mode of Meeting	Thematic Area	Level of support	Feedback/Recommendation
	Ministry of Commerce	*July 28, 2021*	Ministry of Commerce Conference Room- In person Meeting	Trade	*Strongly support the Project Development Objectives*	• The Ministry of Commerce welcomed the project and inform that the Ministry is in fact head of the project steering committee the ministry and the Liberia Land Authority conducted a survey on the project site far back as 2016. • The recruitment of an independent consultant by NIC should have been through the Ministry of Commerce because they are chaired on the steering committee of the project. • The ministry expressed wiliness to provide all relevance documents and support in line with previous research carryout on the same project. The ministry is aware about illegal encroachment of inhabitants on the land allotted for the project. • For the smooth implementation of the project, constructive engagement needed with the local.
	Chamber of Commerce	July 28, 2021	Chamber of Commerce - In person	Investment	Strongly in favor	• There are many international organizations in Liberia and good policies documents but in Liberia it hard to

			Meeting			understand whether it's a bad luck because after all of the good documents nothing seems to be happening. • The Chamber of Commerce support this process and is willing to help the Government attract investors. • The project need to put in place the necessary mechanism to transport commodities from one hub to another.
4.	Liberia Land Administrator in Buchanan, Grand Bassa County	August 3, 2021	LLA Sub Office- In person Meeting	Land use, land governance and administration	In support of the project	• Emphasized the for the total involvement of project-affected communities prior to acquiring land for the implementation of project activities and during the implementation stages of the project. • Welcomed the project and thanked the consultant for the meeting. • Need for continuous consultation with all stakeholders regarding the proposed project site. • Sustainability of the project in rural areas • Minimize Resettlement Impacts
	Superintendent of Grand Bassa County	August 3, 2021	Grand Bassa County- In Person	local governance/ direct project benefici		• The Superintendent of Grand Bassa County welcomed the project and said that the project will serve as an income generating activities for both residence and citizens

				aries? The same applies to the other counties where the project will be implemented.		of the county • The local county leadership is in support of the proposed project
	The Chief, Elders, Youth and Women Leaders of the twelve towns in the affected project site. Grand Bassa County	August 3-5, 2021	Grand Bassa County- In Person	local governance and direct project beneficiary.	Strongly in favor but demand inclusion	• That the selection of project communities be done in consultation with project communities at local level. • Liberians' owned businesses be giving priority • Avoid involuntary resettlement and if avoidance is impossible, compensate for private properties affected by the project. • Government has not been fair to us here; they remove us from our settlement. We experience this with previous companies. • They want to be incorporated into this other project. • They are currently conducting a customary land survey in the entire project location because according to them the site belongs to them not the Government. • They want to complete their land survey before any

						agreement with the Government. • According to them, they were never involved in the previous survey done by the Government, they were left out. They expressed their wiliness for development but request incorporation. • Government conducting a survey without our involvement brought fear to the communities.

Annex II: Findings from stakeholders Consultation with interested Parties (National Level)

No	Issues/Concerns Raise	Response (s) Provided
1.	What is the precise goal of this project?	The Project goal is to improve and add value to the management and utilization of selected agricultural crops across Liberia and increase employment, alleviate poverty and empower the local population.
2.	What is the project name, and who is the Project implementer?	The proposed project is called the "Special Agro-Industrial Processing Zone Project (SAPZ)", and it would be implemented by the Government of Liberia through the National Investment Commission (NIC).
3.	How are the Project implementers going to promote and ensure adequate communication, collaboration and sharing of information among stakeholders	Each stakeholder will be engaged at every stage of the proposed project. The engagement strategies of the project will include face-to-face meetings, phone calls, email, workshops, info shops, print media publications, and radio communications.
4.	What historic issues exist	The project investments are associated with

	related to your project, stakeholders and geographical location of the selected communities?	environmental and social impacts including construction, (road works and other basic infrastructures) to improve post-harvest processing. The provision of essential infrastructure and technology as well as training, capacity, construction of regional aggregation centers or ATCs and Ahs for (for temporary storages, preservations etc.)
5.	Are there any studies conducted on potential environmental, social, health and cultural impacts of the project on local communities?	Yes, to some extent, previous studies have highlighted few significant impacts and the need to conduct a full environmental and social risks and impacts. Therefore, this ESIA/ESMP seeks to evaluate, identify, and assess all relevant environmental, socio-economic risks and impacts of the project and recommend measures that reduce, minimize, and alleviate these potential impacts to acceptable levels. Further studies will be done after the project is approved and before implementation. However, considering the nature and scope of the proposed project, it is professionally worth noting that the project triggers the need for resettlement given the level of potential socio-economic impacts identified and proximity to the few local communities in order to avoid force eviction.
6.	What are those communities/sites selected for the Project intervention, and what are the project main activities?	The main SAPZ Project is location in Buchanan, Grand Bassa County about 200 ha of the 631 ha GoL deeded Special Economic Zone Site. This study has revealed that there are about 12 main villages/settlement within the SEZ/SAPZ Area of Influence and that the local people and communities are concerned about the prospects and how the project would impact their livelihood. The project is structured around three related components; including: a): Support the development of Climate-resilient Infrastructure to attract investments into Agricultural Value addition/industrialization b) Support Business Competitiveness, Enable skills and climate-smart agricultural value chain development and strengthen farmer coordination and c) Strengthen Institutional Capacity, Project Coordination & Management
7.	What are the Project's	Consistent with international best practices, and in line

	guidelines for Sustainable Community Development?	with relevant Liberian Legislations, the Project will initiate multi-stakeholder consultation engagements where the concerns, aspiration and interest of project stakeholders will be integrated into the project design and plan, with the hope of achieving economically, environmentally, socially and healthy resilient communities without harming the future generations.
8.	Will the proposed project be void of political interferences?	Politics is part of human nature which makes it difficult to divorce human activities from political interferences. However, the project is a politically neutral project with the main objective to reduce poverty. Hence, NIC will endeavor as much as possible to avoid or minimize political interference at all stages of the project, through clearly defined roles, guidelines and principles.
9.	Is there any mechanism to mitigate misunderstanding and address concerns amongst project stakeholder?	Yes, the project will have Grievance Mechanisms (GMs) at various levels, and this will include: Community, County and National levels. Each level of the GM will strive to satisfactorily address concerns or complaints related to the project activities. Additionally, there will be pragmatic information dissemination campaigns on both local and national media outlets to inform the public about the project activities.
10.	What criteria did the project proponents use to select the Buchanan SEZ site counties as beneficiaries of the project (Grand Bassa)?	Several alternatives for the proposed located were assessed to ensure that the location that guarantees environmentally and socially sound and sustainable implementation. The GOL has designated the Buchanan SEZ area as its preferred location for the first SEZ under its revised SEZ initiative. The five referenced counties are part of the major coastal zones of Liberia, and they offer the best option for piloting of the project. It is understood that the preference for Buchanan is based on the aim to accelerate economic development in Liberia outside the metropolitan area limits of Monrovia aimed to rebalance national transport, to provide hinterlands not well served by Monrovia with access to other port options, to reduce port investment and

		acknowledging the advantage of Buchanan's resource potential and strategic location..
11.	Who are the stakeholders that will be directly/indirectly affected by your project?	The project stakeholders comprise people and institutions who are either directly affected by the project or have influence and interest in the project, including EPA, MOL, LLA, MFDP, MOA, MOCI, MOS,LCC, LRA, and Cooperatives, Project affected communities. Rural farmers and people, local authorities (County Superintendents and local officials) will be involved at every stage of the proposed project, based on their interest, influence and impacts. The role and involvement of every stakeholder will be clearly defined by the project.
12.	What opportunities are there for youth and women empowerment?	One of the key component of the project is Gender Mainstreaming; The project seeks to reduce gender gap in all its components. It intent to support gender balanced training of staff with a target ratio of 50/50 men and women and ensure that new policies, regulations and business reforms will respond to the specific needs of women. The project will adopt an approach for zero tolerance for sexual exploitation abuse and harassment across its activities and will engage the Ministry of Gender and Social Development (MGSD) on identifying a referral system for cases of gender-based violence (GBV) that may occur during the project's duration.
13.	What is the Project plan on gender; does the Project have specific gender policy/plan?	In accordance with the National Gender Policy of Liberia, the project will mainstream gender and where applicable, the project may develop a Gender Action Plan (GAP) to ensure that gender issues are adequately addressed throughout the project life cycle.
14.	What are the main crops of focus for the SAPZ project?	The commodities of focus for the project include inter alia, rice, cassava, oil palm, fruits, vegetables, cocoa, coffee, rubber, and aquaculture. The project will also improve skills especially for agribusiness by school to

		work transition, build, and coordinate climate-smart farm level value chains and support improvement in the business environment

Stakeholder Engagement Meeting with the local County Authority #001

Head at

Buchanan, Grand Bassa County

August 4-5, 2021

No.	Name	Institution	Position	Date	Cell#
1	Janjay Baikpeh	MIA	Superintendent	**August 3, 2021**	0777041044
2	Flee A. Glay	MIA	Dev. Superintendent	**August 3, 2021**	0770796966
3	Eddie L. Williams	MIA	Info/ protocol officer	**August 3, 2021**	0776668075
4	Nathaniel SM. Thompson	LLA	Land Administrator	**August 3, 2021**	0776339445
5	J. O. Yancy Morris Vanyan	LLA	County Resident Surveyor	**August 3, 2021**	0777524138

Special Agro-Industrial Processing Zone Project-Stakeholder Consultative Meeting held at Bleewein Town, Buchanan, Grand Bassa County.

August 4, 2021

NO.	NAME	NAME OF TOWN	POSITION	CELL NUMBER
1	Auquctive Geg	Massa Town	Elder	
2	Kennedy G. Flahn	Massa Town	Town Elder	0776121272
3	Peter Cole G.	Troble Gifa	Member	0778931475
4	Emmanuel Namdia	David Town	Town Master	0778396526
5	Marthaline Gilson	Sayoe Town	Youth Leader	0775886540
6	James Vah	Massah Town	Elder	0775676113
7	Jackie D. Garkpah	Blawee Town	Member	
8	Martha B. Bayelon	Sayoe Town	Member	0775664935
9	P. Isaac David	Peemeh Town	Town Master	0778089121
10	Isaac Kono	Kono Town	Youth Chair	0777941771
11	Emmanuel A. Fahn	Massah Town	Youth	0778655861
12	Cyrus P. Kpan	Sammie Town	Member	0778005694
13	Trokan Flah	Massah Town	Town Master	0775282660
14	Charley Gbeyou	Massah Town	Elder	
15	Anthony Sayon	Massah Town	Member	0770690169
16	Abraham George	Playble Town	Member	
17	Solomon Boyan G	Playble Town	Member	
18	Naway Paneh	Massah Town	Town Master	
19	Elijah G, Yemicoon	Samwin Town	Youth	0770694461
20	Helen Gboo	Bluwen Town	Women Leader	0775096142
21	Emmanuel V, Moses	Samwin Town	Youth	0775686254
22	Emmanuel G. Kargar	Dearplay Town	Youth Leader	0770466144

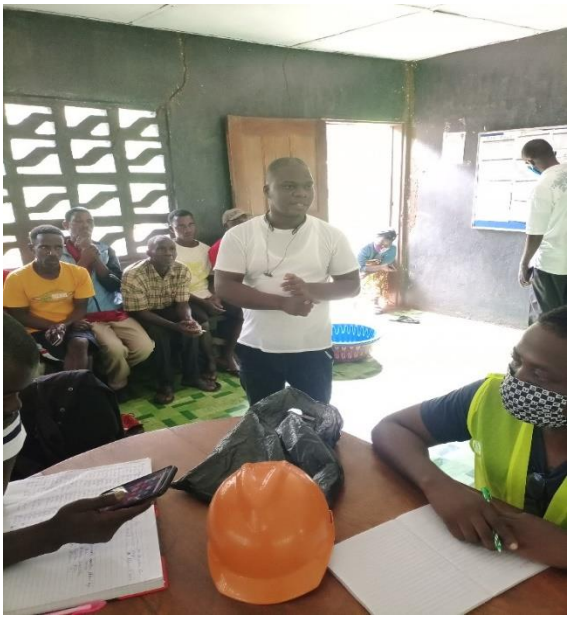
23	Junior Zenzen	Blewen Town	Member	0775230089
24	Ellen Naykua	Sawin Town	Member	0778281546
25	Louis Gauuae	Sawywar Town	Member	0778276358
26	Philip K, Davis	Sawywar Town	Member	
27	Joe G. Smith	Deaply Town	Member	0775336107
28	Oldpay Bayongn	Kono Town	Member	0778404528
29	Nathaniel G.Karway	Dowean Town	Member	0778826088

Joint stakeholders meeting with the vice jury of the President of the republic of Liberia, Superintendent Janjay Baikpeh of Grand Bassa County; the meeting comprises The Superintendent, Development Superintendent, LLA land Administrator & deputies, Grand Bassa Resident County land Surveyor (R) and team of consultants (L).

A group photo with residence of the twelve communities that will be impacted by the project in the SEZ. The consultative meeting was held at Bleewein Town Hall that brought representatives from the affected communities.

Residence of Doewheo Town, one of the community to be impacted in the SEZ met with our team

Residence of Kono's Town, one of the community to be impacted in the SEZ.



Pictorials of Stakeholders engagement with community residence in the SEZ at Bleewenin Town, electrical District # 3, Grand Bassa County.